



Federal Land Agency Lags on Solar Development Approvals Across Southwest U.S.

*Over 99% of More Than 100 Million Acres
Remains Off-Limits to Utility-Scale Buildout;
Cumbersome and Inconsistent Barriers Persist*

Executive Summary

The Bureau of Land Management (BLM), the largest landowner in the U.S., over the years has acknowledged some potential for utility-scale solar development on its vast land holdings across the solar-rich Southwest, but the agency has ignored and continues to overlook most possibilities on this front.

Of the more than 100 million acres the BLM manages in the region—which spans Arizona and New Mexico and parts of California, Colorado, Nevada and Utah—it has set aside only 276,000 acres, or less than 0.25% of the total, for utility-scale development under its Solar Energy Zone (SEZ) policy, although almost 20 million additional acres could be eligible under variance permits.

The agency is tasked with managing its holding in a way that allows for a multitude of uses, but renewable-energy development accounts for a fraction of a percentage of economic activity on BLM lands. Oil and gas, by comparison, account for 70%.

Clearly, the BLM is operating under outdated policy that serves in most cases to restrict rather than encourage development of utility-scale solar.

That said, policy levers do allow for expansion, and projects under development in addition to those already in operation on BLM lands in the Southwest suggest that markets are primed for more activity.

This report describes how the 372MW Shiprock Solar project, one of many utility-scale projects being proposed in the Four Corners area, seems a natural fit: It would take advantage of strong local solar resources and available transmission infrastructure, and offer job opportunities for the skilled workforce being left behind by the region's fast-fading coal-fired power-generation industry. It details also how plans for the 690MW Gemini Solar Project in Nevada, which will be the largest utility-scale solar project in U.S. history, recently were approved by the BLM in an exemplary model of streamlined bureaucratic decision-making.

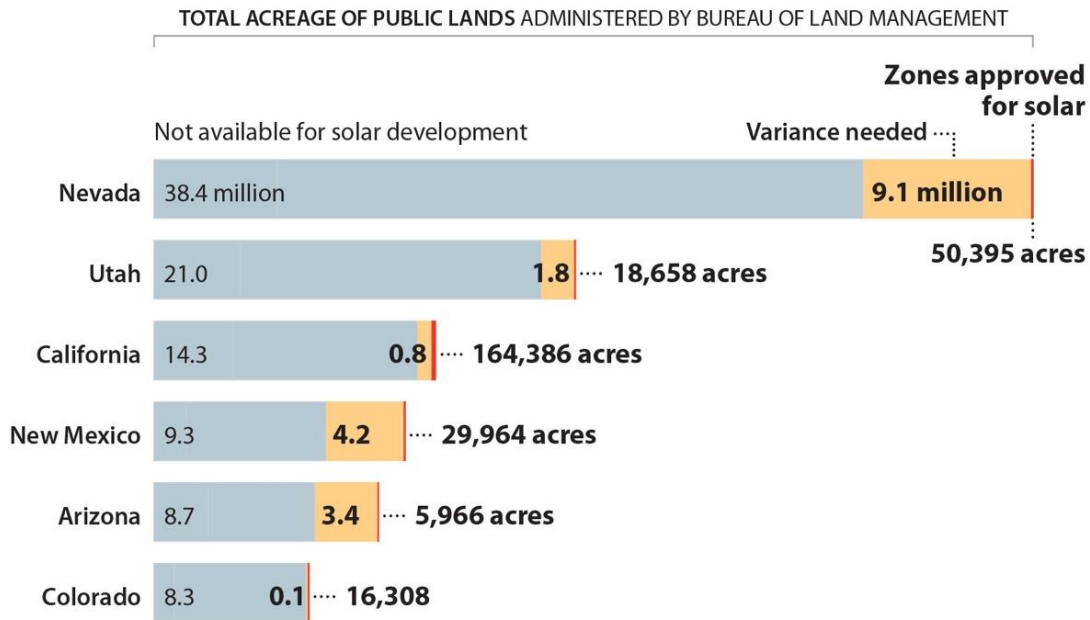
The history of the BLM suggests that many development decisions are shaped by sometimes outdated attitudes and competence levels at state and field offices where

utility-scale renewable energy isn't seen yet for the robust industry it is. Stronger leadership from above would help level the playing field for utility-scale renewable energy development on BLM lands.

The issue can be seen as increasingly nonpartisan, as can be seen in policy action by the Bush, Obama and Trump administrations alike. Yet the BLM for the most part remains an agency that is behind the curve on responsible buildout of these publicly owned resources, which are ripe for development and which would bring local economic benefits while bolstering national energy security.

Across BLM's Vast Lands, A Tiny Fraction Is Set Aside for Solar Development

The Bureau of Land Management administers nearly 120 million acres of Federal land across the southwestern United States. But only a tiny fraction of that—just 286,000 acres—has been designated as approved for solar energy development. A much bigger area of 19.4 million acres, designated as "variance" land, could be used for solar, but the BLM's cumbersome permitting process makes it difficult for solar developers to build projects on that land.



Source: Bureau of Land Management

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Background

The Bureau of Land Management: History and Mission

The Bureau of Land Management (BLM) manages 245 million acres, or 1 of every 10 acres in the U.S., making it by far the biggest single landowner in America.

The vast majority of BLM holdings are in the West, where enormous portions of some states are under BLM jurisdiction. Most of the surface of Nevada, for example, falls under BLM ownership/management, as does about half of Utah. Other states with huge portions of land under BLM control include Idaho, Oregon and Washington. The agency, in addition, manages millions of acres of subsurface mining rights.

About 50%, or 98.3 million acres, of all BLM lands are in the six states that include the American Southwest, a sun-rich area that runs east to west from **New Mexico** across **Arizona** into **Southern California** and north to south from **Colorado**, **Nevada** and **Utah** to the Mexican border.

Under the **Federal Land Policy and Management Act of 1976**, the BLM has a multipurpose mission by which it is to “administer public lands ‘on the basis of multiple use and sustained yield’ of resources.”¹ The historical BLM predates that legislation, having been formed in 1946 from the General Land Office, which was founded in 1812 and was used during the 19th century to support the doctrine of manifest destiny, which drove the continental conquest of lands, resources and native people based on the assumption that such appropriation was preordained and essential.

In more modern times, the BLM, which is part of the **Interior Department**, has managed public lands in a way that has allowed for timber production, mining, oil/gas development, wildlife management, protection of cultural and historic resources, and various recreational activities that include hunting, fishing, hiking, boating, camping, climbing, rafting, horseback riding and so on. Environmentalists have sometimes portrayed the BLM as disproportionately beholden to extractive industries that have fouled American rivers, aquifers, skies and landscapes. In turn, industries that have relied heavily on BLM lands have sometimes demonized conservationists, painting them as job and revenue destroyers.

The BLM, in other words, has been and remains at the center of long-running national, regional and local debates on how best to manage the vast lands it controls.

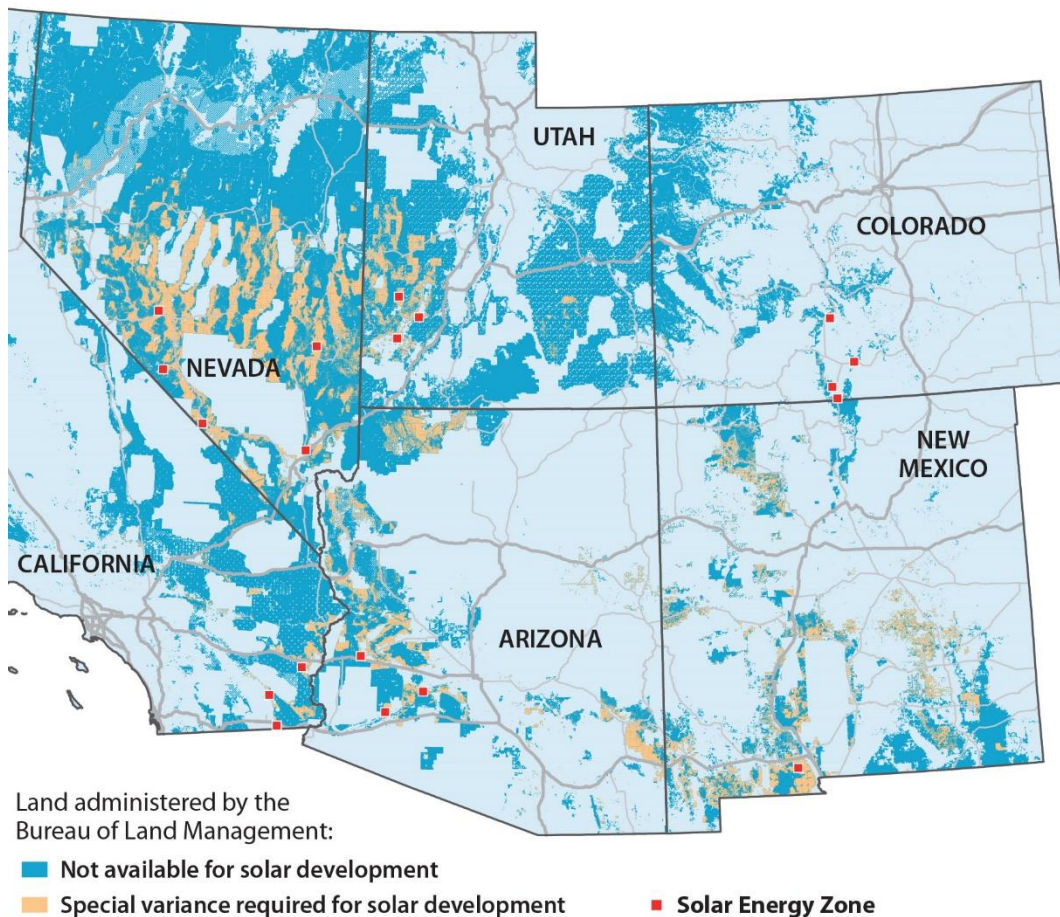
¹ U.S. Department of the Interior, Bureau of Land Management. [What We Manage](#). Accessed June 13, 2020.

The Modern BLM: Lagging on Utility-Scale Solar Policy

While there has been frequent disagreement as to how well it has delivered on its multi-use mission, the BLM has clearly lagged in one area: development of solar resources.

The agency has acknowledged some potential for utility-scale solar development on BLM lands in the Southwest but has done so in an extremely limited way.

The map here speaks volumes, showing how the agency's current policy on utility-scale solar development across the sunniest region of the country is restricted to 19 **Solar Energy Zones**, or **SEZs**, that exclude most BLM land.



Note how the few SEZs, marked by red dots, form a lopsided donut pattern that can be traced clockwise from southern New Mexico and Arizona into California, Nevada, Utah, and Colorado. This policy ignores most of the agency's lands in Arizona and New Mexico—the bulk of the donut-hole in the pattern—most noticeably in the **Four Corners area** of northwestern New Mexico, a especially problematic omission

when one considers how, as coal-fired power complexes are being closed, power-generation transmission remains in abundance.

Importantly, the map also shows the BLM land completely excluded from utility-scale solar development *and* BLM land that is available for utility-scale solar development through zoning-variance or SEZ-expansion processes.²

These numbers show clearly that these lands are not being used to their potential:

- Of the 119 million acres it manages across the six southwestern states, the BLM places 100 million acres, or nearly 84%, completely off-limits to utility-scale solar development.³
- Roughly 286,000 acres, or less than 0.25% of the total, are approved for utility-scale development.
- About 19.4 million acres, or 16% of these lands, are open to variances that could allow utility-scale solar development.

This formulation dates from 2012, when renewable energy was just beginning its years-long ascent in which it surpassed coal-fired electricity for a sustained period for the first time this year⁴ and is positioned now as the main rival to gas-fired power generation.

Goals detailed in **the 2012 BLM decision**⁵ include the following:

- “Facilitate near-term utility-scale solar energy development on public lands;”
- “Provide flexibility to the solar industry to consider a variety of solar energy projects (e.g., location, facility size, and technology);”
- “Optimize existing transmission infrastructure and corridors;”
- “Standardize and streamline the authorization process for utility-scale solar energy development on BLM-administered lands; and”
- “Meet projected demand for solar energy development.”

The 2012 decision is derived in part from a **2001 Bush administration executive order** that called for “the increased production and transmission of energy in a safe and environmentally sound manner” and directed federal agencies to “take

² Bureau of Land Management. [Fact Sheet: Renewable Energy: Solar](#). March 2018.

³ The BLM has set-asides on millions of acres reserved for wildlife preservation, other forms of conservation, and resource development that involves gas, oil, timber, grazing and mining leases.

⁴ IEEFA. [Renewables surpass coal in U.S. power generation throughout the month of April 2020](#). Mar 4, 2020.

⁵ Bureau of Land Management. [Approved Resource Plan Amendments/Record of Decision \(ROD\) Development for Solar Energy Development in Six Southwestern States](#). October 2012.

appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy.”⁶

It also cites the **Energy Policy Act of 2005, a Bush-era omnibus energy policy law**, that states as one of its intentions “before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts (MW) of electricity.”⁷

Further, the 2012 decision references a **2009 directive by the Obama administration** that orders “DOI agencies and bureaus to work collaboratively with each other and with other Federal agencies, individual states, tribes, local governments, and other interested stakeholders, including renewable energy generators and transmission and distribution utilities, to encourage the timely and responsible development of renewable energy and associated transmission... and to establish clear policy direction for authorizing the development of solar energy on public lands.”⁸

That order included this passage of note on policy benefits: “Increased production of renewable energy will create jobs, provide cleaner, more sustainable alternatives to traditional energy resources, and enhance the energy security of the United States by adding to the domestic energy supply.”

While the **Trump administration** has deemphasized such mandates—mainly by putting forth muddled or regressive pronouncements that are often out of step with market trends and that seem intended to thwart renewable energy development—it has, notably, pushed through the recent approval for construction on BLM land of the **Gemini Solar Project**, the largest solar farm in U.S. history and one that suggests a template for how the BLM can expand its utility-scale solar project approval processes (See “The Prime Example: Gemini Solar Project,” page 12).

To its credit, the BLM has a process by which SEZs can be added in any of the six states in question.⁹ The criteria are straightforward:

- “Relatively large areas that provide highly suitable locations for utility-scale solar energy development;”
- “Locations where solar energy development is economically and technically feasible;”
- “Locations where there is good potential for connecting new electricity-generating plants to the transmission distribution system’ and”

⁶ Department of Energy, Office of Electricity. [Executive Order 13212 - Actions to Expedite Energy-Related Projects: Federal Register Notice Volume 66, No. 99](#). May 18, 2001.

⁷ Congress.gov. [H.R. 6, Energy Policy Act of 2005](#). Aug. 8, 2015.

⁸ Bureau of Land Management. [Order No. 3285. Subject: Renewable Energy Development by the Department of the Interior](#). March 11, 2009.

⁹ Bureau of Land Management. [Identification Protocol for New or Expanded SEZs](#). July 2013.

- “Locations where there is generally low resource conflict.”

Alternately, the BLM has a formal variance process that can be applied to undeveloped BLM acreage open to utility-scale solar production.¹⁰ Use of the variance process, which was updated in 2017, with requirements that are byzantine but not insurmountable, depends considerably on the politics and culture of state- and field-level BLM offices.

Over the years, the agency has approved 28 utility-scale projects on BLM land through SEZ permits and off-SEZ variances in the six-state region described in this report. One approval was relinquished by the developer, 13 sites are under development, and 14 are operational and have a total generation capacity of 3,807MW (3.8 gigawatts); 16 of the 28 sites are in California, 10 are in Nevada, and 2 are in Arizona. The BLM, according to its most recent tally, from late 2018, has no operational utility-scale presence in Colorado, New Mexico or Utah, although each of those states have hundreds of thousands of acres each that are BLM eligible for such use via SEZ designations or variance processes.

Some utility-scale projects are wholly situated on BLM land; several merely cross BLM lands with their transmission lines but require rights of way to do so.

Renewable energy—solar and wind, specifically—is a vastly underdeveloped BLM resource by the agency’s own reckoning. A **2019 BLM overview** showed renewable energy development accounting for a less than 1% of economy activity on BLM lands; 70% was controlled by oil and gas interests.¹¹

Case Study: The Proposed Shiprock Solar Project

Tapping Existing Infrastructure and Local Workers

The **Shiprock Solar** project—one of several being proposed in the Four Corners area—would be built on 555 acres of private property and 1,980 acres of BLM land adjacent to the current **San Juan Generating Station**, a coal-fired power plant that dates from the 1970s and is slated for retirement in 2022.

The plan¹² calls for construction on a 980-acre parcel of BLM land and 555 acres of adjacent private land. The solar farm would tie into the **Western Area Power Administration’s (WAPA) Shiprock substation** via a 345kV transmission line, giving it access to offtakers that would likely include utility companies in Arizona and Nevada. Alternately, the Shiprock Solar project, which takes its name from a nearby town and a well-known local geological prominence, could connect to another nearby substation operated **Public Service Company of New Mexico**.

¹⁰ Bureau of Land Management. [Variance Process—Factors to Be Considered](#). September 2017.

¹¹ Bureau of Land Management. [The BLM: A Sound Investment for America 2019](#). Accessed June 13, 2020.

¹² Photosol US. [Preliminary Plan of Development](#). April 2020.

The Four Corners area is an obvious choice for a number of reasons:

- It has an appropriately skilled workforce.
- It is rich in raw solar energy.
- It is in close proximity to existing power industry infrastructure, which includes substations and regional transmission lines that tie into grids that serve tens of millions of people in Arizona, California, Colorado, Nevada and New Mexico.

The developers say the project will bring as many as 250 construction workers to the site and 20 longer-term full-time jobs. They note also that it will generate local property tax revenues and federal lease revenues but have yet to publish those figures.

The Company and the Potential Offtakers

Photosol US Renewable Energy, a Utah subsidiary of **Photosol Group**, a French developer of utility-scale generation, is the company proposing to build **Shiprock Solar**,¹³ a 372MW utility-scale project in **San Juan County** near **Farmington, N.M.**, that would include a battery storage component and that would tie into the regional power grid that serves the Southwest.

“The project is being co-developed by a consortium of experienced developers, including Photosol, **Panorama Company**, and **Case Investments**, who have been successful in developing in aggregate more than 3,100 MW of solar projects in the Americas and in France,” the company states in its preliminary plan for Shiprock.¹⁴ “Photosol has over 4,800 MW of solar projects in development throughout the U.S.”

Photosol, then, appears to be a small but serious player in the fast-growing utility-scale solar sector. It states that it owns 300MW of solar PV projects in operation in France and 80 MW of ready-to-build projects there and that the group “is managed by a lean team of skilled and experienced professionals that oversees the assets and the pipeline of projects.” It has 50 employees (“developers, engineers, technicians, accountants, in-house counsel, financial and renewable energy experts”). The company has not published details on its other projects under development, but a project-development map on its website shows activity in 10 other states: Alabama, California, Colorado, Kansas, Louisiana, Massachusetts, New Hampshire, Nebraska, North Dakota and Texas.¹⁵

Photosol’s business model in the U.S. is built substantially on making use of infrastructure left behind by retired or soon-to-be-retired coal plants, thus the company’s interest in the San Juan County location. Shiprock Solar would essentially

¹³ Photosol US. [Shiprock Solar Project](#). Accessed June 13, 2020.

¹⁴ Photosol US. [Shiprock Solar Facility Preliminary Plan of Development](#). April 2020.

¹⁵ Photosol US. [Our Projects](#). Accessed June 13, 2020.

replace coal-fired generation with solar generation, using the transmission bones of the closed power plant.

The area around Farmington for years has been a power-generation nexus because of its coal-fired power generation industry, which has supported thousands of jobs through plant and mining operations and which has been a fundamental component of the fiscal health of surrounding towns, counties and school districts. The nearby 847MW **San Juan Generating Station** is not long for this world, however, nor is the 1,540MW **Four Corners Power Plant**, both of which have been workhorse power producers for electricity users across the Southwest since the mid-1970s but that are no longer competitive. The 253MW **Escalante Station**, New Mexico's only other coal-fired plant, is closing this year and will be replaced by a utility-scale solar farm.

The trend isn't just local. Regionally, coal-fired power is collapsing. The **Navajo Generating Station**, once the largest coal-fired plant west of the Mississippi, closed seven months ago, and the remainder of Arizona's coal-plant fleet is at risk. Plant capacity factors—the measure by which a coal plant can be said to be economically viable—have tanked at all four of Arizona's remaining coal-fired plants (**Cholla Power Plant, Coronado Generating Station, Springerville Generating Station** and **Apache Generating Station**) and aren't likely to recover. The two biggest power companies in Arizona, **Arizona Public Service (APS)** and **Salt River Project (SRP)**, are moving aggressively to cheaper, cleaner energy, and the state's third-biggest provider, **Tucson Electric Power (TEP)**, is following their lead.¹⁶

Public Service Company of New Mexico is changing also, in part because of the New Mexico **Energy Transition Act of 2019**, which mandates electricity-industry modernization through rapid uptake of renewables, and in part because of private sector demand. PNM will get 43% of its electricity from renewables by 2023 in no small part because **Facebook**, in keeping with the company's green-energy policy, requires that PNM provide it with renewable energy to power its new, 3-million-square-foot data center at Los Lunas. That deal alone now accounts for 36% of PNM's fast-growing 1,064MW renewable energy portfolio.¹⁷

Offtakers of the power produced by Shiprock Solar, if it is built, could include any of the utilities mentioned above—APS, PNM, SRP, TEP—or any combination of them, in addition to others. Executives at all of these companies know full well that utility-scale solar is a far more affordable form of generation than coal or even gas-fired power, and all are seeking deals like the one for which **El Paso Electric** received recent regulatory approval for that came in at record-low prices¹⁸ (El Paso Electric is the power company that provides service in and around El Paso, Texas, and Las Cruces, N.M.)

¹⁶ IEEFA. [The Case \(and the Mechanisms\) for Utility-Company Reinvestment in Arizona's Coalfield Communities](#). February 2020.

¹⁷ IEEFA. [Corporate Case Study: Facebook's Green Energy Goals Are Speeding the Transition of New Mexico's Electricity Sector](#). May 2020.

¹⁸ Utility Dive. [El Paso Electric sees record low solar prices as it secures New Mexico project approvals](#). May 18, 2020.

Photosol U.S. does not have a power purchase agreement (PPA) in place with any utilities, and it needs one or more to actually build the project. But it has invested heavily in planning, in public outreach, and in land-use studies, and it is well-positioned in local transmission interconnection queues, which essentially are waiting lists that determine which power providers will get access to the transmission lines. Such access in the Four Corners area is being pursued by so many renewable energy interests that a race is on for who can develop projects and bring them onto the grid first. Two local coal-fired plants slated for closure—San Juan and Four Corners—have a total current nameplate capacity of almost 2,400MW with associated transmission access that will be freed up when those plants are shuttered.

This is the backdrop against which the Shiprock Solar Project is being proposed.

A Byzantine Approval Process

For the project to go forward under current federal land-use policy, a labyrinth **BLM variance process** must be navigated, requiring six separate steps, each of which has its own sub-requirements.

One of the steps consists, for example, of a 25-point checklist that includes requirements be met for documentation with regard to: proximity to existing SEZ tracts; land-use-plan compliance; design compliance; demonstration of financial capability and technical expertise; proof of minimal likely conflict with existing land uses; demonstration of avoidance of redundant transmission infrastructure; proof of maximum complementary use of adjacent private land; groundwater-protection compliance; protections for desert tortoises and sage grouse; minimal interference with hunting and fishing; minimal impacts on scenic views and cultural resources; and siting preferences on or near brownfield areas. (“Altered lands such as mine-scarred lands and fallowed agricultural lands; idle or underutilized industrial areas; lands adjacent to urbanized areas and/or load centers; or areas repeatedly burned and invaded by fire-promoting non-native grasses where the probability of restoration is determined to be limited.”)

The process, as many government processes are, is couched in language that is not deliberately mysterious but that is indiscernible to the uninitiated and that can create the impression that if an approval were to occur it would require a serial miracle: “Should the Shiprock Solar Project be advanced by the BLM to a NEPA analysis, either an EIS will be prepared or an EA will be prepared to adhere to the solar energy program PEIS.”¹⁹

As discouraging as these hurdles could seem to solar-power investors and developers, the BLM states unequivocally that it is open-minded on utility-scale solar variance applications because “it believes that this approach allows flexibility to adapt as data and science improve, recognizes the variability and tradeoffs

¹⁹ Photosol US. [Shiprock Solar Webinar Presentation](#). May 27,2020.

associated with individual applications, and allows for satisfactory protection of resources of concern.”²⁰

At the end of the day, utility-scale solar variance approvals on the 19.8 million acres of eligible BLM lands across the Southwest—including the acreage for the approval being sought by Shiprock—may depend on the attitude, bandwidth, and competence of BLM staff at state- and field-level offices, especially in states and field-office areas where little or no such development has ever occurred, even with all the many advantages such locations have.

The Prime Example: Gemini Solar Project

In January, the **Department of the Interior**, which manages the BLM, announced its approval for construction of the 690MW Gemini Solar Project, which is to be the largest solar installment in the country.

The technical points in the federal **record of decision**,²¹ which came through the Las Vegas field office of the BLM, is summarized by the agency as follows:



*“The ROD approves a right-of-way grant for the Project and the associated amendment to the **Las Vegas Resource Management Plan of 1998**. The authorized solar facilities include 34.5 kilovolt overhead and underground collector lines, a 2-acre (0.8-hectare) operation and maintenance facility, three substations, internal access roads, access roads along generation tie-lines, a perimeter road, perimeter fencing, water storage tanks for fire protection, drainage control features, a potential on-site water well or a new water pipeline, and improvements to the existing NV Energy facilities to support interconnection. The project also includes a 380 MW solar-powered battery system able to store and deploy over 1,400 megawatt hours which can be used when the power is needed most.”*

This description is revealing in that it shows—while many of the specifics of the two projects are different (production capacity, acreage, layout, collector-panel numbers, battery-storage size, etc.)—that Gemini and Shiprock are fundamentally alike:

- Both are large utility-scale solar farms on federal land in close proximity to existing transmission infrastructure;

²⁰ Bureau of Land Management. [Variance Process: Factors to Be Considered](#). Accessed June 13, 2020.

²¹ Bureau of Land Management. [Record of Decision, Gemini Solar Project](#). May 2020.

- Both will produce cheap, clean electricity and create local economic activity;
- Both are on BLM land parcels that require special rights-of-way and that are not constrained by outdated BLM policy that was designed to limit utility-scale solar development to a tiny fraction of the tens of millions of acres of publicly owned property in the southwestern U.S.

Gemini is of note on three additional points:

- For the speed with which the project will proceed (buildout will occur in two phases, the first coming online in 2021, the second a year later) and which is typical of utility-scale solar project construction.
- For the local economic benefits it will bring (“The on-site construction workforce is anticipated to average 500 to 700 construction workers, with a peak of up to 900 workers at any given time, supporting up to an additional 1,100 jobs in the local community and injecting an estimated \$712.5 million into the economy in wages and total output during construction.”²²)
- For the political nature of the approval—or perhaps in fact for the apolitical nature of it—coming as it does under an administration that often favors policy tilted toward fossil-fuel energy at the expense of renewable energy growth.

“This action is about getting Americans back to work, strengthening communities and promoting investment in American energy,” the lead assistant Interior Department secretary said in announcing the approval in January. “Domestic energy production on Federal lands remains fundamental to our national security.”

Gemini shows, in other words, how relatively quickly utility-scale solar can come online—nuclear power plants take a decade or more to build, gas-fired plants three years or so—how it creates economic activity and how it is a mature enough industry to be politically noncontroversial.

On the latter point, solar buildout on this scale is likely to continue under whichever political party controls the White House over the next few years but is likely to gain further traction if a new and more energy-progressive administration comes to power in 2021.

Conclusion/Recommendation

Projects like Gemini and Shiprock are more than suitable for timely and prudent use of BLM lands regionally, and are a model for how millions of BLM acres in the Southwest could be economically tapped for low-cost utility-scale solar power generation.

²² Bureau of Land Management. [Interior Approves Plan for the Largest Solar Project in U.S. History](#). May 11, 2020.

This report is not a specific endorsement of the company developing the project or of its specific plan, but the land and location in question are ideal for such development, which would bring local economic benefits and make use of the area's rich concentration of transmission infrastructure.

That a lengthy and maze-like variance process is required to proceed with electricity-generation modernization in the Southwest— in the Four Corners region, in particular—suggests that it is time for the BLM to reconsider its restrictive land-use policies on this front and to even the playing field in a way that allows renewable-energy development to vie on an equal footing with competing interests and to help scale up the new-energy economy in local communities that are in dire need of reinvestment.

Stronger direction from above may be required if the agency is to more effectively leverage its solar-rich resources and tap into the growing utility and corporate demand for this clean, low-cost and domestic energy option.

About IEEFA

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About the Authors

Karl Cates

Transition Policy Analyst Karl Cates has been an editor for Bloomberg LP and the New York Times and a consultant to the Treasury Department-sanctioned community development financial institution (CDFI) industry. He lives in Santa Fe, New Mexico.

Seth Feaster

Data Analyst Seth Feaster has 25 years of experience creating visual presentations of complex data at the New York Times and more recently at the Federal Reserve Bank of New York. Feaster specializes in working with financial and energy data. He lives in New York.

Dennis Wamsted

Analyst/Editor Dennis Wamsted has covered energy and environmental policy and technology issues for 30 years. He is the former editor of The Energy Daily, a Washington, D.C.-based newsletter.

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