The Benefits of Solar Energy Projects in Arizona

Prepared for:

Arizona Solar Energy Industries Association (AriSEIA)

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SUMMARY: Benefits of the Solar Industry in Arizona

As of 2024, Arizona ranked sixth in the nation in terms of solar capacity and third in battery storage, with over 90 utility-scale solar projects installed in the past decade. These projects contribute to energy independence, environmental sustainability, and economic growth, providing numerous benefits to the state, local communities, and school districts.

Energy Independence: Solar power reduces reliance on fossil fuels, enhancing Arizona's energy security. With 7,800MW of solar capacity and an additional 2,860MW in battery storage (as of 2024), Arizona has diversified its energy portfolio. Localized solar installations help improve grid resilience, reduce transmission losses, and offer protection from volatile fossil fuel prices as solar technology advances.

Environmental Benefits: Solar energy significantly reduces greenhouse gas emissions, contributing to Arizona's climate goals. Compared to other power generation methods, solar projects use very little water, an important factor in Arizona's arid climate. A study revealed solar uses 0.3 acre-feet of water per acre, far lower than other land uses, making it an environmentally favorable option for energy production.

Economic Stimulus: Solar development brings substantial investments to Arizona, creating jobs in construction, maintenance, and related industries. For instance, a 200MW solar project with battery storage generates 225 direct jobs during peak construction. Moreover, solar energy stabilizes long-term energy prices, lowers electricity bills through net metering, and supports technological advancements, positioning Arizona as a leader in renewable energy.

Tax Revenues: Despite misconceptions, solar projects generate considerable tax revenues. A 200MW example project would generate an average of $565,200 annually in personal property taxes levied on solar equipment, or $22.6 million over the life of the project. Additionally, solar projects increase land value, leading to higher real property tax revenues for local jurisdictions.

In summary, Arizona's solar industry drives energy independence, supports environmental sustainability, stimulates economic growth, and generates significant tax revenues.

About Elliott D. Pollack & Company

Elliott D. Pollack & Company has been in business for more than 30 years and is headed by one of Arizona's most noted economists. The firm is known for its expertise in two primary areas – real estate and economics, with its primary practice in the State of Arizona. The firm has been employed by public institutions, state, county, and local governments, private entities, and Native American Communities, in a variety of assignments that include economic impact analyses, real estate market studies, forecasting, and public speaking at events around the State.

INTRODUCTION

Arizona has one of the highest solar potentials in the U.S., with an average of over 300 sunny days per year, making it ideal for solar energy production. Indeed, as of 2024, Arizona ranked 6th in the nation in terms of solar capacity and 3rd when considering battery storage.[1] And the solar energy industry in Arizona continues to grow. According to the Solar Energy Industries Association (SEIA), over the last 10 years alone, there have been more than 90 utility scale solar projects and battery storage facilities installed throughout Arizona, increasing the total nameplate capacity by an estimated 356%. By the end of 2024, the utility scale nameplate capacity in Arizona will reach an estimated 7,800 megawatts (MW) with an additional 2,860MW in battery storage. In addition, there are 16 known projects currently under development that will total nearly 3,400MW of capacity.

The benefits of this recent growth are important to the State, counties, local communities, and taxing jurisdictions - such as special districts and local school districts. These new utility scale solar projects not only bring energy independence to communities but offer environmental benefits, stimulate economic growth, and increase tax revenues.

There has been much misinformation regarding the solar industry circulating throughout the State in policy forums by both the public and elected policymakers. This report, prepared by Elliott D. Pollack & Company, presents comprehensive data and analysis on the solar energy industry, highlighting its growth, economic impact, and environmental benefits.

[1] Based on data provided by the Solar Energy Industries Association (SEIA).

ENERGY INDEPENDENCE

Many communities in Arizona recognize the value of renewable energy and have embraced the development of utility-scale solar projects. Data from the Solar Energy Industries Association (SEIA) provides the volume of solar nameplate capacity by County.

As of year-end 2024, the State's solar projects registered with SEIA will total over 7,823MW with an additional 2,860MW in battery storage. These totals include the aggregate of 165 projects.

Arizona Utility Scale Solar Capacity
by County
2024

County	Project Count	AC Nameplate Capacity (MW)	Battery Storage Capacity (MW)
Apache	3	13	
Cochise	9	189	20
Gila	2	22	8
La Paz	3	633	
Maricopa	65	3,389	1,408
Mohave	8	117	60
Navajo	2	55	
Pima	31	350	65
Pinal	17	1,440	704
Santa Cruz	1	6	
Yavapai	4	48	
Yuma	20	1,561	595
	165	7,823	2,860

Source: SEIA projects larger than 1MW

SEIA data lists 16 additional projects, located in six counties, currently in various stages of development but all expected to begin operations within the next three years (by year-end 2027). These projects total nearly 3,400 MW of additional nameplate capacity, or an average of 210MW per project.

Arizona Utility Scale Solar Capacity Under Development by County		
County	**Project Count**	**AC Nameplate Capacity (MW)**
Coconino	2	700
La Paz	1	200
Maricopa	10	1,907
Pima	2	384
Yuma	1	185
	16	3,376

Source: SEIA projects larger than 1MW

As the State and local communities add capacity of solar energy, it can help diversify and, thus, reduce reliance on fossil fuels and improve energy security and self-sufficiency. Distributed solar installations can enhance the resilience of the electrical grid by not only reducing demand on the main power grid, but also providing local sources of power and reducing transmission losses. That is, by producing energy locally, communities become less vulnerable to supply chain disruptions affecting fossil fuels.

Furthermore, solar energy provides a hedge against volatile fossil fuel prices, as sunlight is free, and the cost of solar technology continues to decrease. Advances in solar technology and storage solutions continue to improve efficiency and reliability, further supporting energy independence goals.

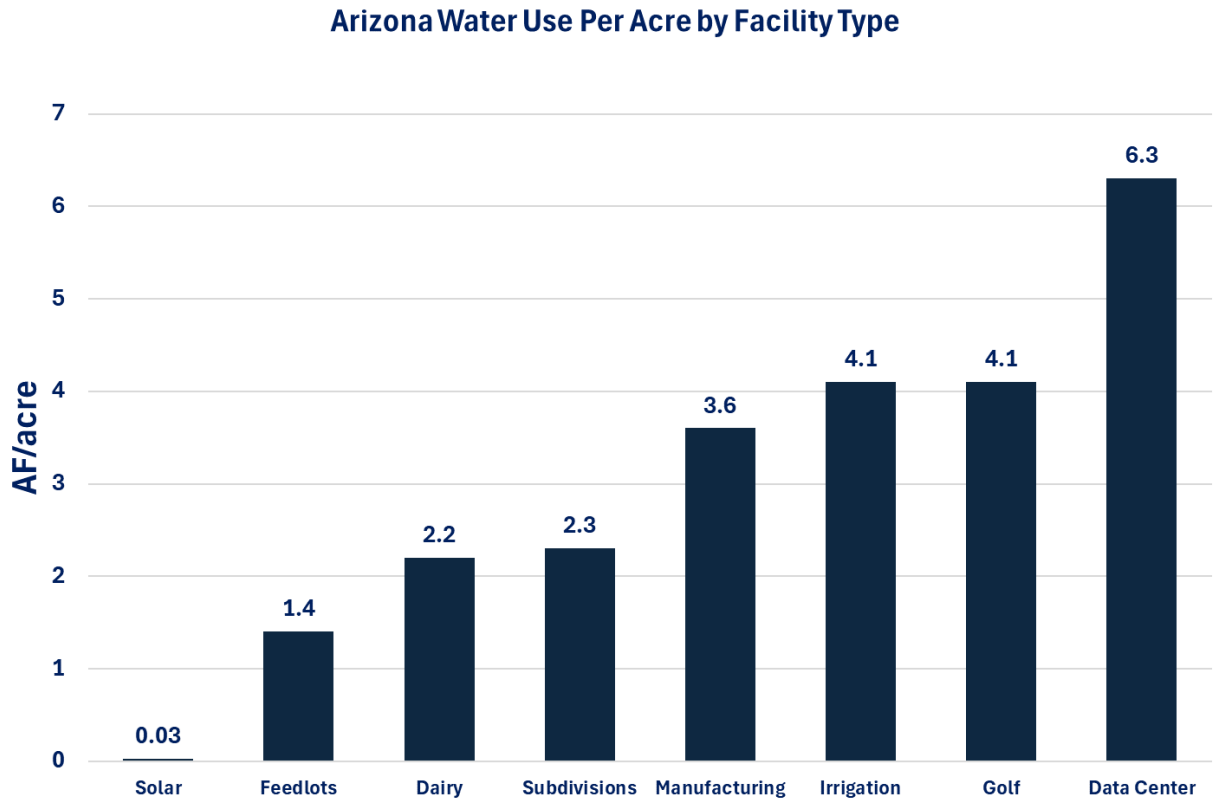
ENVIRONMENTAL BENEFITS

Beyond the importance of energy independence, many communities throughout Arizona are committed to a sustainable future. As part of this movement, demand for the production of carbon-neutral electricity has increased. Solar energy reduces greenhouse gas emissions and overall air emissions (even beyond greenhouse gas emissions), contributing to a cleaner environment.

According to the Arizona Department of Environmental Quality, there are currently seven counties in Arizona with communities with air quality pollutants above the National Air Quality Standard (NAAQS) that are outlined in the Clean Air Act. Nonattainment areas are classified by the Environmental Protection Agency (EPA) to offer air quality monitoring data.

When considering a solar project in a local community, many policymakers have expressed concern regarding the use of water. In reality, solar power generation uses minimal water compared to traditional power plants, which is crucial in arid regions like Arizona.

Furthermore, analysis conducted by WestWater Research, LLC concluded that Solar projects in Arizona use significantly less water than other land uses that local communities may consider as an alternative to solar. The study, "Arizona Water Demand Analysis by Land Use Category," illustrates that the average water use across the sectors analyzed is 3.4-acre feet per acre. When compared to solar (0.3-acre feet per acre), this is more than 100 times the water usage. The chart below provides the results of their analysis by land use type analyzed.



Overall, solar energy helps Arizona meet state and national climate goals and renewable energy requirements, contributing to a more sustainable future.

ECONOMIC STIMULUS

Solar energy development brings significant investment into Arizona. This new development creates jobs and stimulates economic activity. Arizona's investment in solar technology can lead to job creation in installation, maintenance, and manufacturing sectors.

Based on information from local solar developers, the construction of a new 200MW solar facility with 200MW of battery storage would generate 225 direct jobs at peak construction. While there is no guarantee these construction workers are based locally, especially in some of the smaller rural areas, they are still onsite and spending money locally during the construction phase. In addition, suppliers and manufacturers are impacted, generating additional indirect and induced jobs.

Beyond the jobs and spending, the solar industry provides additional benefits not quantified in this analysis:

- Solar energy generation provides a stable energy source with low operational costs, offering long-term economic benefits, and energy price stability.
- Solar energy can lower electricity b ills for homeowners and businesses through reduced reliance on grid power and the potential for net metering.
- Investing in solar energy encourages technological advancements and can position Arizona as a leader in renewable energy technologies and practices.
- Solar projects can provide economic opportunities in rural areas, offering additional revenue streams and infrastructure development.

TAX REVENUES

There is a common misconception that solar projects do not generate tax revenues for local governments in Arizona. However, solar projects across all counties in Arizona are subject to personal property taxes on equipment and, thus, generate significant revenue for local taxing jurisdictions as outlined in this report. In addition, solar projects can contribute to increased real property taxes as well as generate use taxes levied on non-exempt equipment for the State.

Personal Property Tax

Per Arizona Revised Statute 42-14155, the full cash value of renewable energy equipment is subject to Arizona personal property taxes over the life of the project using a 30-year straight-line depreciation with a 10% floor for solar and a 15-year straight-line depreciation with a 10% floor for battery storage. This full cash value is 20% of the depreciated cost of the equipment.

In order to illustrate the potential impacts on personal property taxes for local governments, the following project was considered. This example project would produce 200MW of power and includes the addition of 200MW (4 hours) of battery storage. A facility of this size is generally in range with recent power purchase contracts announced by Arizona Public Service and Salt River Project, two of the state's largest electric utilities. The taxable original cost of a project of this size is estimated at $528.0 million.

Using the formula described in ARS 42-14155, the following personal property taxes would be collected by each jurisdiction. Weighted average tax rates were used for each of the taxing jurisdictions based on population.

In the early years, the tax collections would be higher and decrease each year until depreciation reaches the 10% floor. Therefore, the annual average over the life of the project is provided in

the following table. An average of $565,200 would be collected each year by all jurisdictions. This equates to $22.6 million over the life of the project.

Personal Property Taxes
Arizona Solar Project (200MW Solar & 200MW BESS)
(2024 dollars)

	Rate	Average Annual	Life of Project
County	1.8698	$97,400	$3,896,000
Water District	0.1400	$7,300	$292,000
Fire District	0.0203	$1,100	$44,000
County Flood	0.2011	$10,500	$420,000
County Library	0.1629	$8,500	$340,000
Community College	1.2333	$64,200	$2,568,000
Special Health District	0.3277	$17,100	$684,000
Vocational District	0.0745	$3,900	$156,000
School Districts	6.8210	$355,200	$14,208,000
Total Personal Property Tax Collection	**10.8505**	**$565,200**	**$22,608,000**

--Through 12/31/40 the full cash value of "renewable energy equipment" is 20% of the depreciated cost of the equipment per ARS 42-14155. This report assumes the statute will be extended to cover the life of the project.

--The figures are intended only as a general guideline as to how the various counties could be impacted by the project. The above figures are based on the current economic structure and tax rates of the State of Arizona and counties.

Source: Elliott D. Pollack & Co.; ATRA; ARS 42-14155

Real Property Tax

Site selection for solar facilities is an important step in development. Factors such as accessibility, climate, grid capacity, and social and environmental impacts are considered. In addition, developers must consider zoning ordinances and regulatory and permitting requirements.

Typically, solar projects are situated on undeveloped land outside the immediate urban area where land is more abundant and often more affordable. The existing land uses can range from agricultural to industrial zones or brownfield / underutilized sites. In many cases, this land is far enough outside of the immediate development that it likely will not be developed for many years. In the meantime, the community can experience not only the personal property taxes described above, but also increased land value and, thus, increased property tax collection.

Research conducted by Elliott D. Pollack & Company regarding the assessed value of solar facilities showed that real property values increased an average of over 250% once solar was installed on the site. That directly correlates to increased real property tax collections for local jurisdictions.

The life of a solar project is typically 30 years at which point the panels can be removed with very little land disturbance. Not to mention, these solar developments are not taking the “last piece of land” available. Thus, local governments have much to gain from approving solar developments.