

# Frequently Asked Questions

## Utility-Scale Solar in Kansas

As demand grows for affordable, clean, and reliable power, utility-scale solar is quickly becoming a preferred energy source in America. Ranked as a top 10 state<sup>1</sup> for sunny days with plenty of flat land, Kansas is a premier prospect for large solar farms. In this FAQ, we answer common concerns this promising technology.



### What is utility-scale solar?

'Utility-scale solar' - otherwise known as 'solar farms' or 'large-scale solar' - are power generation facilities harnessing energy from the sun using photovoltaic panels to provide enough electricity for hundreds or thousands of customers, not just for one specific home or business. The U.S. Energy Information Administration classifies utility-scale solar facilities as at least 1 megawatt (MW), but many new utility-scale projects are between 100-500 MW to achieve optimal cost-benefit ratios, with solar costs down 82% since 2010.<sup>2</sup> In most cases, facilities of this magnitude are located on open land near an electrical substation.

### Why put solar panels on the ground rather than rooftops?

While rooftop solar is extremely positive in its own right, utility-scale solar projects use ground systems to achieve greater contiguous space and ease the process of acquiring development rights from property owners.

### Why do we need new solar projects in Kansas anyway?

- 1) **Matches peak demand:** Solar energy provides a valuable renewable resource that can help provide energy during peak times of consumer demand - during the middle of the day. Much of our peak power demand is caused by the cooling needs of buildings during hot afternoon summer days and prime time of use, in which solar energy can provide critical and cost-effective power supply.
- 2) **Better than coal:** Utility-scale solar has numerous advantages in replacing coal, yet Kansas utilities maintain outdated coal units to generate 40% of the state's power, despite coal's vast costs upon electric rates, the environment, and public health. Coal's levelized cost averages \$40+/MWh, while solar is closer to \$30 per megawatt hour (MWh).<sup>3</sup> Solar's fuel from the sun is free. It doesn't emit smog or greenhouse gases nor consumes increasingly scarce water supplies. Instead of relying on expensive and harmful Wyoming coal, Kansas utilities should quickly retire their coal fleets and capitalize on affordable and reliable solar resources.
- 3) **Economic opportunity:** Beyond the potential to provide lower-cost energy to Kansans, solar farms will undoubtedly bring *billions* in economic investment into the state and create *thousands* of good-paying local construction jobs, local tax revenue, much like wind development has done over the past 20 years.
- 4) **National duty:** Kansas is well-suited to contribute clean and reliable electricity to our state and region, helping our country reduce its emissions and address the national security challenge that is the climate emergency.

<sup>1</sup> "[Solar Resource Map and Data](#)" National Renewable Energy Lab. Accessed 3 Nov. 2021.

<sup>2</sup> "[Documenting a Decade of Cost Declines of PV Systems](#)" National Renewable Energy Lab. 10 Feb. 2021.

<sup>3</sup> "[Kansas Pays the Price](#)" Sierra Club. Aug. 2019.



## FAQ Continued: Utility-Scale Solar in Kansas

### What's physically involved in a large-scale solar facility?

Solar farms usually include the array of panels, racking, cables, inverters, transformers, transmission lines, perimeter fencing, and access roads. These facilities can also include onsite energy storage, such as battery systems. Regarding land space, every MW of solar capacity needs 5-6 acres of land.<sup>4</sup>

### What about cloudy days and nighttime?

Solar panels create energy even on cloudy days. Photovoltaics will not produce at night on their own, but if coupled with energy storage, the stored excess solar energy can be a power source during evening hours. As investment and production in energy storage technology expands, utility-scale batteries and other storage systems are falling in price, reducing concerns about intermittency of renewable energy going forward.

### Where would the energy generated from solar go?

Energy produced by large-scale solar farms will be tied into the electrical grid and likely serve the regional power pool. That said, utilities often employ their area low-cost power resources, like renewables, to address their nearby demand needs. Thus, a host community of a solar farm could expect to receive the service of that power.

### How long does a solar project last?

Solar panels typically have a 20 to 30 year lifespan, according to most solar developers. Because the panels can be renewed, most utility-scale solar projects themselves are usually sited for 30-40 years or more.

### Are solar panels safe?

Yes. Photovoltaic electricity has shown to be safe and one of the least environmentally-harmful power-generating technologies. Solar energy technologies do not emit harmful air pollutants or greenhouse gases during operation and have significantly lower emissions in comparison to fossil energy sources even when considering all life-cycle stages from upstream materials requirements to operations and decommissioning.<sup>5</sup> Solar arrays do not heavily consume water resources nor cause water contamination like burning fossil fuels does. While solar panels are made up of mostly glass and aluminum that can be recycled, solar panels can contain minute amounts of heavy metals, meaning those hazardous contents must be disposed of properly, much like household electronics. Furthermore, studies have shown that electromagnetic radiation from solar farms is negligible and far below standard exposure limits.<sup>6</sup> Finally, as the joke goes, a huge spill of solar energy is just called 'a nice day.'

### What happens to the solar panels at the end of its useful life?

Solar projects have decommissioning plans for when the project is complete. At such time, solar panels can be removed, properly disposed of, with the land returned to its initial condition or better. Local guidelines usually include requirements which specify how decommissioning must be accomplished and make the developers responsible for the costs.

### If I'm a property owner in or around a proposed solar project, will I be forced to have solar on my land?

No. Solar leasing is a voluntary property right and eminent domain is not used.

<sup>4</sup> "Landowner FAQs" NextEra Energy Resources: Accessed 3 Nov. 2021.

<sup>5</sup> [The Environmental and Public Health Benefits of Achieving High Penetration of Solar Energy in the United States](#) US Dept. of Energy, Berkeley Lab. May 2016.

<sup>6</sup> Tell et. al, [Electromagnetic Fields Associated with Commercial Solar Photovoltaic Electric Power Generating Facilities](#) Journal of Occupational and Environmental Hygiene 2015.

## FAQ Continued: Utility-Scale Solar in Kansas



### Should we be worried about solar facilities compromising Kansas farmland?

No. Utility-scale solar projects are increasingly offering ‘low-impact solar design’ by preserving topsoil and native vegetation under the array to mitigate land disturbance, increase water and soil retention, and provide pollinator habitats. Best management practices can address stormwater and erosion issues as well as the potential for herbicide drift and leaching into ground and surface water. Researchers have proved native vegetation as a living ground cover helps to support pollinator populations, while also reducing weeds, mowing, and pesticide use. Studies have shown that underlying vegetation improves solar efficiency too.<sup>7</sup> Some developers are even utilizing ‘agrivoltaics’ or a combination of agriculture and solar generation on the land, including sheep grazing or growing shade crops underneath/around the solar array. With 45 million acres or 87.5% of Kansas already in farmland, we have enough farmland to balance both agricultural and solar energy interests.

### How does solar farms impact surrounding property values?

A review of the scientific literature shows that solar has a minimal or ‘statistically insignificant’ impact on property values to neighboring properties, especially for rural areas, according to analysis by a researcher at Wichita State University.<sup>8</sup>

### Won't large solar farms negatively harm wildlife and ecosystems?

Solar farm design can incorporate safe wildlife corridors along protected streamways and in woodlands between fenced array areas. The overwhelming factor destroying wildlife and ecosystems is continuation of burning fossil fuels, especially its acceleration of our climate crisis; that’s why nearly every major national environmental group supports rapid and widespread transition to renewable energy. Ongoing study should evaluate utility-scale solar impacts upon area wildlife and ecosystems as existing scientific literature could be better<sup>9</sup>, but observations of current solar projects by developers across the country have demonstrated a safe coexistence of utility-scale solar and wildlife.<sup>10</sup>

### What about the visual impact of solar farms, such as viewscape and glare?

Solar farms offer a low-profile viewscape with little vertical visual obstruction and nighttime light pollution compared to other energy systems. Regarding glare, modern solar panels reflect as little as 2% of incoming sunlight, about the same as surface water and less than soil and wood shingles, according to the U.S. Department of Energy.<sup>11</sup>

Utility-scale solar will bring Kansans a better quality of life by reducing electricity prices and pollution while diversifying rural economies and avoiding the worst effects of climate change.

<sup>7</sup> [“Beneath Solar Panels, the Seeds of Opportunity Sprout”](#) National Renewable Energy Lab: Accessed 3 Nov. 2021.

<sup>8</sup> 10/25/21 Presentation by Jeremy Hill at Clean Energy Business Council’s Policy Forum “Energy Horizon for Solar & Storage.”

<sup>9</sup> Chock et. al. [Evaluating potential effects of solar power facilities on wildlife from an animal behavior perspective](#) Nov. 2020.

<sup>10</sup> Industry panel on Clean Energy Business Council’s Policy Forum “Energy Horizon for Solar & Storage” 10/25/21

<sup>11</sup> [“Research and Analysis Demonstrate the Lack of Impacts of Glare from Photovoltaic Modules”](#) National Renewable Energy Lab: July 2018.

Sierra Club- Kansas Chapter  
PO Box 11415  
Overland Park, KS 66207  
[info@kansas.sierraclub.org](mailto:info@kansas.sierraclub.org)

For questions:  
Ty Gorman  
KS Beyond Coal Rep.  
[ty.gorman@sierraclub.org](mailto:ty.gorman@sierraclub.org)

Visit us at:  
[Kansas.sierraclub.org](http://Kansas.sierraclub.org)  
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