HORIZON SOLAR

NEWSLETTER
Volume 1

WELCOME to the Horizon Solar Newsletter. In this newsletter, We are excited to share project and industry related facts regarding utility-scale solar and look forward to continuing our efforts to educate and provide information about the benefits of solar energy to our Warren County Community.

SOLAR HISTORY

Humanity utilizes the sun as a resource for light, heat, and of course, electricity. From the Greeks and the Romans utilizing mirrors and sunlight to ignite torches, to the discovery of electricity being produced when certain elements are exposed to light, the sun has been a resource for generations and there are countless opportunities for us to utilize the sun's energy to benefit our homes, businesses, and communities. Here are some interesting historical facts about the technology:[1]

1921 → The Nobel Prize in Physics was awarded to Albert Einstein "for his services to Theoretical Physics, and especially for his discovery of the law of the photoelectric effect".

1954 → Daryl Chapin, Calvin Fuller, and Gerald Pearson developed the first silicon photovoltaic (PV) cell, capable of converting energy from the sun into power that could run every day electrical equipment.

1958 → The Vanguard I satellite used a small solar array to power its radios. Solar arrays continue to successfully power our satellites today.

1966 → Japan installed a **225-watt** photovoltaic array on a lighthouse, which was the largest array at that time.

1978 → NASA's Lewis Research Center installed a **3.5-kilowatt** photovoltaic (PV) system on the remote Papago Indian Reservation located in southern Arizona, which was used to pump water and provide electricity to 15 homes. Without a connection to a power line, this was the first solar electric village.

1980s → The solar technology continued to advance as solar arrays began to power homes and businesses and were now being manufactured at a larger scale.

1982 → The first utility-scale solar power plant (**1.1-megawatt**) began operation in Hesperia, California.

2002 → First Solar began producing photovoltaic solar panels from its factory in Perrysburg, Ohio.

2015 → Burlington, Vermont became the first US city to use 100% renewable energy, 19% of which came from solar power.

2023 → Solar accounted for over 50% of new electricity capacity added to the grid.

As of December 2024

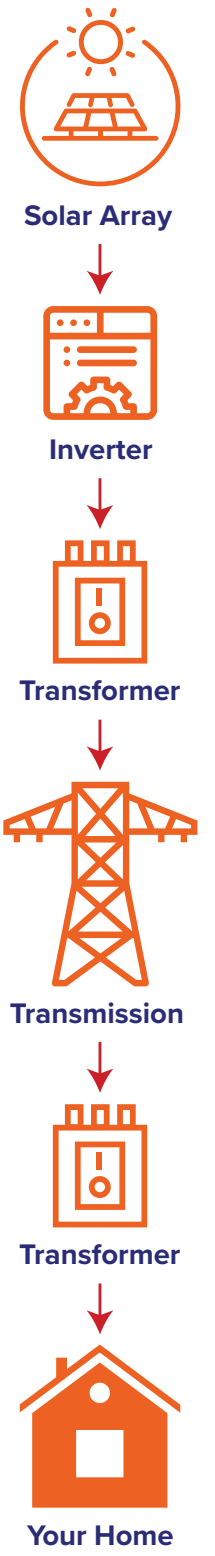
→ There are over **9,700-megawatts** of installed solar capacity in the State of North Carolina. North Carolina ranks 5th in the Country for total installed solar capacity.

HOW SOLAR WORKS

In just 90 minutes, enough sunlight strikes the earth's surface to handle the entire world's energy consumption for one year (energy.gov). By utilizing photovoltaic (PV) solar panels, we can capture a fraction of this energy to power our homes, businesses, and communities. This may raise a question, however – how does solar work and how do we use it?[2]

Solar panels used for solar projects, such as the proposed Horizon Solar Project, are mounted on tilted single-axis tracking systems that follow the sun from east to west, capturing the sun's energy throughout the day. As the sun shines onto a solar panel, the energy from sunlight is absorbed by the PV cells. The energy absorbed by the cells creates electrical charges that move in response to an internal electrical field within the cell – allowing electricity to flow (energy.gov). The energy absorbed by the panel, producing direct current (DC), is then transported through underground cabling to an inverter. The inverter will convert the direct current (DC) to alternating current (AC), which will then be transmitted to a substation to supply nearby power lines with locally sourced renewable energy.

The solar power that is absorbed and produced by the array can power homes, businesses, and communities in the area. Similar to water, the energy flows using the path of least resistance, meaning that if there is energy demand close to the solar array, then power from the array and other available energy resources will flow from the grid to fulfill that need. Once the need for energy at that source is fulfilled, energy will continue to flow down the line to meet additional energy demand. Power can also be directed by the local grid operator, PJM[3], to ensure that power is being appropriately distributed across the grid. Adding power to the electric grid, sourced from a local solar array, allows our county and state to harness energy from our most abundant resource – the sun.



Citations

1 https://www1.eere.energy.gov/solar/pdfs/solar_timeline.pdf
2 https://www.energy.gov/eere/solar/how-does-solar-work
3 https://www.pjm.com/about-pjm/who-we-are

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