

Spotlight

A publication of Spotts, Stevens and McCoy



SPOTTS | STEVENS | MCCOY

JUNE 2021

Our work touches everyday life.

From the water you drink to the air you breathe to the buildings and communities where you live, work and play.

Spotts, Stevens and McCoy is a family-owned regional engineering, environmental, and surveying firm serving local and global clients. We engineer solutions for a better world. Our work touches everyday life; from the water you drink, to the air you breathe, to the buildings and communities where you live, work and play.

EXPERTISE

- Building Engineering
- Site and Civil Engineering
- Survey, Data Capture and Modeling
- Water and Wastewater Engineering
- Construction Phase Services

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Sunny State of Mind

SSM's President and CEO, Brian Kelly, encourages everyone to be sunnier on the inside. "Work at a happy place, work at being a happy person, repeat." We're all about making the world a better place. And that includes spreading the sunshine of a positive attitude. The summer sun reminds us to not only enjoy sunniness on the inside, but to enjoy the remarkable nature of the sun outside.

There's plenty to marvel about when it comes to the sun from its enormous size, able to hold 1 million Earths to its near perfect sphere that continues to be a science spectacle. Did you know that the sun rotates on its axis about once every 26 days? It is 93 million miles away from the Earth; but it only takes eight minutes for its light to reach us.

Perhaps one of our favorite extraordinary facts about the sun is its generous offering of energy. The amount of sunlight that strikes the Earth's surface in just an hour and a half is enough to handle the entire world's energy consumption for a full year. As June comes to an end and we're all enjoying long sunny days we explore the power and strength of the sun.

Harnessing the Sun's Power: Solar 101

An increasing number of homeowners and businesses across the country are making the switch to solar as an energy source. Two common reasons for this switch include financial savings and environmental benefits.

Solar power is often a cost-effective decision as it drastically decreases your electric bills, even if your solar system doesn't produce 100% of your consumed energy. Likewise, switching to solar can help prevent paying for rising energy costs and add value to your property.

Switching to solar is also beneficial to the environment and your local utility companies. Your switch can offer less stress on utilities' infrastructure and contribute to less carbon emissions produced by the generation of electricity via power plants.

So how does it work? Generally, there are less steps in the process of converting solar energy to usable electricity versus standard electrical generation.

Simply put, solar panels absorb sunlight and turn it into electricity. The absorption of sunlight combines tiny photons. These photons, combined with photovoltaic cells in the solar panels create a flow of electrons.

The flow of electrons generates Direct Current (DC) electricity. The DC current is sent to an inverter at your home or business. The inverter converts this DC current to AC (Alternating Current) which is usable electricity for your home.

At this point, the electricity flows throughout your home just like any other electrical source!

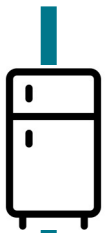
Solar in Numbers

SSM has been a part of designing hundreds of megawatt-hours of solar!

What's a megawatt hour? While a megawatt measures the power or capacity of an electric system, a megawatt-hour represents how much electricity is delivered through that system in an hour. For example, if a 1 megawatt solar array runs in the full sun for an hour, it will theoretically produce 1 megawatt-hour of electricity.



What can be done with the megawatts of solar SSM has been a part of designing?



540 refrigerators run for a year.



27 years of electricity for an average home.



24,030,000 slices of bread toasted.



972,000 miles driven by an electric car. That's 245.5 times around the Earth.

Project Profile: Aztec Materials

Electric Dredge and Solar Array | The Aztec Materials sand mining operation was acquired by Delaware Valley Concrete, a firm that specializes in producing exceptional-quality product for concrete and sand buyers. The site is situated on 300 acres of property in Hammonton, NJ, consisting of sandpit and, formerly, a diesel crane and dredge. The labor-intensive operation relied heavily on trucks to transport sand across the site to screens that filtered out larger pieces. Aztec Materials enlisted Practical Energy Solutions, now a division of SSM, to provide comprehensive energy and sustainability services. The client's operation now leverages an ecologically sound electric dredge powered by a large solar array.

Services

- Grant Acquisition Services
 - Calculations on energy savings, energy use reductions & emissions
- Engineering Analysis
- Financial Services
 - Technical and Financial Review
 - Cash Flow Analysis
 - Life Cycle Analysis
- Land Development Plan
- Erosion and Sedimentation Control
- Permitting Support
- Utility Connection Coordination
- Solar Renewable Energy Credits
 - Utility Contract Negotiation
 - Ongoing SREC Applications
- Array Add-Ons to Monitor Output
- Reporting

USDA REAP Energy Efficiency Grant | The team acquired a \$250,000 Renewable Energy for America Program (REAP) grant to purchase a new electric pump/dredge, to eliminate diesel fuel use.

USDA REAP Renewable Energy Grant | The 2nd grant acquired for the client was in the amount of \$327,000 for a solar photovoltaic array to power close to 100% of initial scope and reduce their environmental footprint. Aztec Materials has since expanded their operations, and the solar array covers the majority of the new total electricity demand. This solar array should last 20 to 25 years.

Project Benefits | With energy cost savings, SREC savings and a 30% federal tax credit, the solar array paid for itself in under 4 years. In addition to satisfying a 10-year loan on the solar array the client will have saved \$1.8 million net. Converting the new dredge from grid electricity to solar electricity reduces its environmental impact to almost zero. Considering the towering electricity costs in southern New Jersey, the solar array provides a strong financial and economic benefit for the company, as well as an environmental benefit for the region.

The SSM Way

SSM's survey team provided research and field surveying services to prepare an ALTA/NSPS survey plan for a ground mounted solar project.

"The survey team at SSM made the as-built ALTA survey process so simple for our ground mounted solar project. The speed and accuracy displayed in finalizing the survey was the best we've ever experience. We cannot wait to work with SSM on future projects."

-Robert Sander, Esq. | Corporate Counsel | General Energy Solutions USA, Inc.



Between Wires: Electricity 101

How exactly does your microwave run? Or, your hair dryer and your bedside lamp. Did you ever wonder how electricity is created and then gets from the wire to the device? We put our electrical engineers to the test to answer the question: "How does electricity work?"

Step One: It starts at a generating station with huge generators. This is what you know as a power plant. Here, electricity is generated through large alternators using wind, coal, natural gas, or water.

Step Two: The generated current goes through a transformer that increases the voltage for distribution. This allows the power to be distributed long distance- by distributing it at a higher voltage there is less loss.

Step Three: Next, the electrical charge gets distributed across the country through high-voltage transmission lines. You may have seen these large transmission towers that hold these high-voltage lines.

Step Four: The current reaches a localized substation which decreases the voltage so that it can be distributed through smaller power lines through local utilities. This is where you often see smaller wooden poles along the street.

Step Five: The current travels through your neighborhood via these distribution lines. Smaller transformers will, again, decrease the voltage before it enters your house. Sometimes you might see small transformers mounted on the wooden poles. Other times they may be located on the ground.

Step Six: The electrical current enters through your house by way of the utility company's meter. When it passes through a meter, it measures how much your household uses.

Step Seven: Upon entering your home, the electricity goes to your service panel. This is often found in your basement or your garage. The service panel houses breakers or fuses which prevent your home wire systems from ever being overloaded.

Step Eight: Just like it traveled through lines outside, the electricity travels through wires inside of the walls of your home and allows you to access it through outlets and/or switches within your home!

Soaking Up the Sun

SSM team members voted! Here are our ranking for the Top Five songs about the sun. (#1 is the best rated by our team!)

1. **Walking on Sunshine**
Katrina & the Waves
2. **Here Comes the Sun**
The Beatles
3. **Walkin' on the Sun**
Smash Mouth
4. **House of the Rising Sun**
The Animals
5. **I Can See Clearly Now**
Johnny Nash

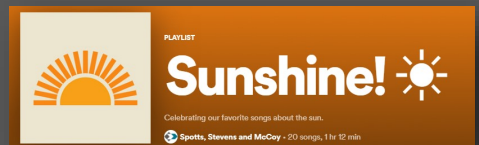
Honorable Mentions:

Surfin' USA
The Beach Boys

Days Like This
Van Morrison

I'll Follow the Sun
The Beatles

Sunday Best
Surfaces



Enjoy our sounds of summer.

Want to enjoy some of our favorite songs about the sun? We made a playlist just for you.

[Click Here to Listen!](#)



Staff News

Welcome back to Katie Baltzley in SSM's Water Resources group as a GIS Analyst. Katie graduated from Millersville University with a Bachelor's in Geography and minor in Meteorology. She has been a GIS professional for 6 years. Katie specializes in developing integrated GIS data management strategies to support a variety of environmental, municipal, and industrial projects. She creates workflows that tie mobile field technologies with web-based office applications to streamline full cycle operations management.

Where we've been this month



Conferences

We joined the **Eastern Pennsylvania Water Pollution Control Operators Association (EPWPCOA)** for their May plant tour/vendor show.

We also participated in the **Pennsylvania Water Environment Association's** annual PennTec conference as an exhibitor and presenter.



Lunch on Us

We celebrated Public Works Week as well as National Hamburger Month by providing "lunch on us" to some of our municipal clients' Public Works teams. We enjoyed sharing lunch from local restaurants while also getting to spend some time together with our clients.



DVASBO Golf Outing

Andrew Shambach and Paul Speigel enjoyed a day of golfing for the 31st annual Delaware Valley Association of School Business Officials (DVASBO) at the Gilbertsville Golf Club.



Plen Air West Reading

SSM sponsored Plen Air West Reading 2021 where 30 artists were selected to capture *en plein air* the character of Berks County. SSM also attended the patron preview and enjoyed a great evening and exhibit.

Where we'll be next month



BCWSA Virtual Conference | July 28, 9 a.m. - 3 p.m.

SSM is excited to be attending and presenting at the Berks County Water and Sewer Association Virtual Conference and Trade Show. Information to sign-up to attend can be found at [Berks County Water & Sewer Association](#) | [Albright College](#)

Opportunities at SSM - join the team!

Visit ssmgroup.com for more information about these opportunities.

Construction Project Representative with 4-10 years of experience in the water, sanitary sewer, and stormwater field, including the inspections of mains, pump stations, treatment plants and paving projects.

Senior Design Engineer with eight or more years of water/wastewater experience to support our work on projects such as municipal treatment facilities, distribution systems, collection systems, sanitary and storm sewers.

Mechanical Engineer with at least seven years of experience in the design of HVAC, process piping and plumbing systems in industrial, commercial, and R&D type facilities.

Project Geologist licensed to practice geology in PA for at least five years. Responsibilities include conducting siting, developing, testing, and permitting public water supply wells in addition to various hydrogeologic projects.

Survey Technician to operate all field surveying instruments including robotic survey instruments, GPS surveying instruments, and auto-levels.

Project Manager with strong engineering and technical qualifications as well as experience working across multi-discipline technical teams.

Environmental Specialist responsible for conducting and supporting various watershed projects including source water protection and storm water management projects, through a combination of field data collection and GIS-based analysis.

Systems Administrator with 8 - 10 years' experience in an IT role, and a minimum of 5 years systems administration experience to join our Information Technology department.