

Crawford project

lightsource bp

November 2021







About Lightsource bp

We're dedicated to a sustainable future

Local track record

Since 2017, the team has developed a pipeline of over 9 GW of large-scale solar projects at various stages of development in 21 states across America.

U.S. Project Portfolio	Contracted Assets	Projects in Construction	North America Team
			
9+GW total development pipeline	2,700 MW executed power contracts with clients in 10 states	1 GW Currently under construction	90+ U.S. solar team with decades of experience in the U.S. solar and power markets

Global platform

We're a global leader in the development and management of solar energy projects.

Track Record	Global Platform	Full Lifecycle Capabilities	bp Strategic Partnership
			
3.0GW of projects developed around the world	14 countries with active operations	500+ staff covering end-to-end project lifecycle	50:50 bp joint venture includes investment into project development and funding



Lightsource bp in Pennsylvania



Whitetail Projects

72 Megawatts in Franklin County

Whitetail 1,2, and 3 are powering 25% of all Penn State University campuses, while saving the University \$14 million in electricity bills over the contract term. Commercial operation began in September 2020.

Elk Hill Projects

46 Megawatts in Franklin County

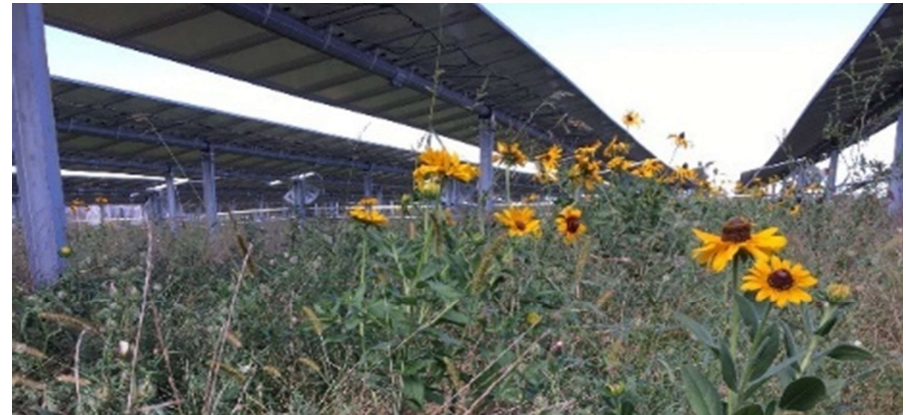
Two solar farms with the Southeastern Pennsylvania Transportation Authority (SEPTA) will generate an estimated annual total of 67,029 MWh of clean and affordable solar energy, or nearly 20 percent of SEPTA's 380,000 MWh per year electricity demand.

Cottontail Projects

3

191 Megawatts in Central Pennsylvania

Commonwealth of PA awarded electricity accounts located throughout the state of Pennsylvania to Constellation, which in turn has executed an agreement to purchase power and project-specific renewable energy certificates (RECs) from Lightsource bp. Located on seven sites spanning six central Pennsylvania counties, the Pennsylvania PULSE (Project to Utilize Light and Solar Energy) is expected to achieve commercial operation by December 2022. Once complete, it will provide clean power to 16 COPA agencies. Pennsylvania is sourcing approximately 50 percent of its annual energy consumption from renewable energy, which is the largest solar commitment by any government in the U.S. announced to date.



York County Projects

Township supervisors approved final land development plans for the projects on April 22, 2021.

The three solar farms will generate 58 megawatts of power. The state's Department of General Services is buying the farms' power under a 15-year contract arranged by Constellation, a subsidiary of utility giant Exelon.

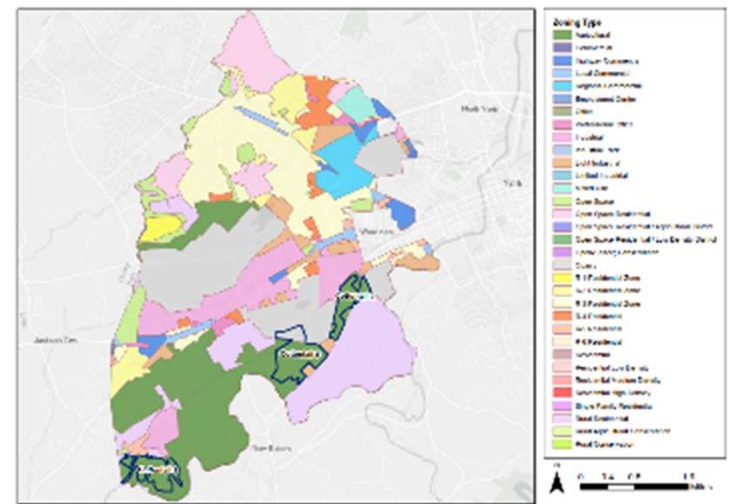
The projects are expected to commence commercial operation before the end of 2021.

Consistent with established zoning

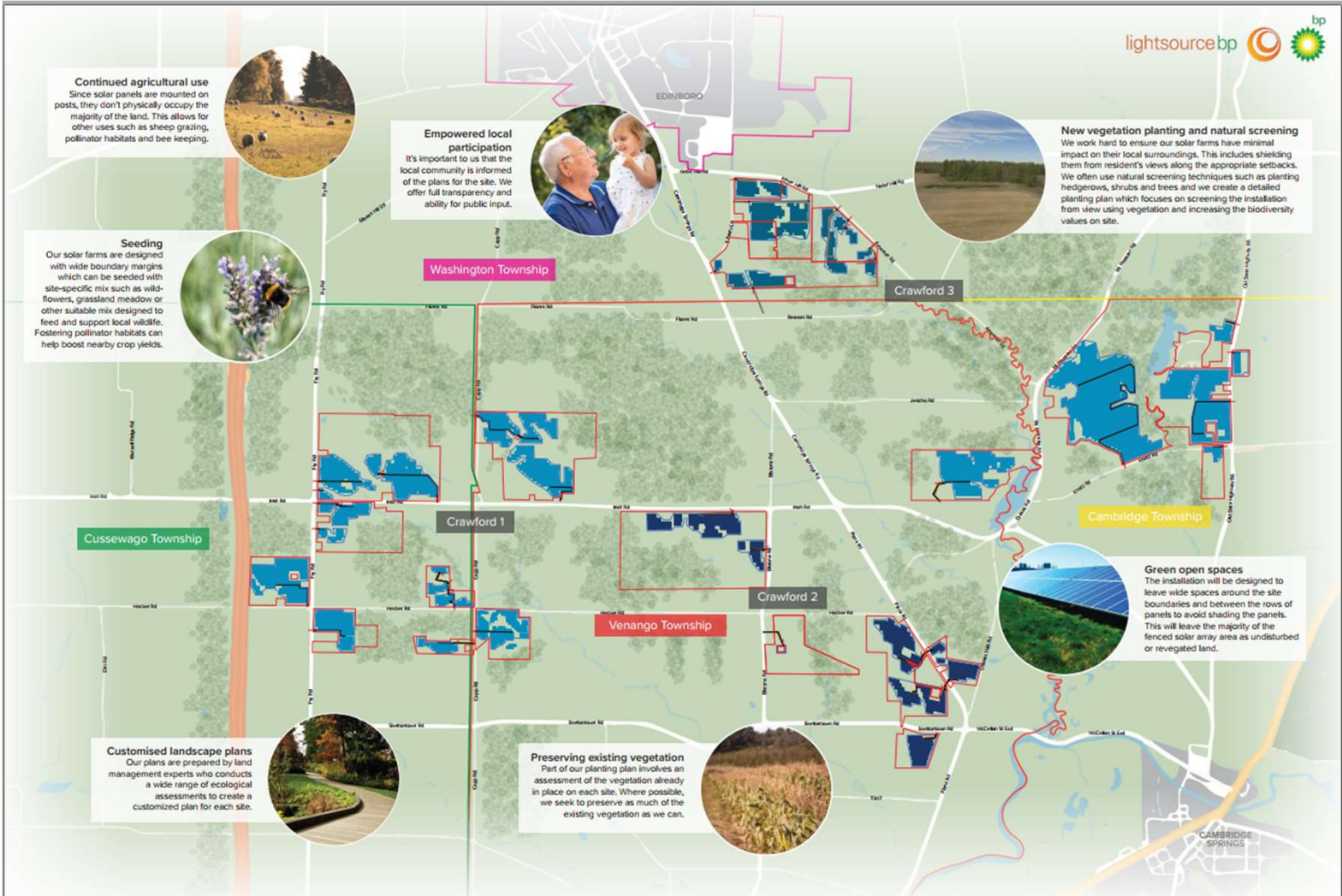
- Close to existing interconnection infrastructure.
- Flat open rural land parcels which avoid the need for extensive site clearance or impacts to wooded land.
- Limited impact on local residents.
- Close to existing industry.

Landowners who share LSbp's commitment to land diversification

- Local farmers who need an additional revenue source while still being able to beneficially use the site for agricultural purposes such as grazing.
- Willing to embrace solar ecology principles.
- Commitment to keep the land in agriculture and return it after the end of the projects.



Project information



Each shade of blue shows a stage of the project



Responsible Solar Farming

Our goal is to maximize the sustainability benefits of our projects across the U.S.

For almost a decade throughout Europe, Lightsource bp has been constructing solar farms in a regenerative fashion, taking steps to not only minimize the effect to the land but also to improve soil health, boost biodiversity, and provide pollinator friendly environments wherever possible. We're now bringing this approach to solar farm development in the United States - and around the world.



Sustainable benefits beyond clean, affordable electricity

Land Regeneration

- A solar farm is relatively undisturbed for decades once constructed
- Provides a haven for species-rich grass, herbs, wildflowers, butterflies, bees and other local wildlife
- Gives the land a recovery period, increasing future soil quality and land value

Co-located Agriculture (Agrivoltaics)

- Sheep grazing keeps the land in agricultural production and provides farmers with additional revenue
- Grazing aids in low impact vegetation management and promotes healthier ground cover

Rural Resilience

- Solar helps mitigate carbon emissions from energy generation and its affects on the land, wildlife, and people
- Provides a diversified revenue stream for landowners and their families for 25-30 years

Increased Biodiversity & Pollinator Friendly Solar

- Native, pollinator-friendly seeding helps conserve declining pollinator habitat, providing healthy food source for beneficial insects
- Fostering pollinator habitats can help boost nearby crop yields



Supporting local communities

Sustainable, local energy infrastructure

- Lightsource bp and project partners to invest hundreds of millions of dollars of private capital into building new clean energy infrastructure, helping diversify the state's energy portfolio and providing energy security with local electricity generation

Jobs

- Along with growing the region's solar market and supply chain, our solar projects create hundreds of jobs during construction - we hire local subcontractors and recruit from the local labor pool

Tax revenue

- Solar farms contribute millions of dollars in property tax revenue, benefitting local schools, fire departments, parks, and other community public services

Revenue for landowners

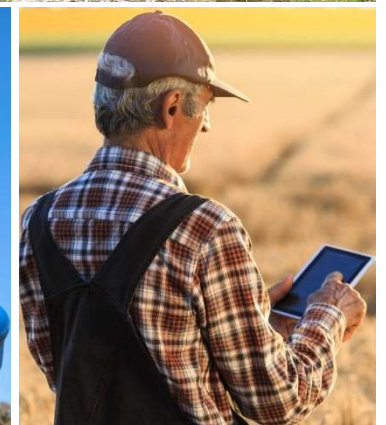
- Solar farms provide diversified revenue for landowners and generations of their families for 25 or more years, contributing to the economics of their farming business

Educational opportunities

- The solar farm will provide educational opportunities for local schools and universities, with Lightsource bp providing curriculum support, research opportunities and site tours

Philanthropic commitments

- Lightsource bp is committed to dedicating funds to philanthropic activities and charitable donations to local organizations



Our approach

We are a long-term partner. Lightsource bp's model is to develop, own and operate our solar farms throughout their full life cycle. With solar farms having a life span of decades, it's important to us to be stewards of the land and long-term partners of local communities.



Empowered local participation

It's important to us that the local community is informed of the plans for the site. We offer full transparency and the ability for public input.



Preserving existing vegetation

Part of our planting plan involves an assessment of the vegetation already in place on each site. Where possible, we seek to preserve as much of the existing vegetation as we can.



Green open spaces

The installation will be designed to leave wide spaces around the site boundaries and between the row of panels to avoid shading the panels, which will leave the majority of the fenced solar array area as undisturbed or revegetated land.



New vegetation planting and natural screening

We work hard to make sure our solar farms have minimal impact on their local surroundings, and this includes shielding them from residents' views along with appropriate setbacks. We often use natural screening techniques such as planting hedgerows, shrubs and trees. We create a detailed planting plan, which will focus on screening the installation from view using vegetation and increasing the biodiversity values on the site.



Seeding

Our solar farms are designed with wide boundary margins which can be seeded with site-specific mix, such as wildflowers, grassland meadow or other suitable mix designed to feed and support local wildlife. Fostering pollinator habitats can help boost nearby crop yields.

Customized landscape plans

Our plans are prepared by land management experts, who conduct a wide range of ecological assessments to create a customized plan for each site.



Continued agriculture use

Since solar panels are mounted on posts, they don't physically occupy the majority of the land. This allows for other uses we often implement such as sheep grazing, pollinator habitats and bee keeping.

Solar equipment is un-intrusive and can be designed and located to minimize impact

The main Project components include:

- **PV panels** – harness solar energy and convert into electricity. A typical 20MW solar park requires 40,000-50,000 panels.
- **Structural tracking system** - provide the framework on which the panels sit. These track the sun throughout the day.
- **Inverters** – turn the electricity from Direct Current (DC) to Alternating Current (AC). These are units located in the central part of the Project site.
- **Perimeter fencing** – aesthetically pleasing game fence provides safety and security and prevent animals from entering the site and damaging the equipment.
- **Access roads** – used to access the inverters and transformers on site. These roads are simple crushed stone and are limited only to what is necessary to access the structures on site.
- **Interconnection infrastructure** – interconnection infrastructure, such as transformers, will be required to connect the power from the plant to the local electricity network. This will be positioned to have minimal visual impact on the site and as close to the existing substation as possible.



LSbp designs solar projects to promote biodiversity and agriculture

Stormwater Benefits

- May significantly reduce sediment runoff by converting tilled row crop acreage to permanent cover crop of native grasses that can intercept and retain stormwater.
- Bases of solar panels will be minimal, limiting the use of concrete and other impermeable materials on the site.
- Site will be subject to a long-term lease, assuring the previous native grass cover remains year after year.

Ecology benefits

- Land beneath the panels can be grazed by livestock to ensure agricultural use is maintained.
- Wildflower habitats can be created in the margins of the site to promote pollinator species such as bees and butterflies.

Land recovery

- Takes intensively farmed agricultural land which lies fallow allowing natural biological processes to rejuvenate the soil over the project lifetime.
- Land restored completely at the end of the project life



A Safety-First Approach

Engineering

- Solar plants are designed by licensed engineers.
- Civil, Structural, and Electrical Designs.
- Erosion, Stormwater, and Sediment Control.

Building and Electrical Permits

- All system designs are approved by local building and electrical authorities.
- National Electric Code compliant.

Safety

- Perimeter fencing to prevent trespassing and injury.
- Vegetation maintained to prevent overgrowth.

Operations and Maintenance

- System performance monitored in real time 24 hours a day/7 days a week
- Site visits 5-9 times annually for maintenance.

Minimal Traffic and Road Impacts

- Minimal truck traffic during construction. Construction will be less intensive than most other commercial or utility projects.
 - No truck traffic after construction other than rare occasions for maintenance and repair of facilities.
 - No daily employee traffic.
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Impacts during operation are limited

Minimal sound

- Inverters and transformers are the only sources of noise.
- A fan operates to keep them cool during the daytime.
- At 150 feet, this cannot be heard.
- No noise after sun-down
- Considerably less noise than ordinary farm equipment such as tractors, grain dryers and combines

Minimal glare

- Panels are designed to absorb, not reflect irradiation.
- Anti-reflective coating used to limit impacts.
- Substantially less reflective than glass buildings (such as greenhouses) or large bodies of water.

Visuals

- Panels and trackers will be approximately 8-10 feet in height while substation equipment may be up to 15 feet.
- Vegetation can be used to screen properties from immediate views of the equipment.
- Further planting used to blend the project into the landscape.



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Thank you!