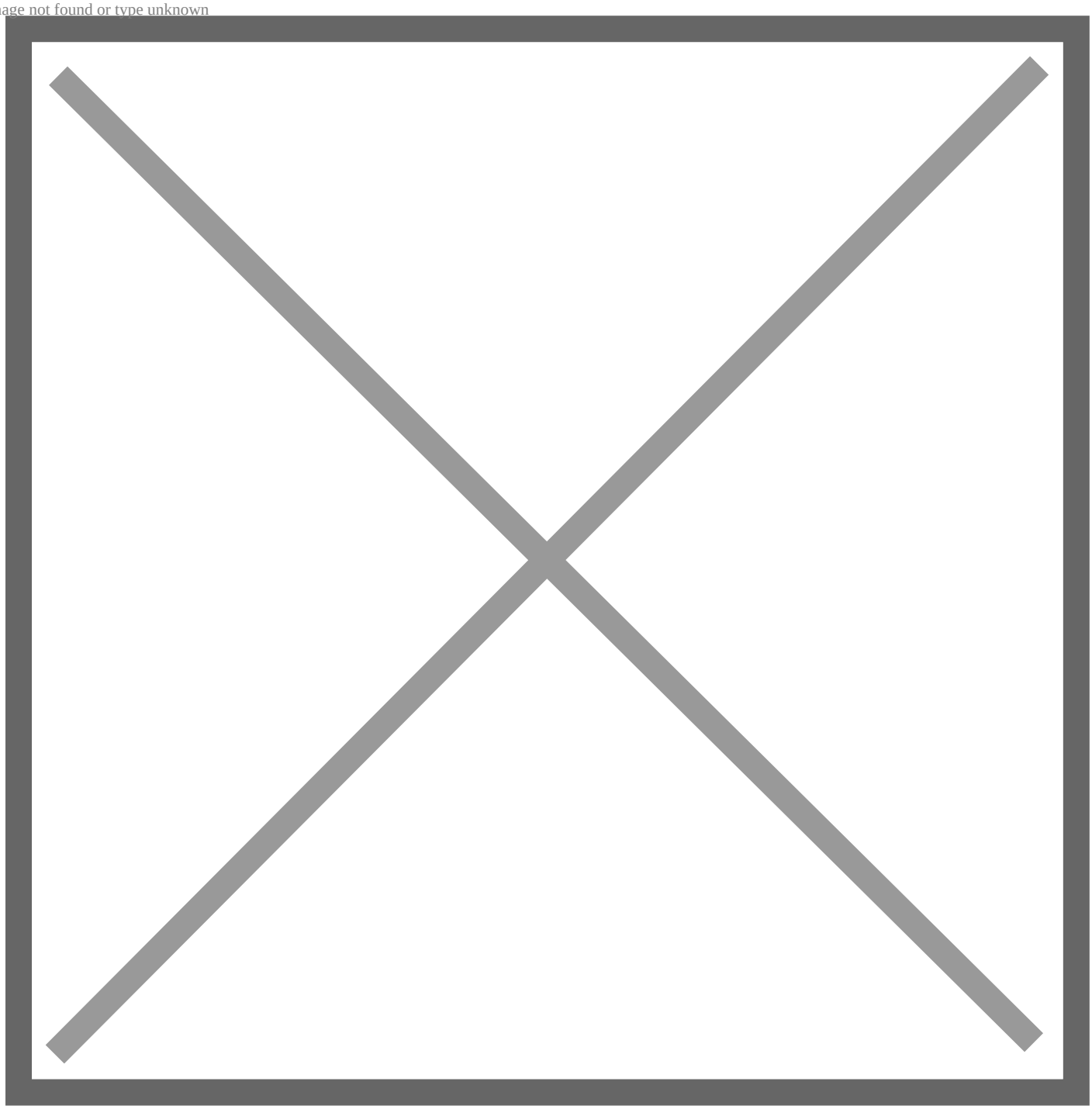
Larger, Varied Solar Projects Lower Toyota’s Carbon Footprint in Wooly Ways

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Grazing sheep, reclaimed mining land and innovative financing highlight the unique building blocks of a far-reaching and sophisticated way of reaching carbon neutrality

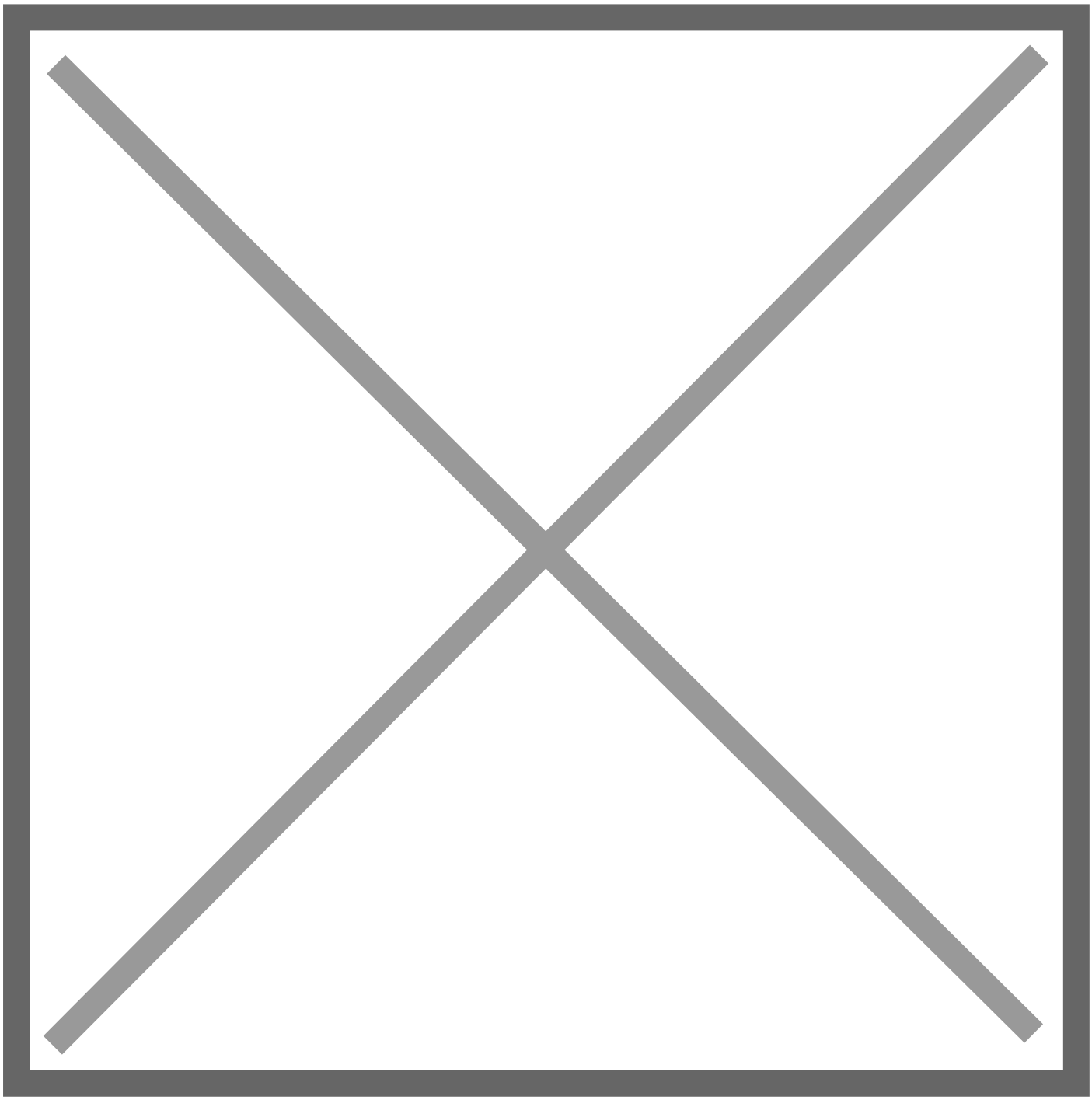
The Toyota Environmental Challenge 2050 includes some robust goals, including all North American facilities becoming carbon neutral by 2035. To do that, the company is investing in all kinds of renewable energy, including solar photovoltaic projects that bleat.

New solar arrays are coming online every year, helping to generate clean electricity for Toyota Motor North America (TMNA). In West Virginia, a flock of 40 sheep are eating grass under panels next to Toyota's engine plant, providing grazing land for a local farmer while the panels charge in the sun. A project is set to come online in Kentucky before the end of the year on a reclaimed mountain top removal mining site. TMNA's largest project to date, in Mississippi called Wildflower, came online the summer of 2024.

"A lot of folks think this is simply altruistic, but really it's not," said David Absher, former senior manager of carbon neutrality and regulatory affairs at TMNA. "This has been good for business."

Toyota is more than 10 years into the process of planning and implementing renewable, sustainable energy projects, including solar, making the case for how this kind of sustainable energy fits into and enhances business operations. This year and next will see some landmark projects come online that will begin to generate dramatic amounts of this renewable power for the company.

The Wildflower project is an example of how creative thinking on renewable energy can benefit the entire grid, beyond Toyota's operations. This project will provide 100 megawatts of clean electricity to the power grid. Toyota is contracted for a portion of Wildflower's output which, on the whole, is equivalent of what is needed to power 21,000 homes.



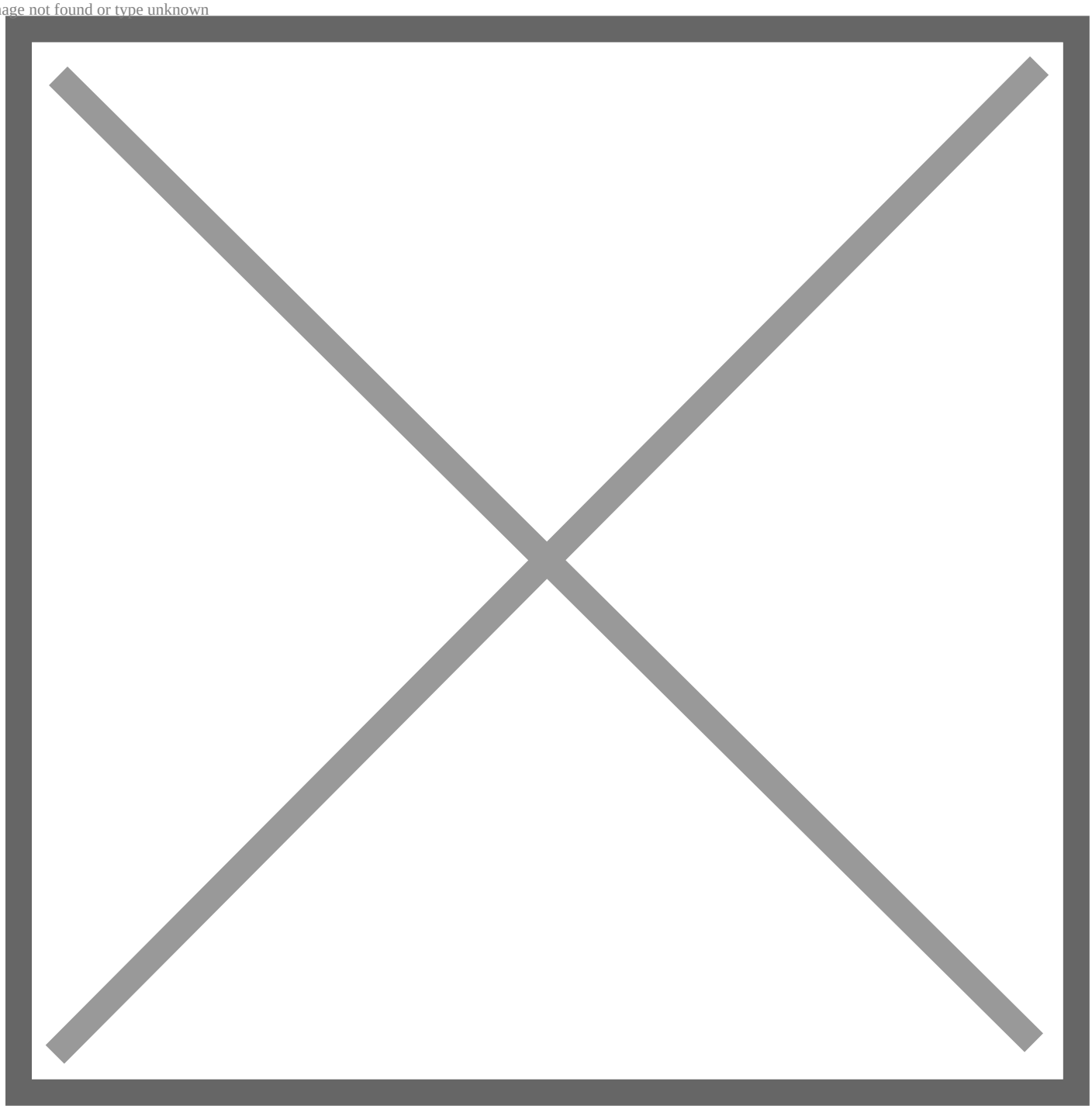
Wildflower is a great example of how economics can drive the expansion of solar projects – becoming a critical tool in reducing a company's emissions footprint. The Desoto County, Mississippi site is 80 miles from Toyota Mississippi in Blue Springs. The off-site power from the solar panels doesn't go directly to the assembly plant. Instead, the solar-generated electricity is fed into the grid from which Toyota factories and other operations already purchase an equivalent amount of power.

This kind of agreement makes the economics attractive to solar developers, in this case, Deriva Energy of Charlotte, North Carolina. Companies like Toyota are underwriting the construction and continued production of

renewable energy. It’s been the key to unlocking solar power on a larger scale, Absher explains.

Wooly Agrivoltaics

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Another important element of sustainability is making sure that any land used for renewable energy production in rural areas can also be used for native habitats or agriculture where practical. Toyota has embraced this concept, known as agrivoltaics, at its factory in Buffalo, West Virginia.

The solar panels are on land directly adjacent to the plant. They sit low to the ground, too low for easy mowing with a tractor or lawn mower. In fact, plant leaders were concerned that some panels would be damaged by lawn equipment. That's when Toyota Environmental Engineer Amanda Young got the idea of using sheep as a living, organic way to maintain the grounds.

Young had read of grazing sheep at other solar sites and began to look at the logistics of using them at Toyota West Virginia. The plant was already the site of another noted solar project – a set of panels set up in the shape of oversized flowers whose petals unfurl in the morning and rotate throughout the day to maximize the amount of sun they can collect – generating 2.6 megawatts of electricity, enough to power over 400 homes.

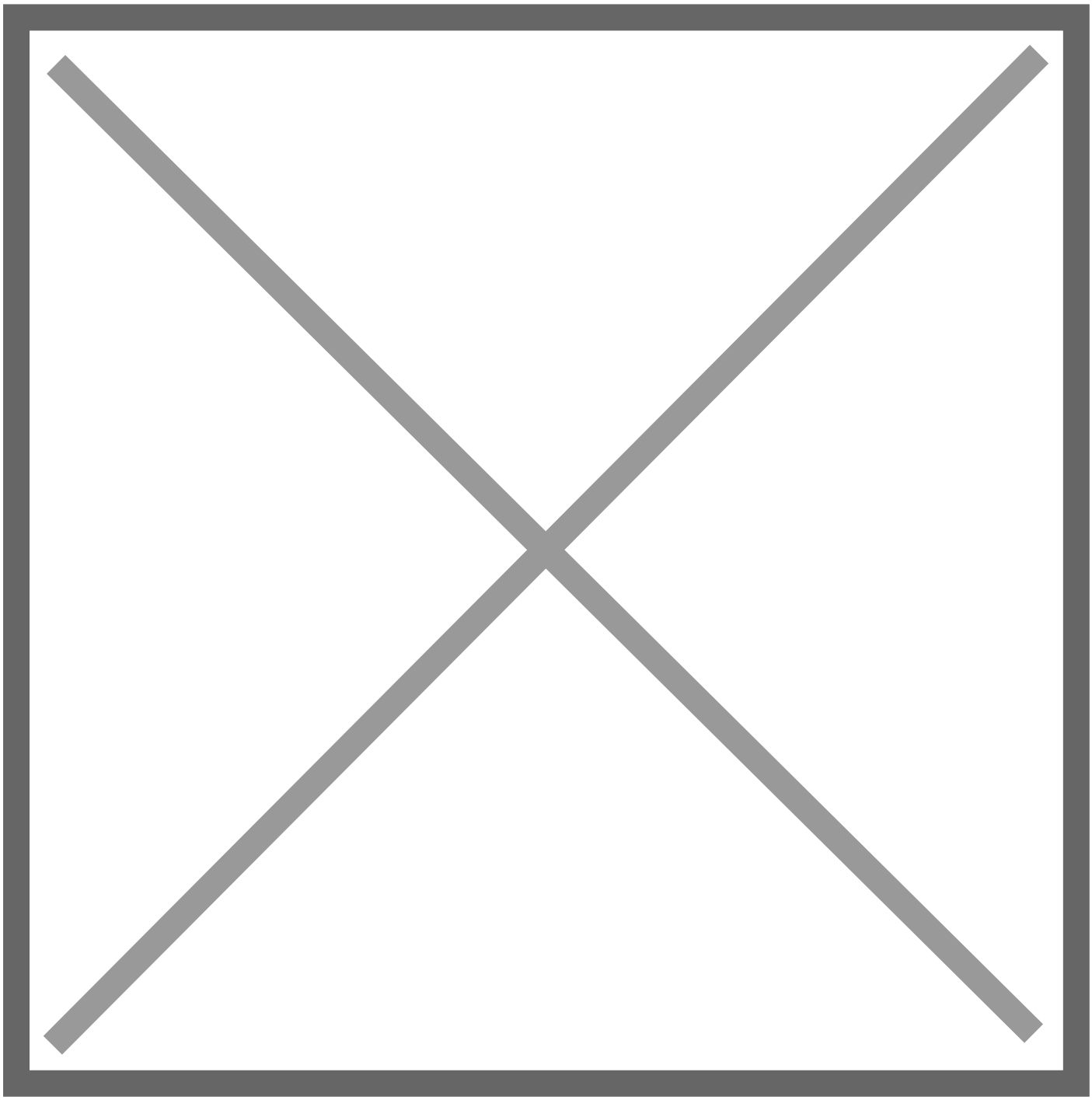
It wasn't hard to convince plant managers, Young said. Everyone understood the value of lowering the carbon footprint of operations around the site. Sheep don't burn fuel or create carbon emissions. They can get around the panels easily. As they move about the site, they aerate and fertilize the soil.

"Solar panels taking up productive farmland would be a problem," Young said. "We need to look at spaces differently. They can be more than one thing."

The local farmer drops off a herd of sheep in early April, and they stay until October. The farmer provides feed and water. A fluffy white Great Pyrenees sheepdog named Pickle keeps the herd in line, and he has become a local celebrity with visiting school groups. The sheep don't need a barn — the photovoltaic panels provide all the shelter they need. The farmer moves a 1 ½ acre pen around the site so the herd grazes on one section at a time.

"Land is finite," Young said. "We have to find ways to use it well. We need agriculture and crops. We all need to eat."

Repurposing a Coal Brownfield



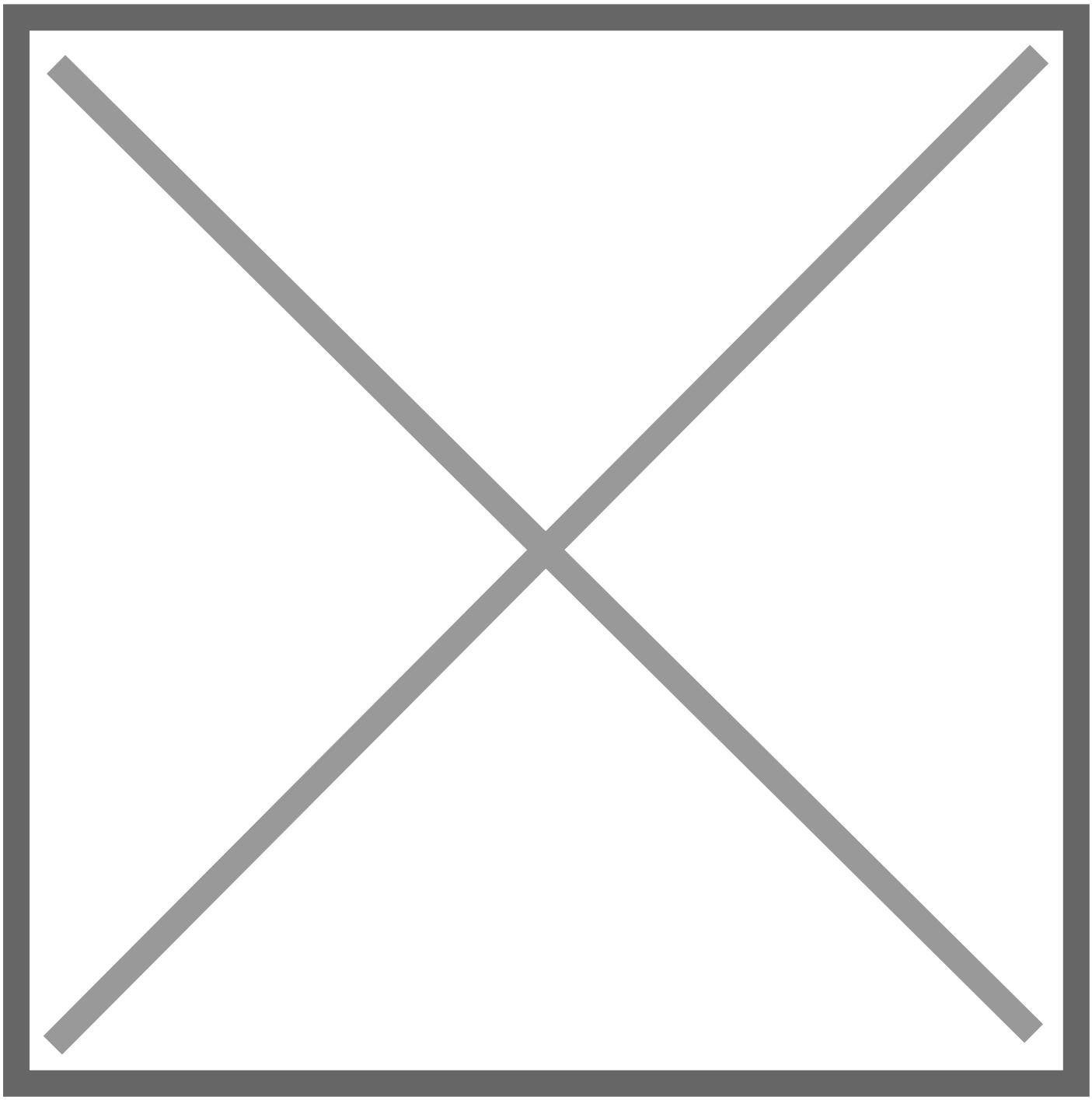
Working with local farmers to use the land under solar panels is one way to be a responsible steward. Using a reclaimed mining site is another. In Martin County, Kentucky, Toyota found an old mining location designated a brownfield by the EPA – meaning its reuse is complicated by the potential presence of pollutants or contaminants.

Toyota is partnering there with Shell subsidiary Savion to build a 111-megawatt solar facility at the site of a mountain coal mine that closed thirty years ago in the 1990s. Savion is putting 214,000 solar panels across 850 acres at the former Martiki coal mine, once the second-largest mountain top strip mine in the world. It will be the

largest solar site in Kentucky.

Former mines work well as sites for large-scale solar for a large part because of the available infrastructure. Roads built for the mines can be used during construction and operation of the solar facilities. In Martin County, the power generated will be fed into the existing and updated American Electric Power's Inez substation, also on site.

Toyota will use 100 megawatts of power each year from the Savion project under a virtual power purchase agreement. This offsets part of Toyota's overall energy needs in North America and is located 150 miles to the west of the Georgetown, Ky. plant, where the Toyota Camry, Camry Hybrid, RAV4 Hybrid, and fuel cell modules are assembled.



Toyota’s push into solar dates back more than 20 years, when a team installed solar panels on the roof of the Ontario, California parts distribution center. At the time, it was the largest roof-mounted solar array in North America.

In 2011, a group was formed within Toyota Motor North America to study renewable electricity programs. When Toyota adopted its 2050 goal a few years later, in 2015, the goal to achieve carbon neutrality was included in the company’s global environmental challenge. Absher and his team analyzed every renewable energy purchase agreement that had been executed to date.

By 2018, the plan to expand solar projects had complete executive support. Some of the projects coming online this year started then, when Toyota put out a request for proposals and received 600 responses. When it comes to adding solar projects, it takes years of planning, permitting and collaboration to get from idea to reality.

One thing that Toyota has learned along the way is that these projects are cost effective. At the beginning it was assumed the projects would be expensive but justified to achieve environmental goals. The reality has been that there is no net increase in costs, Absher said.

The progress will continue for years to come, Absher said. Other projects Absher cites as being in the works include an analysis to determine if a 50-megawatt project in Mississippi can be added while the company moves forward with a renewable energy purchase agreement with Detroit Edison in Michigan and 200-megawatts from the Sequoia solar project in Texas.

“There was a lot of skepticism, but we overcame that by analyzing what was available and providing facts,” Absher said. “There is a lot of disinformation out there about renewables.” Working to share accurate and validated information around the technology has helped Absher and his team to help communities understand the benefits that accompany clean energy.

With agreements and projects coming online over the next couple of years, Toyota is on track to have at least 45 percent of its power supported by renewable energy purchase agreements by March 31, 2026.