

Accelerating Solar Design with Parallel Works

Bridging the gap between complex optimization and actionable insights for developers

Increase the safety, reliability and efficiency of solar systems.

Parallel Works is a high performance computing platform that enables solar engineers to **build, deploy and run** large-scale workflows that support critical decisions throughout the solar design process. It empowers engineers and analysts to more accurately **predict and optimize a plant's IRR, system capacity or solar yield** or any other desired objective function, and seamlessly share these tools across teams to accelerate the design process. Conducting solar design studies at scale will support the knowledge to make solar solutions safer, more reliable and more efficient.



What Parallel Works brings to solar design optimization.

Model development & testing at massive scale



Quickly shape, measure, tune, and iterate on solar optimization workflows ranging from simple optimization of contained PV systems to complex technical performance and efficiency analyses on utility-scale systems

Simple, intuitive workflow deployment



Package and deploy your workflows with a simple UI in the cloud. Automatically scale based on the needs of your study to get results fast. Then share workflows across teams to standardize processes and make engineering operations more efficient.

Immediate impact, lasting benefits across the enterprise.



Rapid Insights. Accelerate time to insight with Parallel Works rapid workflow execution. For complex solar optimization models that are running slowly on a desktop or not scaling effectively, Parallel Works provides a highly scalable, robust, and low-latency workflow model that reduces computing bottlenecks and delivers insights fast.



Increased Productivity. Easily tune and test new solar models quickly using the Parallel Works Workflow Development lab for engineers to collaborate on models and frameworks. Quickly push your entire environment to the cloud for deployment at scale with the Parallel Works workflow engine.



Optimized Compute Spend. For short that need to run at mega-scale, the Parallel Works workflow system delivers rapid speed and low latency, making optimal use of the computing resources and delivering the highest return on cloud compute investment. It is robust and fault-tolerant, reducing the risk of frustrating debugging and workload failures.

Why Parallel Works?

It's fast.

Latest benchmark clocked at 1.5 billion tasks / sec using 100 microsecond tasks on 500,000 cores

It's flexible.

Jobs can be run using any software applications or languages through embedded interpreters and run on any compute infrastructure

It's open.

Based on an open source technology from Argonne National Labs developed with support from the DOE and NSF



Parallel Works

Learn more about how Parallel Works can enhance your solar energy design practice

Matthew Shaxted

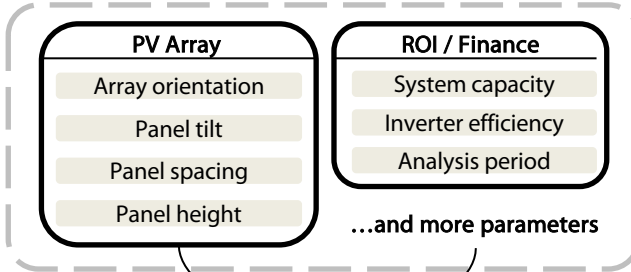
Founder & President

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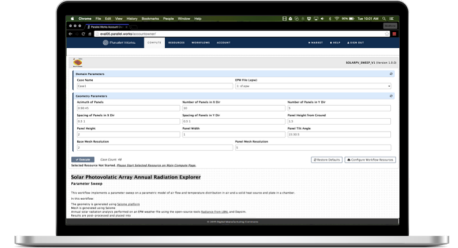
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Sample Solar Photovoltaic Annual ROI Design Explorer

Solar Array Inputs and Parameters



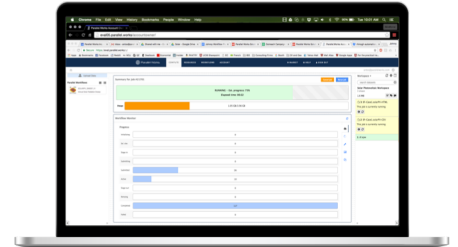
Web-Based Input



Specify inputs, parameters and variables



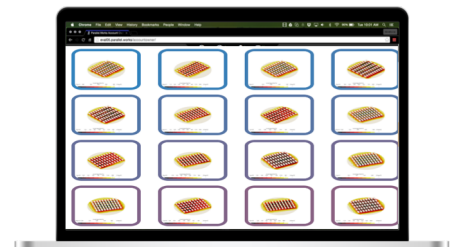
Solar Simulation Engine (Radiance / NREL SAM)



Track workflow progress and view intermediate results



PV Array Configuration Results



Rapidly analyze and visualize 1000x simulation results

Swift Parallel Script Wrapper



Execution on Diverse Computing Resources



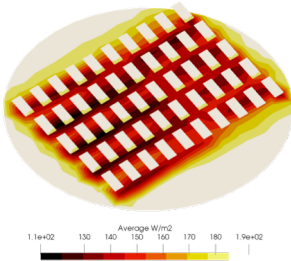
Array 1 Analysis

1. Array Geometry
2. Annual Radiation
3. NREL SAM ROI

Array N Analysis

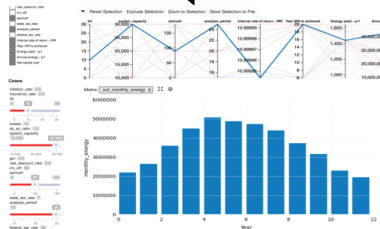
1. Array Geometry
2. Annual Radiation
3. NREL SAM ROI

Web-Based Result Visualization



Radiance

Weather-Dependent Annual Solar Radiation Profile



NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Optimized ROI, NPV, payback period, etc.