DALY

The next generation of solar & storage modeling.

PVPMC 2023

May 2023

Agenda

- Octavia and subhourly overview
- Subhourly, Terrain Aware Simulation
- Daly Overview

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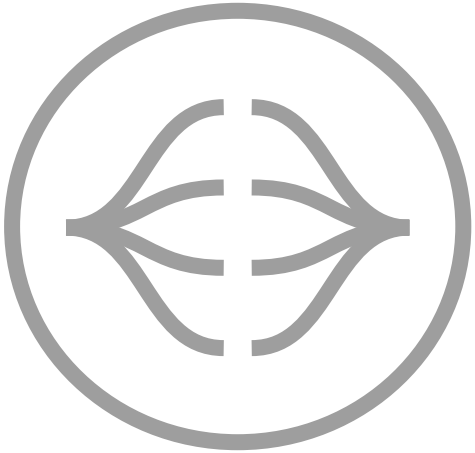
Octavia & Subhourly Overview

Daly Modeling Engine Overview

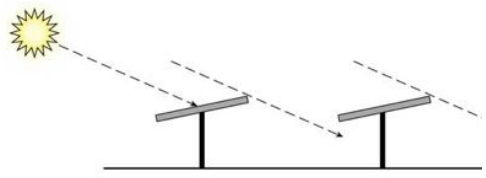
Accepted and widely used physical models

Simplified software and user interfaces



Parallelized and distributed computing

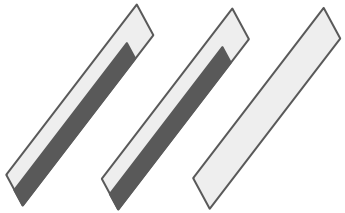
Near Shading Overview



Unlimited

2D Near Shading Engine

- Analogous to ‘unlimited’ trackers
- Simple inputs and usage
- Simulated at energy model run time
- Electrical impact optional
- No separate object management



Octavia

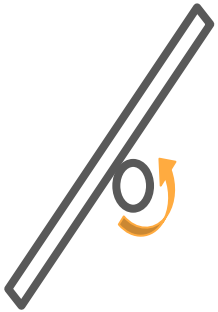
3D Near Shading Engine

- Advanced 3D near shading calculations
- API Based
- Diode protected areas in 3D
- Terrain-aware tracking algorithm
- Import shading scenes from SHD files, JSON point file, exports from PVComplete, .PVC file

Octavia 3D Near Shade Scene Processing

Parallel Processing

Near shading calculations, like subhourly energy simulations, are broken up and run in parallel to improve calculator speed and complexity



Tables Analyzed Individually

Each table is analyzed individually for a set of azimuths and a sweep of sun elevations to determine Terrain Aware Tracking adjustments, shade impacts and shading fractions

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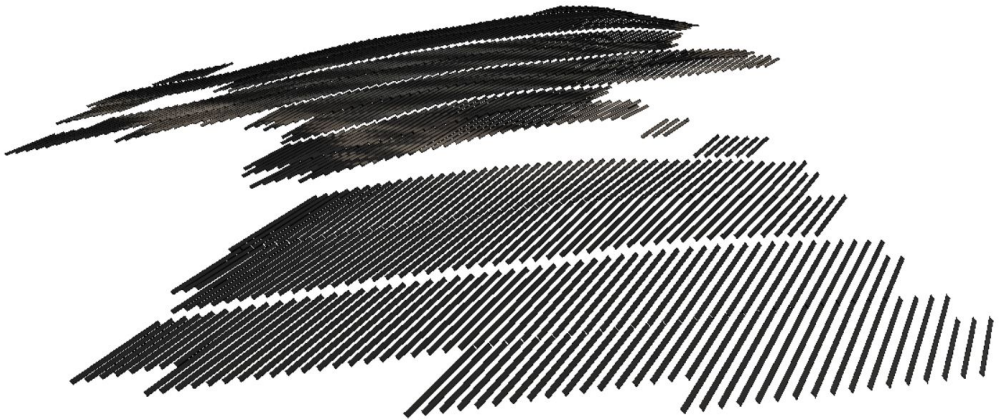
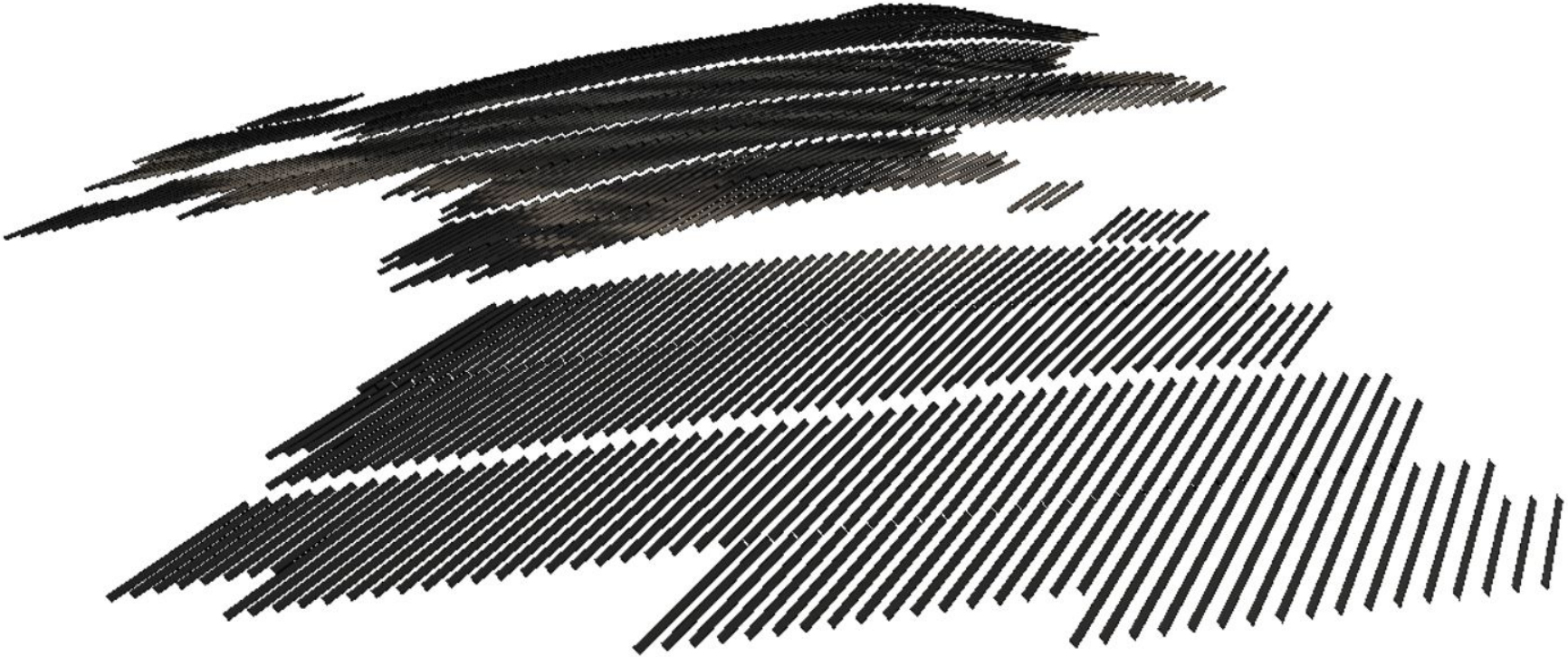
Case Study:
Subhourly & Terrain-Aware

Example Project Overview



Location	Sonoma, CA
Latitude	38.28
Longitude	-122.46
Weather Source	NSRDB PSMv3
Weather Intervals	5, 15, 30, 60 min
MW	22.5
DC:AC Ratio	1.27
GCR	0.405
Average N/S Slope	4.42
Module	144 Cell – center bus bar

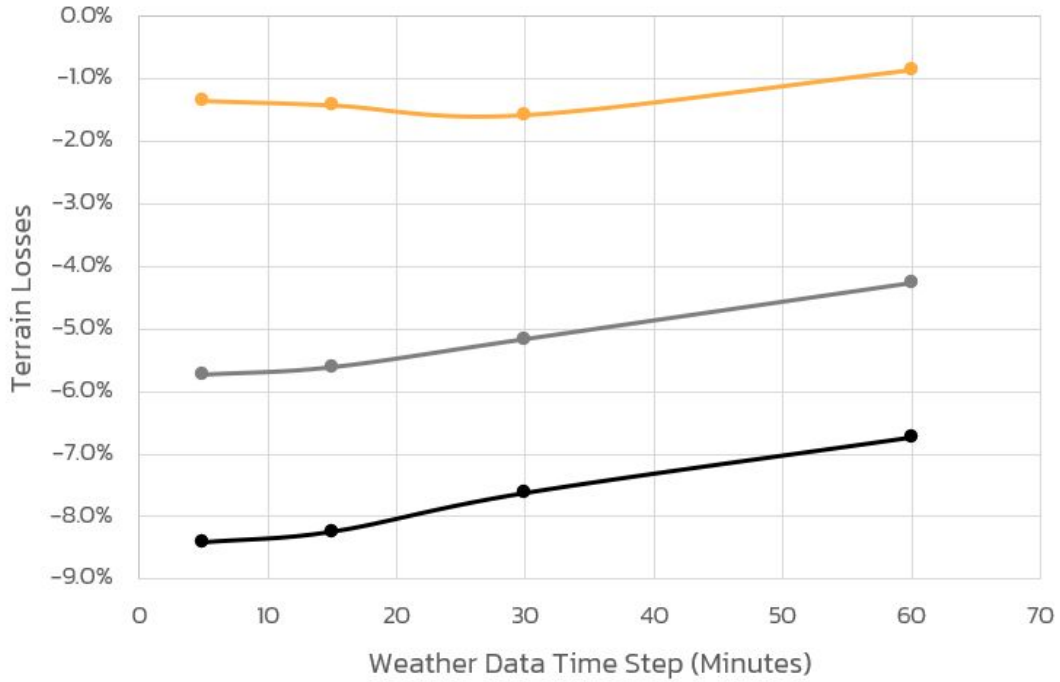


Layout Overview – Looking North

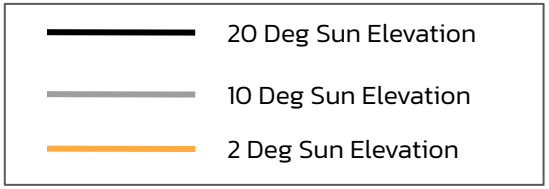
Results

Subhourly weather data allow Terrain Aware tracking simulations to minimize impact to yield due to subhourly losses

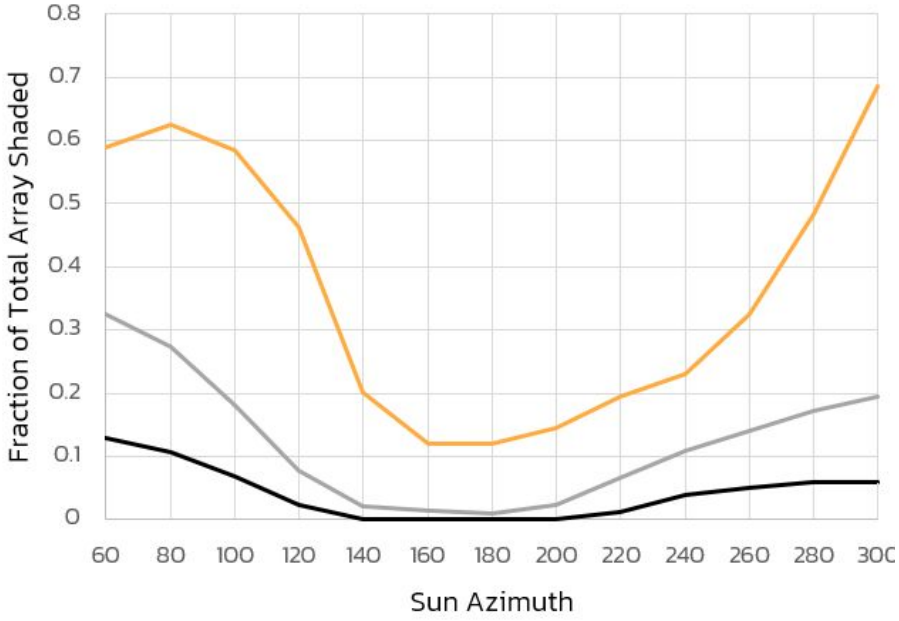
Weather Data Time Step (Minutes)	True Tracking	Backtracking	Terrain Aware	# of Terrain Aware Tracking Changes
60	-6.738%	-4.267%	-0.848%	394,194
30	-7.621%	-5.167%	-1.565%	798,029
15	-8.238%	-5.617%	-1.410%	1,590,611
5	-8.405%	-5.737%	-1.340%	4,631,874



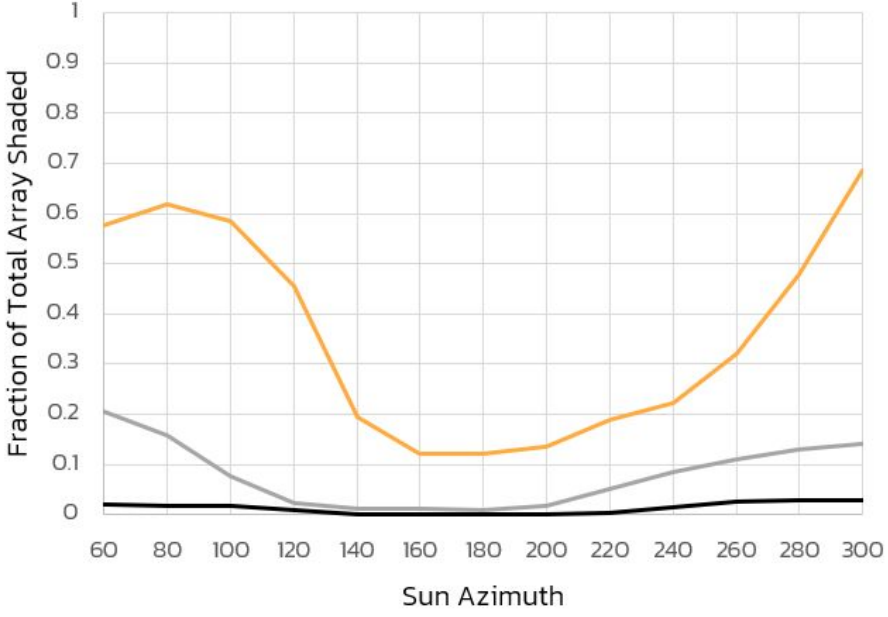
Shade Reduction

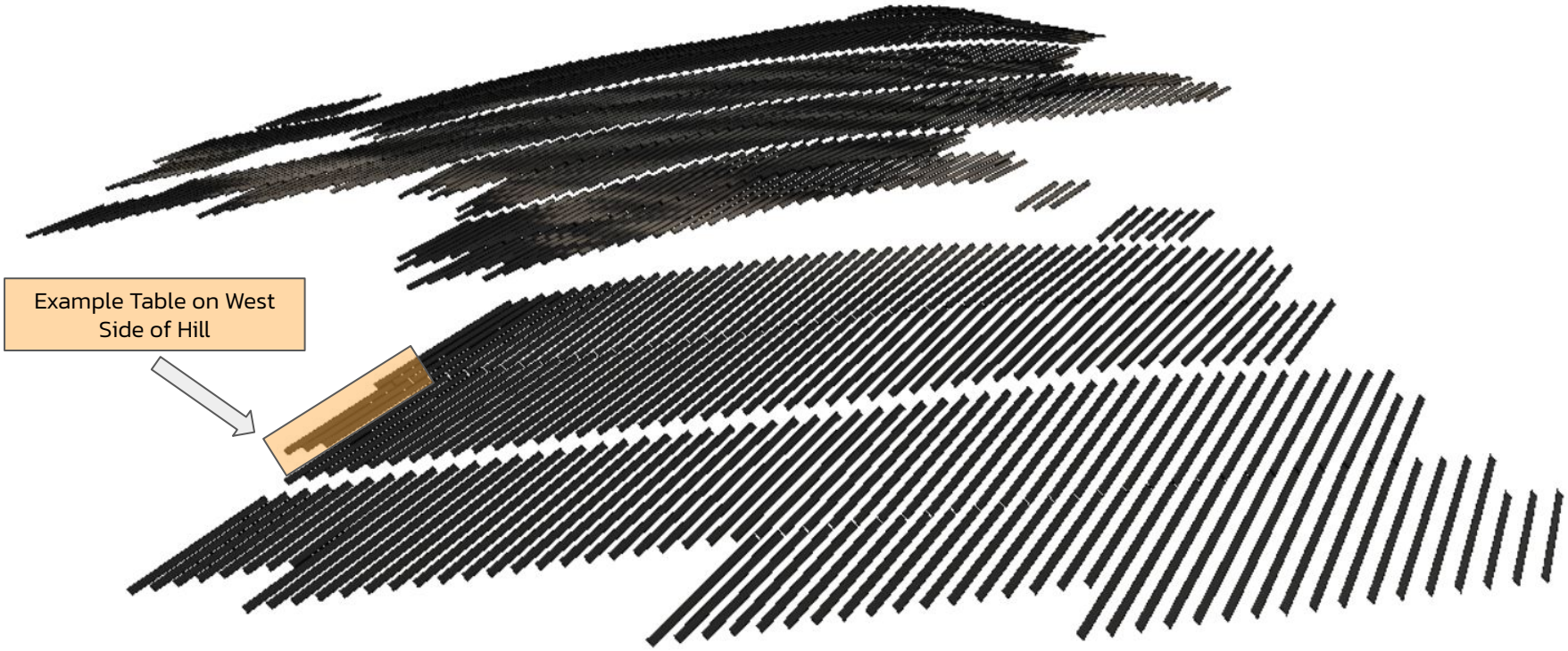


Standard Backtracking



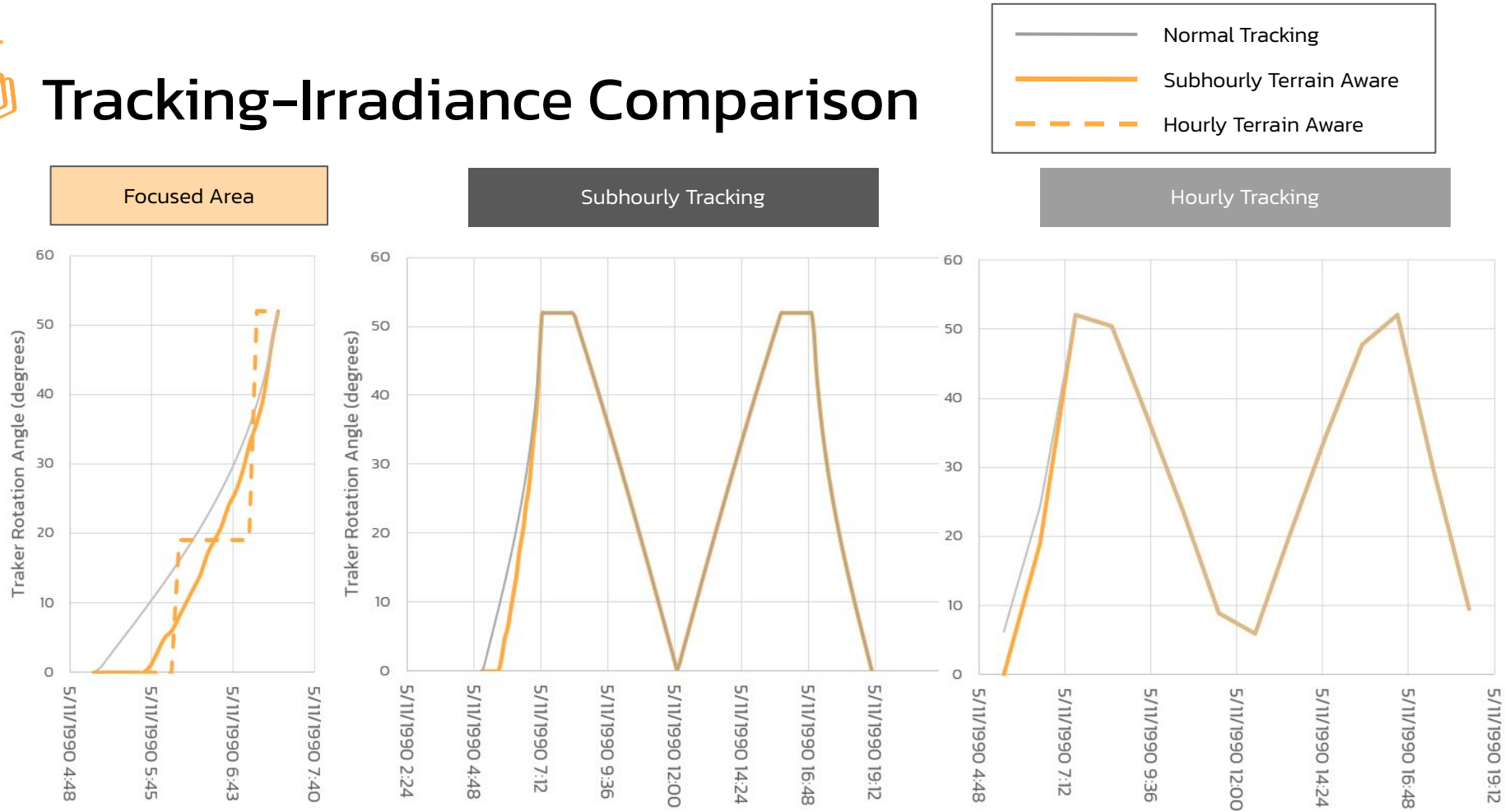
Terrain Aware



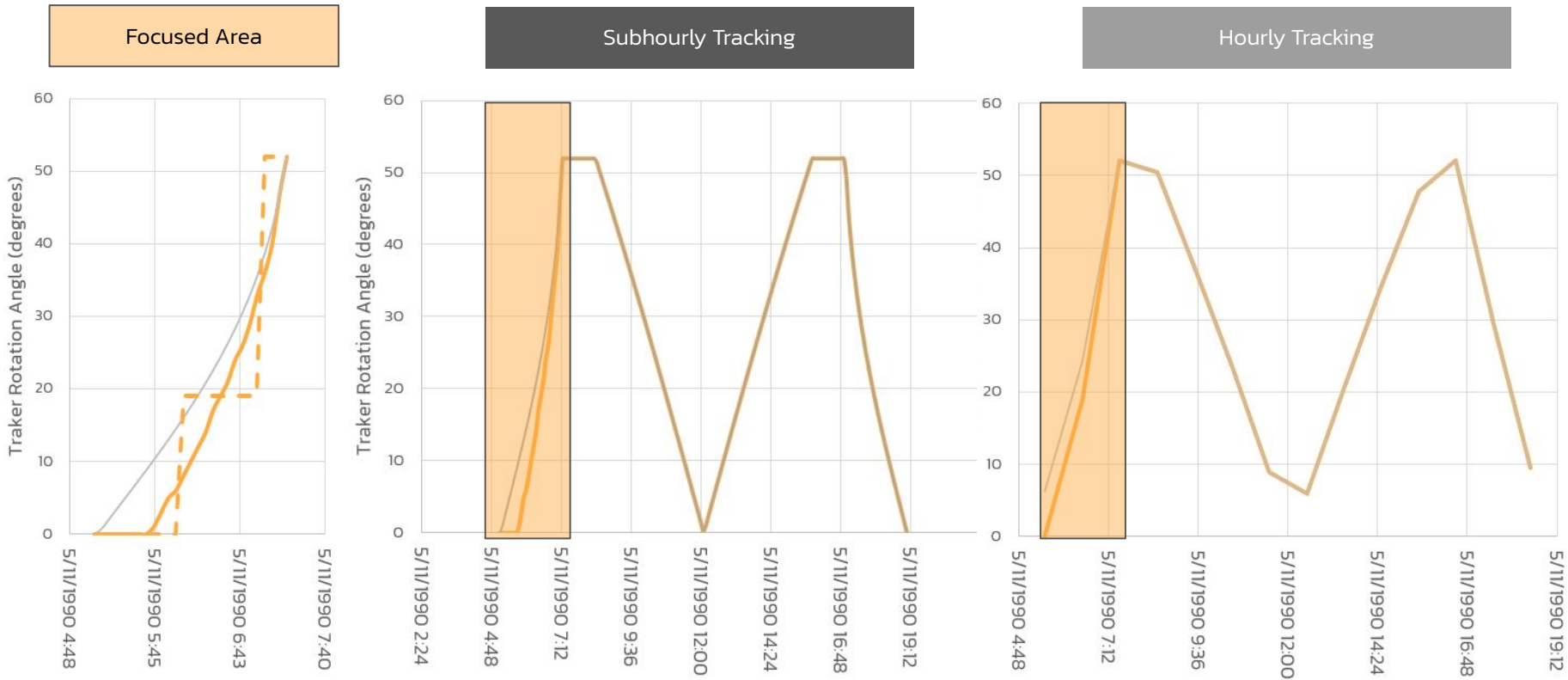


Layout Overview – Looking North

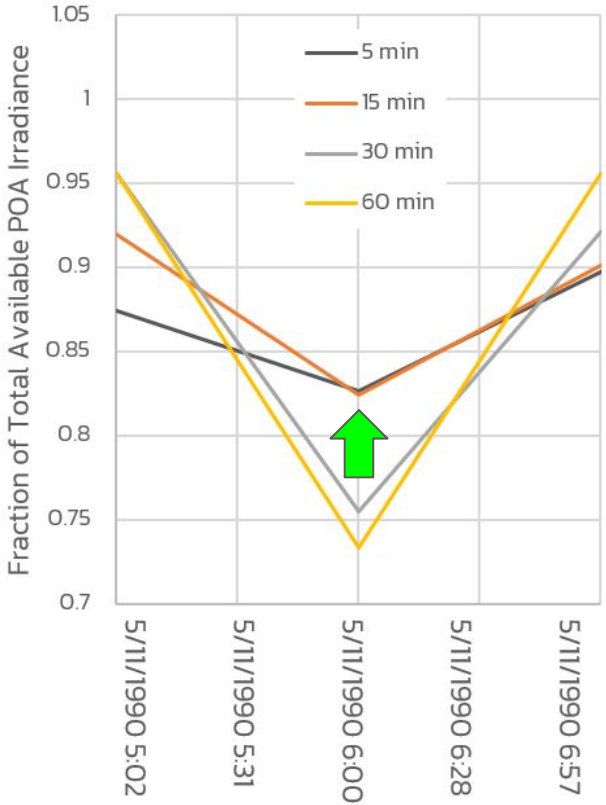
Tracking-Irradiance Comparison



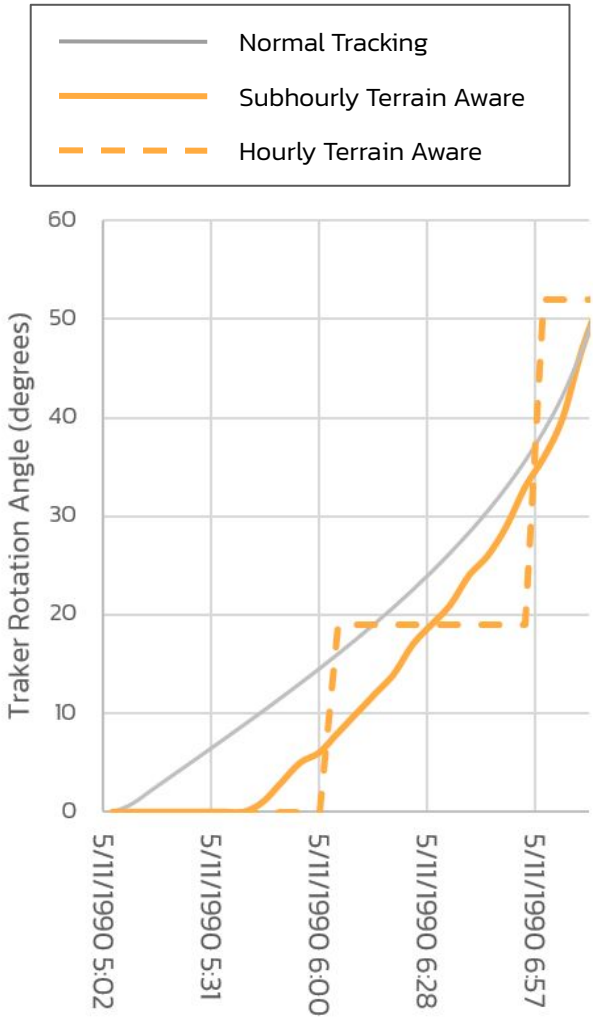
Tracking-Irradiance Comparison



Tracking-Irradiance Comparison



Subhourly, specifically < 30min time step, simulations are able to capture more of the available irradiance over a given interval



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Daly Overview

Software Offering

Web Interface

Collaborative workspaces designed to simplify and automate modeling work

API

Access entire platform through REST API for custom functionality and workflow automation

Third Party or Custom Software

Use Daly in other software platforms or integrate it directly into your in-house software and tools

Modeling Platform Overview

Daly Interface
Modeling Interface

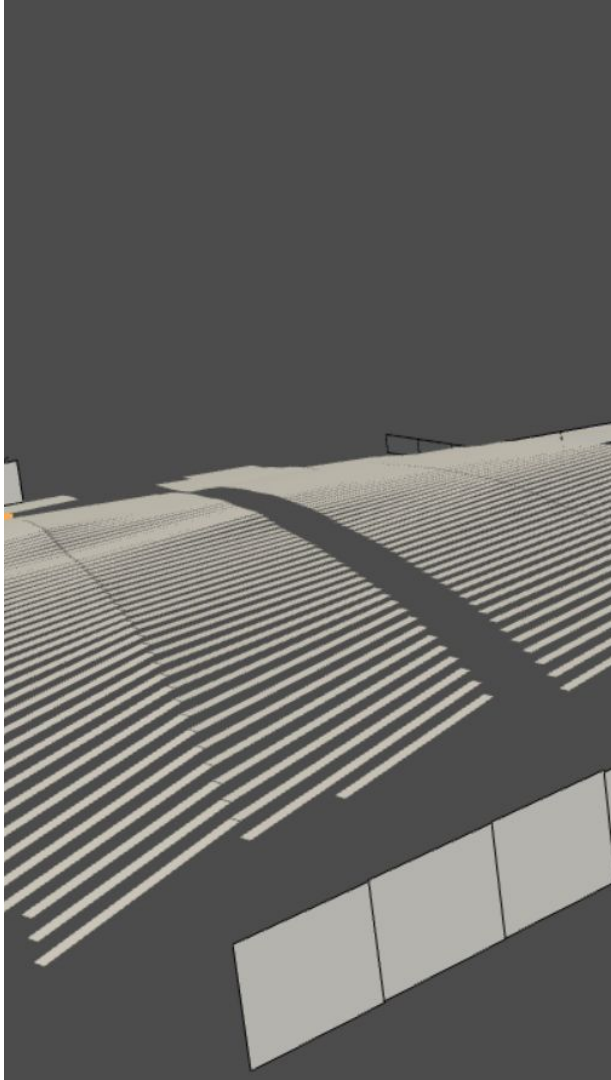
- One-Click Production Modeling
- Automated Workflows
- Cloud-Based Collaborative Workspaces

Daly API
Modeling API

- Integrate Into Any Process or Excel file
- Automate Repetitive Processes
- Accepted and Trusted Models

Octavia
3D Near Shading API

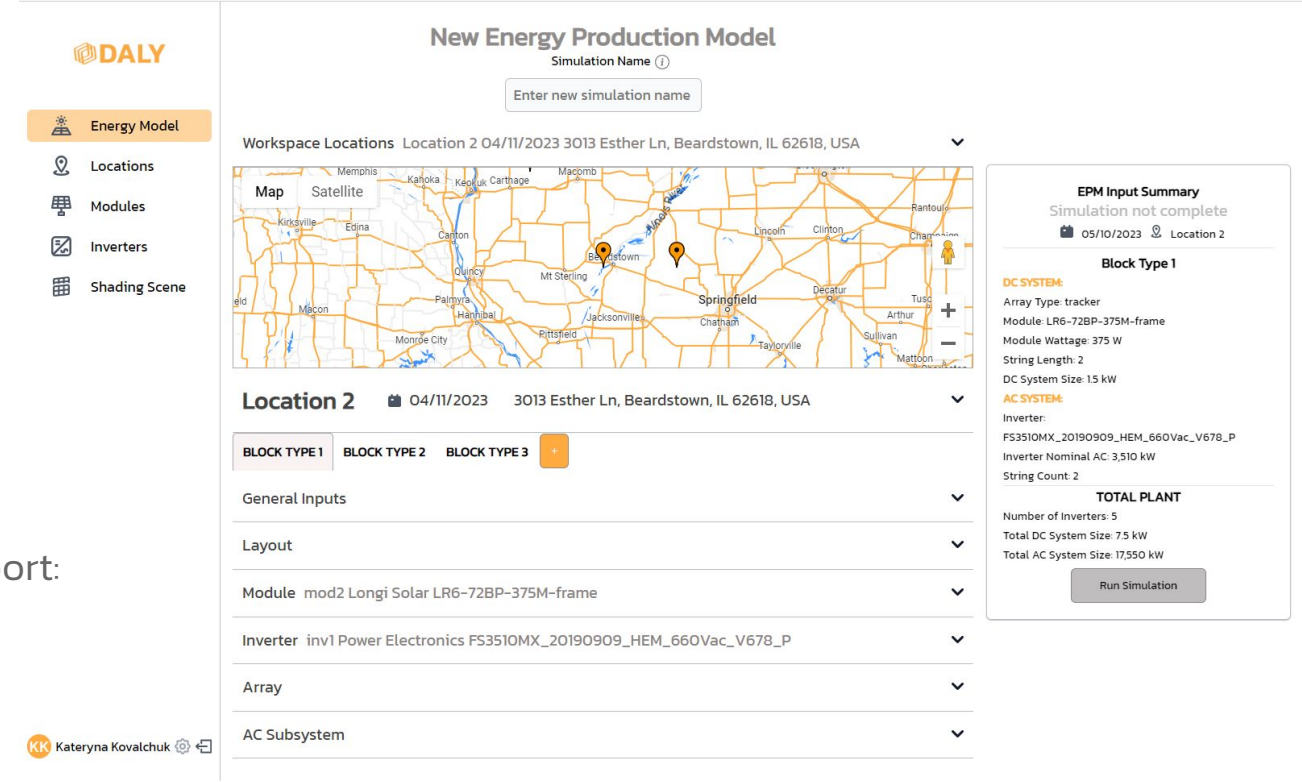
- Terrain-Aware Single Axis Tracking Algorithm
- Model Electrical Architecture in 3D
- Accepts .PVC, .SHD files and PVComplete Exports



Web Interface

NEWLY RELEASED

- Segmented workspaces
- Multi-blocks
- Subhourly
- PDF and Excel reports
- Automated workflows
- Automated weather import:
  - Vaisala
  - SolarAnywhere
  - NSRDB



Up Next: Feature Releases Q2 2023

AOI Optimized Tracking

- Accounting for AOI based losses in terrain aware tracking algorithm to optimize tracking schedules for center bus bar modules

Multi-Year Simulation

- Multi-year/historical time series weather data import and yield modeling functionality
- Can be run in place of typical year

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