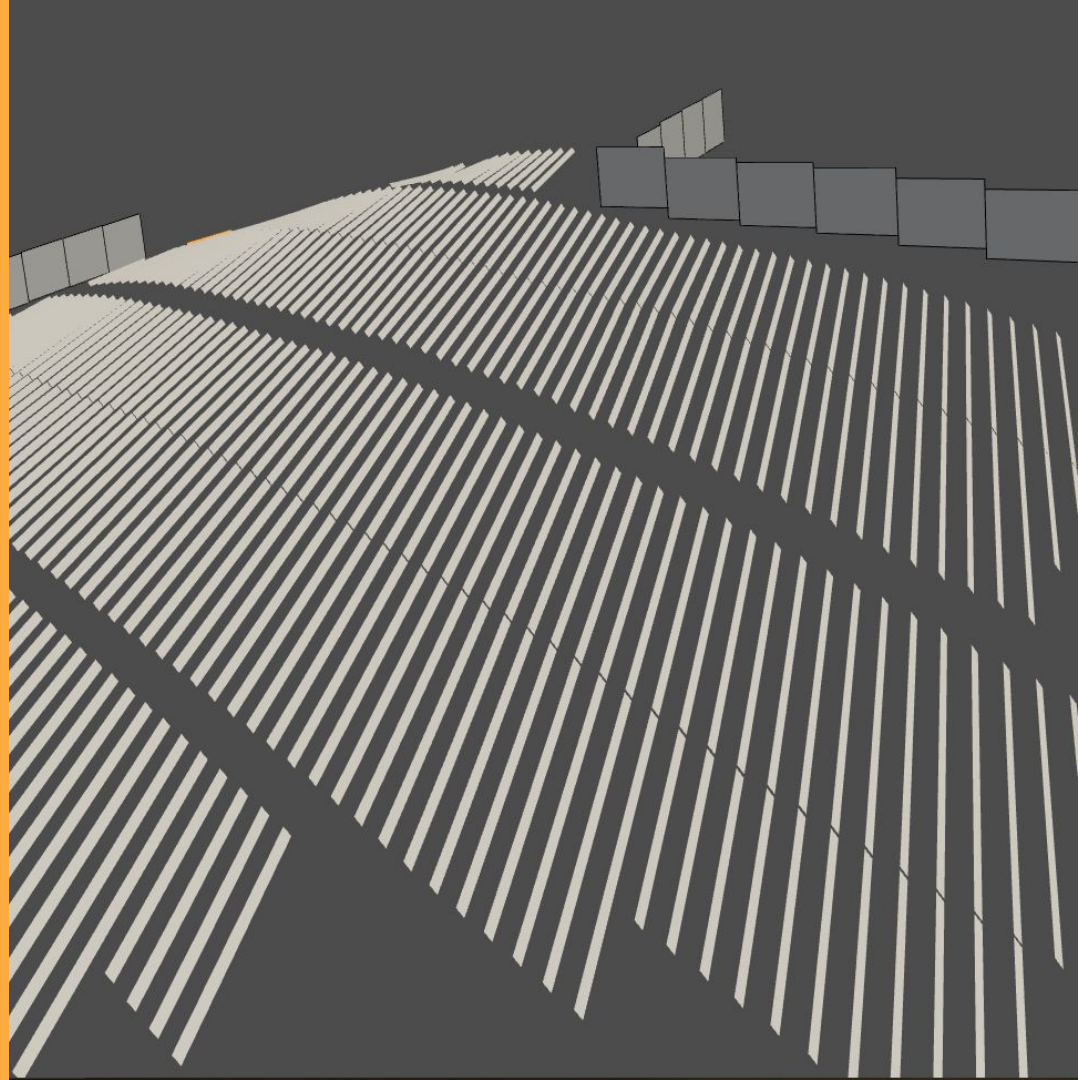
DALY

Next Generation Solar + Storage Modeling Software

PVPMC Presentation

August 2022



About Daly

- Founded in 2021
- San Francisco, CA + Chernivtsi, Ukraine
- API released May 2022
- Platform launch September 2022
- Independent engineer assessment underway
- 5 full time engineers

Daly is simplifying and improving solar + storage modeling

Utilize industry accepted and financible physical models

With advanced software functionality and capabilities

To provide the next generation in solar and storage modeling

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

Daly Technical Overview

Daly Solar Modeling Platform

Solar yield calculated using the most financed and accepted models

- Industry standard models
- Utilizes .PAN and .OND file formats
- Octavia near shading model

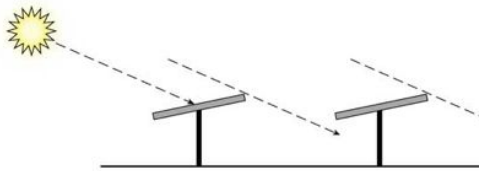
Daly Storage Modeling Platform

Energy storage techno-economic modeling built for PV+S or standalone

- Cell-to-site level model
- Automated or manual dispatch algorithms
- Unique interaction with solar output

COMING SOON

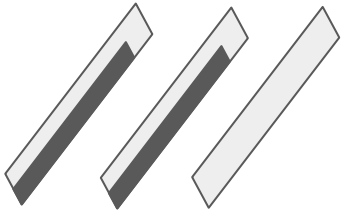
Near Shading Engine



Unlimited

2D Near Shading Engine

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



Octavia

3D Near Shading Engine

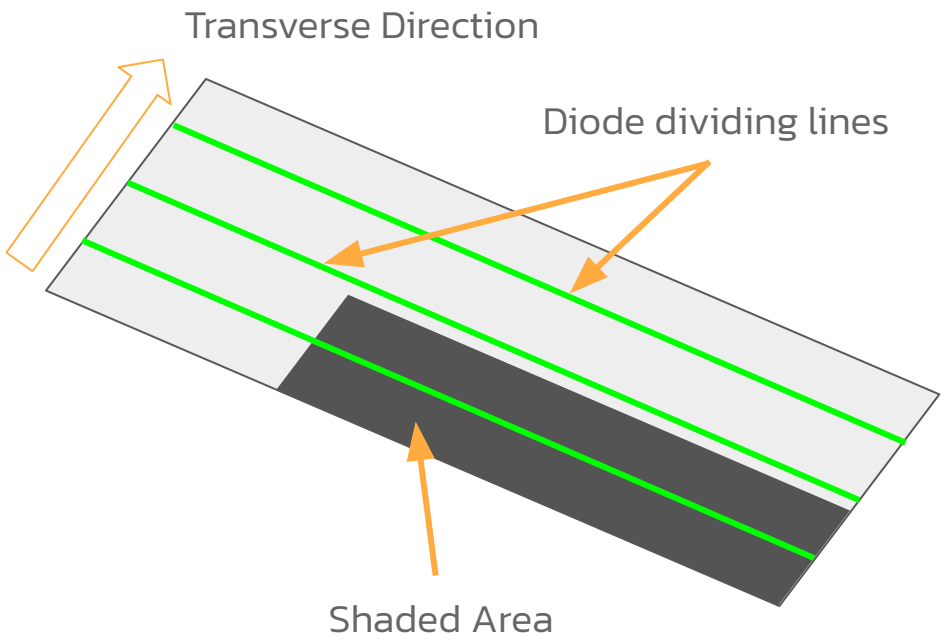
- Complex 3D shading calculations
- Diode protected areas in 3D
- Terrain-aware tracking algorithm
- Import shading scenes from SHD files, JSON exports from PVComplete, .PVC files,

Terrain-Aware Tracking

- Octavia analyzes tables individually to determine backtracking angles
- Diffuse and direct irradiance adjustments made on hourly basis for every table
- Can reference module architecture to determine optimal backtracking angles

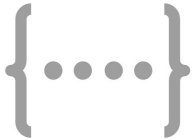
Transverse Diodes

- Divides table into diode sensitive areas
- Same input for 2D and 3D
- Informs Terrain-Aware tracking
- Used in electrical loss calculations



Octavia API Workflow

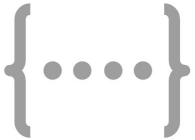
Step 1



api.dalyenergy.com/octavia/upload

POST Upload file with tracker inputs if tracker system

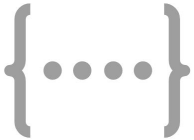
Step 2



api.dalyenergy.com/octavia/status

GET Check status of processing

Step 3



api.dalyenergy.com/epm/run

Reference ‘shadingSceneId’ in energy production model inputs

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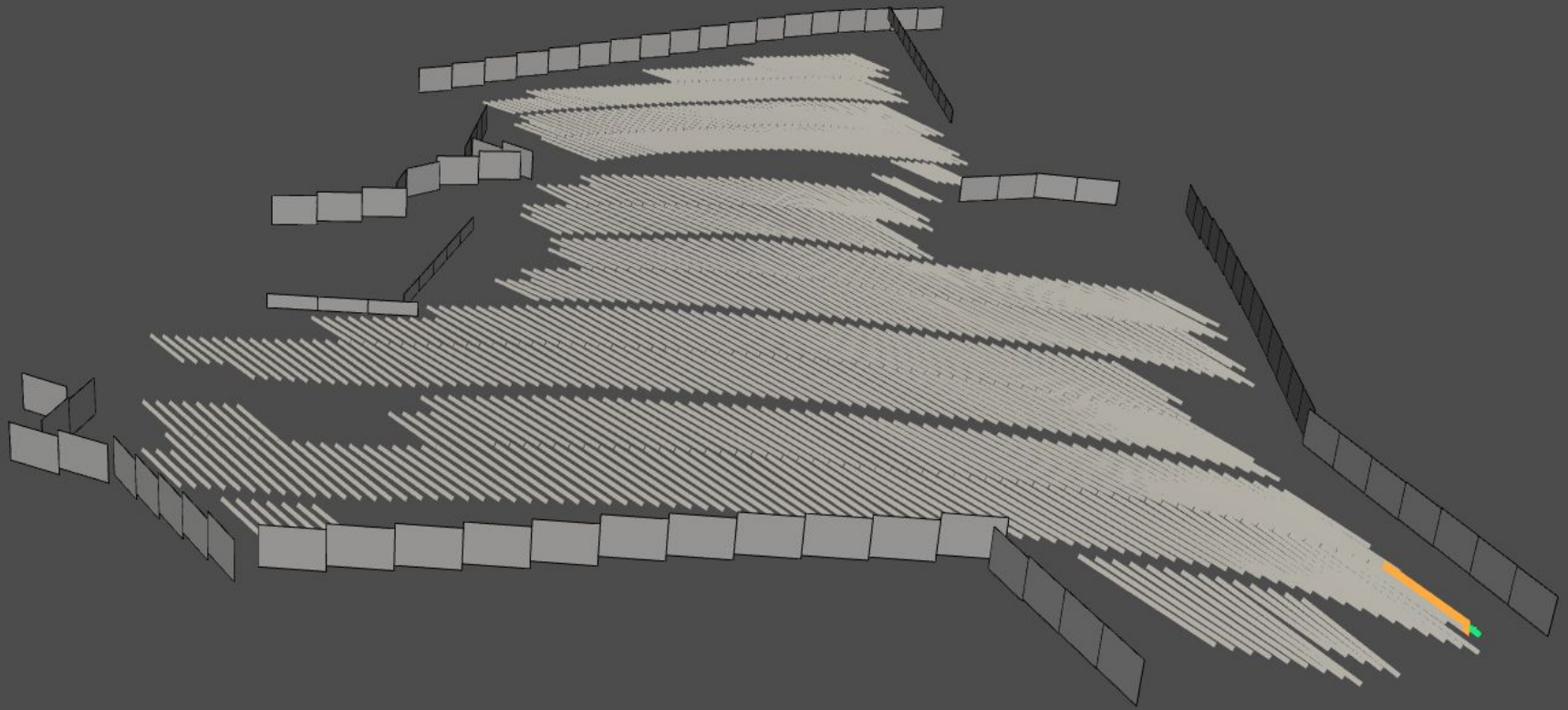
Example Project



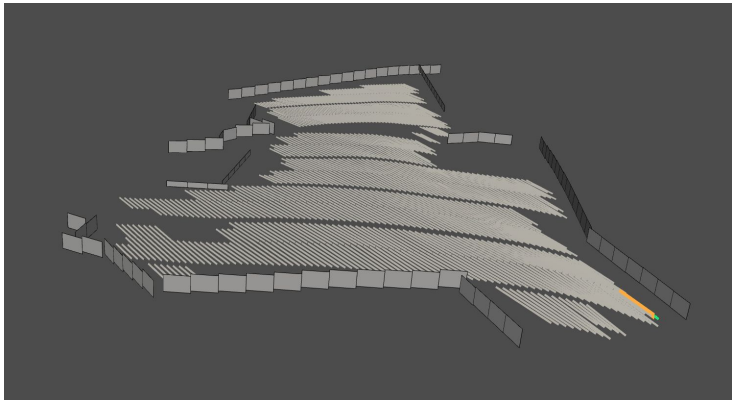
Base Case Simulations

Unlimited

2D Near Shading Engine

2099 kWh/kWp

PVSYST: 2100 kWh/kWp

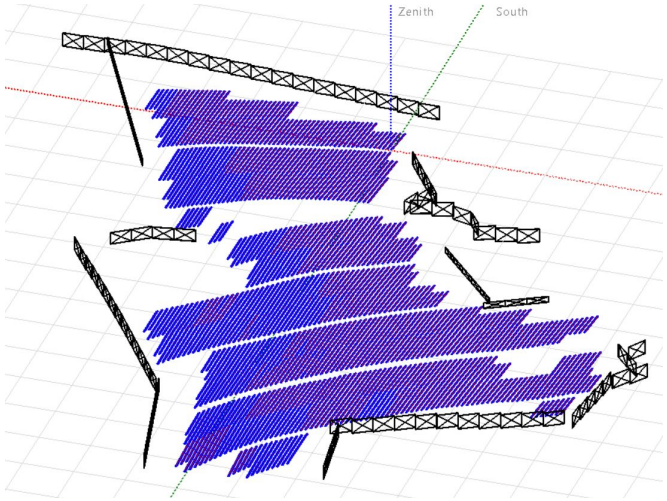


Octavia

3D Near Shading Engine

1911 kWh/kWp

PVSYST: 1904 kWh/kWp



Terrain Aware Tracking Improvement

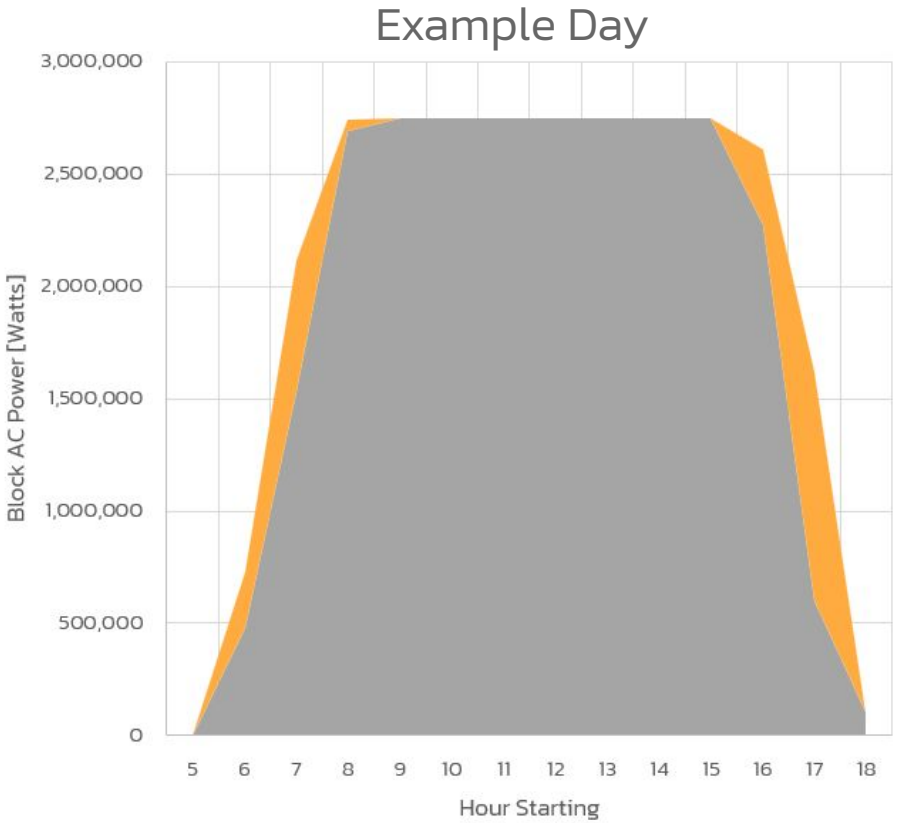
Standard (Flat) Backtracking
Full-Cell Module

1911 kWh/kWp

Terrain-Aware Backtracking
Full-Cell Module

2054 kWh/kWp

+7.48% Gain



Impact of Half Cells

Standard (Flat) Backtracking
Full-Cell Module

1911 kWh/kWp

Terrain-Aware Backtracking
Full-Cell Module

2054 kWh/kWp

+7.48% Gain

Standard (Flat) Backtracking
Half-Cell Module

1972 kWh/kWp

+3.19% Gain

Terrain-Aware Backtracking
Half-Cell Module

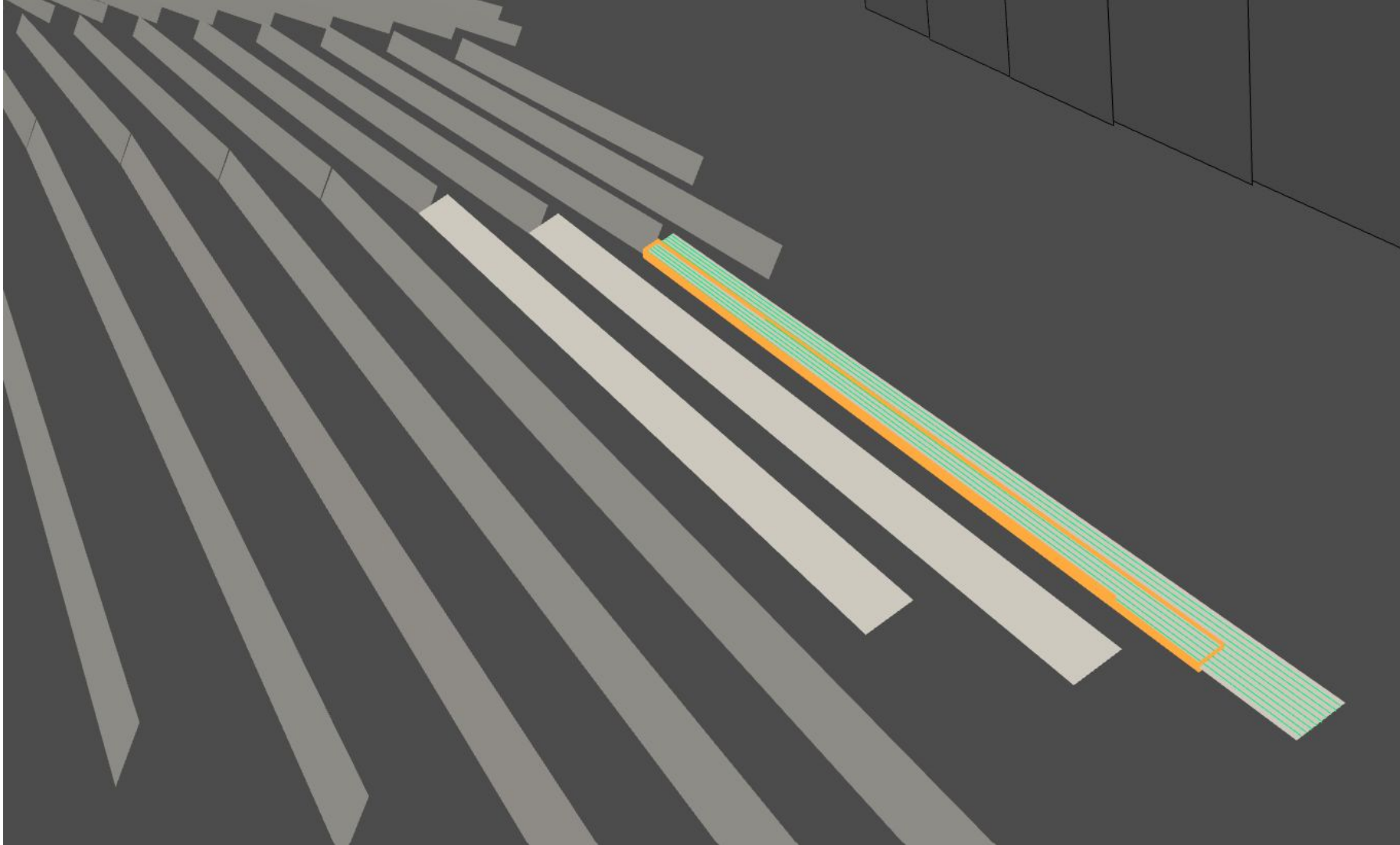
2061 kWh/kWp

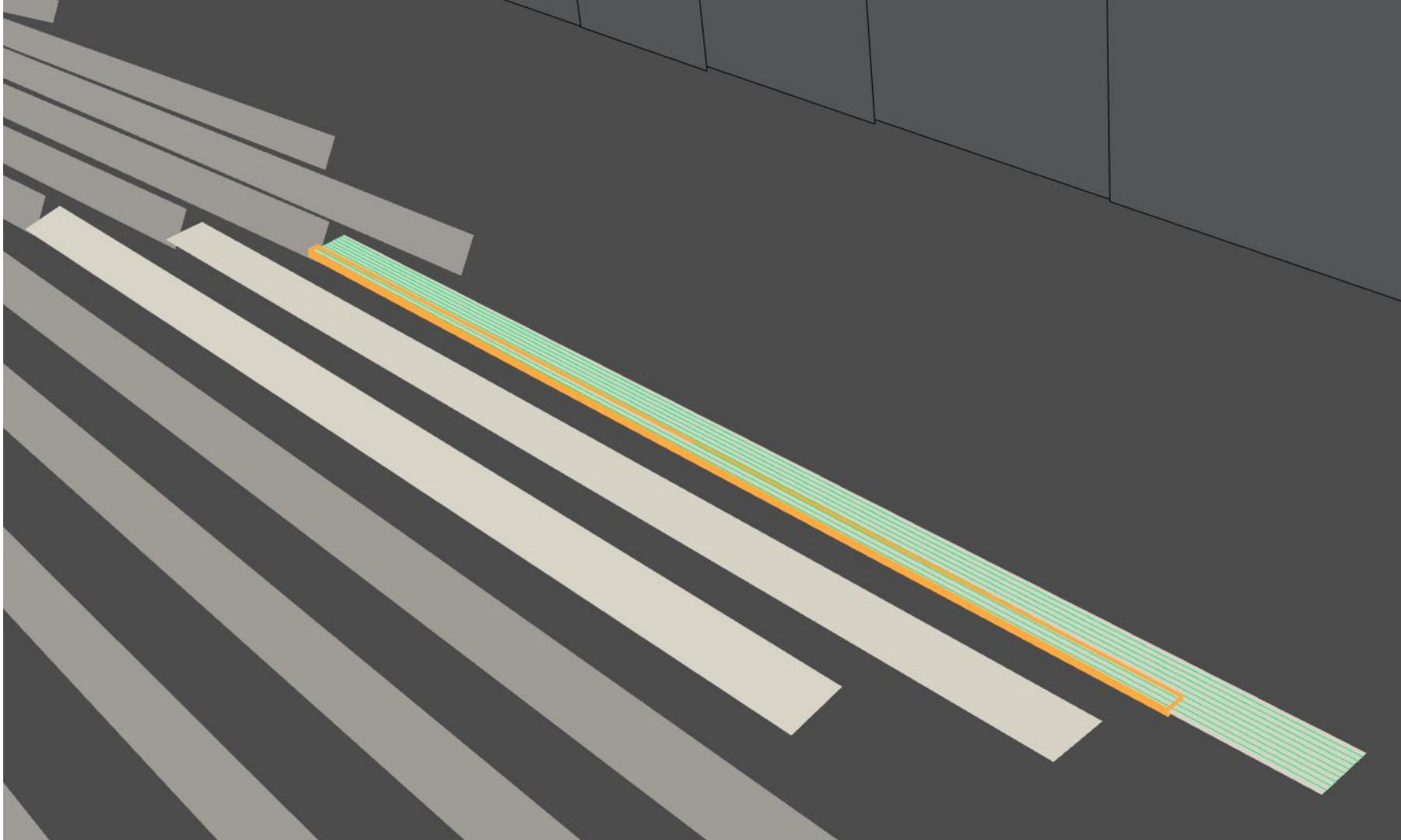
+7.84% Gain From Full-Cell

+4.5% Gain From Half-Cell

Are we missing anything?

Do Terrain-Aware tracking strategies change with Half-Cells?





Half-Cell Specific Terrain Aware Tracking

Full Terrain-Aware Tracking

Standard (Flat) Backtracking
Half-Cell Module

1972 kWh/kWp

Terrain-Aware Backtracking
Half-Cell Module

2061 kWh/kWp

+4.5% Gain

Half-Cell Specific Terrain-Aware

Standard (Flat) Backtracking
Half-Cell Module

1972 kWh/kWp

Terrain-Aware Backtracking
Half-Cell Module

1957 kWh/kWp

-0.7% Loss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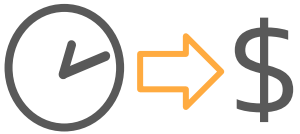
Appendix

Positioning + Value Proposition



Fast

>90% Reduction in time to run

```
for locaitonId in locationList:
    baseProdJSON['locationId'] = locaitonId
    for albedo in albedoList:
        prodJSON = baseProdJSON
        prodJSON['albedo'] = albedo
        for tilt in tiltList:
            prodJSON['layout']['tilt'] = tilt
            gcr = 0.83 if tilt == 5 else 0.66
            prodJSON['layout']['gcr'] = gcr
            for stringCOunt in stringCountList:
                prodJSON['array']['stringCount'] = stringCOunt
                x = requests.post(epmURL, json = prodJSON)
                if x.status_code == 200:
                    epmIDList.append(x.json()['RunID'])
                    dcAcRatioSaveList.append(x.json()['dcAcRat
                    print('tilt:{} | gcr:{} | dcacratio:{} pro
                          .format(tilt,gcr,x.json()['dcAcRat
                else:
                    epmIDList.append(-1)
                    dcAcRatioSaveList.append(-1)
                albedoSaveList.append(albedo['jan'])
                tiltSaveList.append(tilt)
                gcrSaveList.append(gcr)
                locationIdList.append(locaitonId)
epmRunDf = pd.DataFrame({'locationid':locationIdList,
                         'epmRunId':epmIDList,
                         'albedo':albedoSaveList,
                         'tilt':tiltSaveList,
                         'dcAcRatio':dcAcRatioSaveList})
```

Automatable

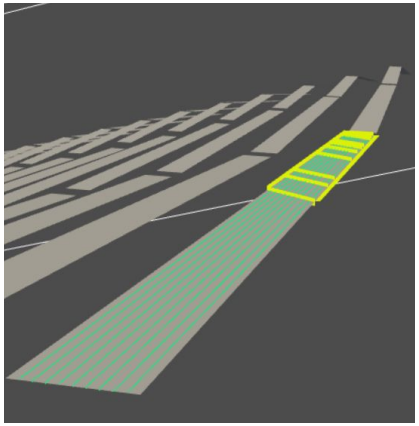
Easily automate work and integrate yield modeling into any process

+/-

0.05%

Reliable

Produces results within +/- 0.05% of industry accepted models

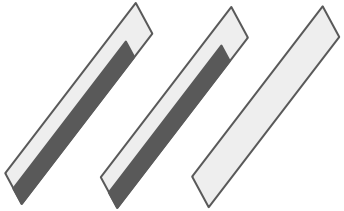


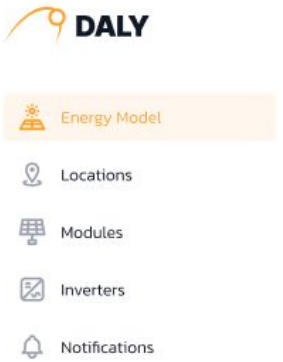
Innovative

Developing needed improvements to the modeling space

Daly Solar Platform


```
{
  "String Length": 29,
  "Number of Strings": 322.0,
  "DC Wp": 3501750.0,
  "AC Wp": 2500000.0,
  "DCACRatio Actual": 1.4007,
  "Wh": 7322108455.74602,
  "Specific Yield": 2090.9854
}
```



Daly API

Production Modeling API

- Industry leading modeling engine
- Simple inputs and usage
- Block-to-plant level energy model
- Third party review underway

Octavia

3D Near Shading API

- Cloud based near shading model
- Terrain based tracking
- Third party reviewed
- 4 modes of electrical loss calculation

Daly Interface

Production Modeling Web Interface

- User friendly and collaborative
- Unlimited users and projects
- PDF report generation
- Custom branding & functionality

Daly Interface

- Web based interface
- Workspaces with user roles
- Create and manage production runs as well as modules, inverters, and locations databases
- PDF report generation (Q3 22)
- Assumption and workflow automation