



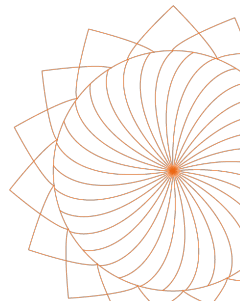
WHEN TRUST MATTERS

# SolarFarmer: latest developments and insights

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PVPMC – Session 13: Software Updates

14 May 2026



# SolarFarmer PV Modeling



- Developed in house at DNV (launched in 2017)
- Bankable yield estimates for **design and operations**
- Built for industrial and utility-scale projects
- **3-D modeling** for complex terrain and shading
- **Automation and SDK** for scale
- Cloud compute with **API** access
- Multi-year runs at any time step

# Latest developments & insights

- 1** Updates in bankability and validation
- 2** Performance upscale for 3-D calculations
- 3** Renewables Component Library
- 4** SDK for SolarFarmer API integration



DNV AS

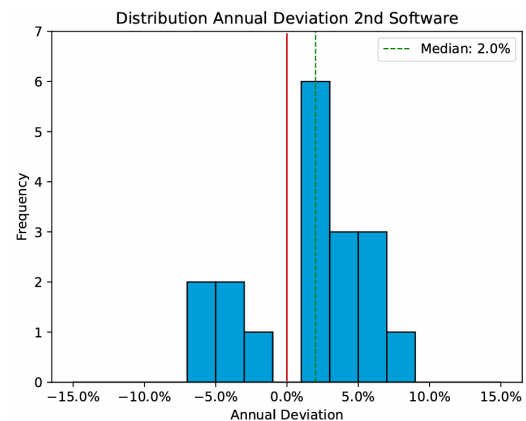
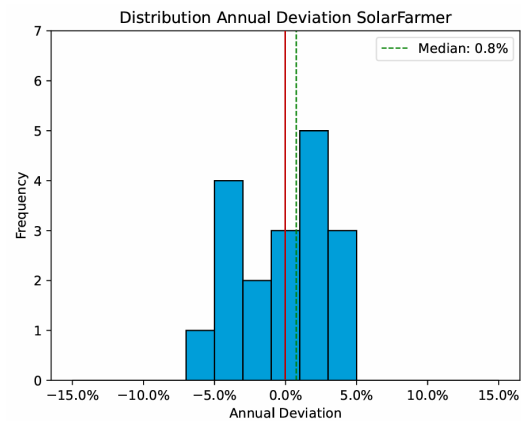
## Position in Bankability

In North America (US and Canada):

- 80 GWp over 1,000 projects delivered.
- 5 GWp already financed with technical due diligence (TDD) delivered with SolarFarmer yield estimates.
- Developers, EPCs, IPPs and tracker manufacturers are using SolarFarmer in North America, Europe and Asia.
- DNV Advisory Services are progressively rolling out SolarFarmer worldwide.

# Validation in Latin America, Europe and Middle East

- DNV solar engineers evaluated SolarFarmer against 3.6 GWp of operational PV assets
- 24 plants  
996 months (83 years)  
18 TWh operational data
- Findings
  - Bias / MBE 0.8%
  - RMSE 3.3%
  - SolarFarmer was closer to the operational data (project-year) more than 83% of the times compared to a 2<sup>nd</sup> software.



**SOLARFARMER**  
PROVEN ACCURACY FOR BANKABLE  
ENERGY ASSESSMENT

2026 Validation study across 3.6GWp  
operational assets

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Reviewed By  
Camelia Farchado

Published  
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WHITEPAPER

Study available in:  
[www.dnv.com/publications](http://www.dnv.com/publications)

# 3D Cloud compute improvements

- 3D calculation needs → high compute on demand
- Requirement for faster and scalable calculations

Get the 3D calculation running faster!

We want to run 300+ MW site in the 3D API

- Improvements for flexibility and scalability:
  - ✓ Compute optimizations and parallelization
  - ✓ Compression of intermediate results to avoid memory bottlenecks in the cloud
  - ✓ Same secure DNV cloud: ISO/IEC 27001 certified

SolarFarmer API improvements:

No project (MW size) limit

12x faster per timestep · MW

Overall: 3-15x faster runtimes

## Examples of 3D runtime durations in SolarFarmer API version 6

10 MW, 1h year	3 – 5 min
100 MW, 1h year	10 – 15 mins
100 MW, 15 min 1 year	12 – 16 mins
200 MW, 1h 10 years	≈ 40 mins

# Renewable Component Library (RCL)

New API for accessing finance-grade PAN/OND files on demand

## How component files flow today

- OEM provide module (PAN) and inverter (OND) specs for design, which are not always trusted for finance-grade decisions.
- IEs often rebuild component files for project finance.
- DNV has refined this modeling workflow through years of advisory work.

## A hybrid path to trust

- Hybrid AI + IE approach: LLMs extract unstructured data; DNV deterministic methods validate and generate models.
- RCL delivers finance-grade PAN/OND models on demand for everyone as a standalone API or integrated into SolarFarmer licensing.

# Python Software Development Kit (SDK)

Use the SolarFarmer SDK to simplify and accelerate both high-level and detailed PV plant definition

## Installation

GitHub: [DNV OpenSource / solarfarmer-python-sdk](#)

Pypi: `pip install dnv-solarfarmer`

## Getting started

```
import solarfarmer as sf
```

Specific SDK  
documentation

Distinct  
workflows /  
use cases

Sample  
end-to-end  
notebooks

Designed for  
LLM auto-  
discovery

The screenshot shows the 'SolarFarmer Python SDK' documentation page. The page has a navigation menu on the left with items: Home, Getting started, API Reference, External Resources, License, and Frequently Asked Questions. The main content area is titled 'Welcome to SolarFarmer API' and contains the following text: 'A Python SDK that wraps the [DNV SolarFarmer API](#) to help you run cloud-based energy calculations and manage API payloads in a user-friendly way.' Below this is a button 'New to SolarFarmer? Discover it here!' and a section 'Embed SolarFarmer's API into your workflow. Typical use-cases of the package include:' followed by a list: 'Build SolarFarmer API JSON payloads for 2D energy calculations' and 'Run 2D and 3D energy calculations from existing API payload files'. There is a section for 'Workflow 2: Design Plants with PVSystem' with a 'For:' statement 'Solar engineers and designers creating new plant configurations' and a 'Goal:' statement 'Define high-level plant specifications and automatically construct API payloads'. Below this is a 'Key Classes:' section with two items: 'PVSystem - Define plant configuration (location, capacity, equipment, etc.)' and 'CalculationResults - Access and analyze results (available via `plant.results` after calculation)'. A 'Time to First Result:' section states '10-15 minutes'. An 'Example' section shows a code snippet: 'Specify your plant: location (lat/lon), DC and AC capacities, inverter type, mounting configuration. `PVSystem` handles the payload construction and you run the calculation.' At the bottom, it says 'Results from `PVSystem` are approximations based on simplified layout assumptions — see [FAQ](#) for details.' The DNV logo is in the bottom right corner.

# What's coming: PVCollada 2.0

- SolarFarmer will integrate the new PVCollada 2.0 format once completed by the work group
- Users will be able to import and export \*.pvc2 files
- **Question from day 1 (session 4): How large will the “bloated XML files” be?**
  - The new format copes with geometries, electrical and component elements.

Project capacity (MW)	File size (MB)	Ratio MB/MW
12	9.4	0.74
61.5	31.3	0.50
107	98	0.91
445	415	0.93
885	667	0.75

File sizes depend on the terrain, shading objects and components included.  
Range from 0.5 to 0.95 MB/MW

## See more at ...

- Software Office Hours. **Today from 13:20h**
- Training Session. **Today from 15:25 (session B)**

*API-centric workflow from resource data to energy yield calculations using DNV Green Data Products*



**Solar Resource Compass**  
Solar intelligence, on-demand



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# Thank you!

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