



Scaling and Commercializing Hybrid-Tandem™ Solar Modules

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Caelux at a Glance



Technology Innovator

Commercialized Product

Caelux is a global leader in commercializing **Perovskites**.

Advanced Manufacturer

Full Size in Production

LAB TO FAB

Current 50 MW
Future 100 MW

OPERATIONAL FACTORY

>20 GW

CONTRACTED DEMAND GLOBALLY

Leading Global Investors

khosla ventures

Fine Structure VENTURES

TEMASEK

SiteGround

Reliance Industries Limited

Recognized Leader

TIME AMERICA'S TOP GREEN TECH COMPANIES

Business Intelligence GROUP

CLEANTECH BREAKTHROUGH AWARDS

Caelux Energy Producing Glass
SOLAR: AMPLIFIED[™]

29%+
Hybrid-Tandem[™] Efficiency with Caelux Technology

- Advanced Perovskite Technology
- Proven Performance Durability
- Voltage Matched & Bandgap Tuned
- Plug & Play Production Compatibility
- Field Ready for Standard Installation
- USA Designed & Manufactured

COMPATIBLE WITH INDUSTRY-STANDARD MODULE SIZES & CELL TYPES

PERC | TOPCON | HJT | BIC

35% More Power[†]

35% More Energy[†]

20% Lower LCOE[†]

7%+ Efficiency Gain[†]

Caelux transforms the top glass used in solar modules into a power generation layer. This enables a module with industry-leading efficiencies that drives performance up and costs down across the solar value chain.

A Plug & Play solution, Caelux's Energy Producing Glass integrates seamlessly into existing module manufacturing lines with all major silicon technologies, and is available in standard industry sizes.

Caelux amplified modules are field ready with voltage matching technology allowing them to be installed the same as conventional solar modules.

CAELUX

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Caelux Amplified Module Efficiencies

Cell Technology	p-PERC	n-PERC	TOPCON	HJT	aBC	Product Availability
Standalone Module Efficiency	23.50%	23.50%	23.50%	24.00%	25.00%	
With Contact	26.7%	27.0%	27.0%	27.0%	28.2%	Ready
With Caelux	27.2%	27.2%	28.1%	28.2%	29.1%	2027
With Caelux	28.0%	28.7%	29.1%	29.3%	30.2%	2029

Perovskite Glass Electrical Characteristics

Models	Series	Model #	Prmax (W)	Vmp (V)	Imp (A)	Isoc (A)	Voc (V)	Caelux Glass PCE (%)	
			STC	NOCT	STC	NOCT	STC	Area	
CS-0706	Series1	CS-0706-000	330	22.0	34.0	9.30	30.00	40.7	17.0%
	Series1	CS-0706-040	340	24.0	34.0	9.40	31.00	40.7	17.0%
	Series1	CS-0706-080	350	26.0	34.0	9.70	31.00	40.7	18.1%
	Series1	CS-0706-120	360	27.0	34.0	10.00	31.00	40.7	18.1%
	Series1	CS-0706-160	370	28.0	34.0	10.30	31.00	40.7	18.1%
	Series1	CS-0706-200	380	29.0	34.0	10.60	31.00	40.7	18.1%
CS-0706	Series2	CS-0706-000	330	22.0	34.0	9.30	30.00	40.7	17.0%
	Series2	CS-0706-040	340	24.0	34.0	9.40	31.00	40.7	17.0%
	Series2	CS-0706-080	350	26.0	34.0	9.70	31.00	40.7	18.1%
	Series2	CS-0706-120	360	27.0	34.0	10.00	31.00	40.7	18.1%
	Series2	CS-0706-160	370	28.0	34.0	10.30	31.00	40.7	18.1%
	Series2	CS-0706-200	380	29.0	34.0	10.60	31.00	40.7	18.1%
CS-0800	Series1	CS-0800-000	400	24.0	34.0	9.30	30.00	40.7	17.0%
	Series1	CS-0800-040	410	26.0	34.0	9.40	31.00	40.7	17.0%
	Series1	CS-0800-080	420	28.0	34.0	9.70	31.00	40.7	18.1%
	Series1	CS-0800-120	430	29.0	34.0	10.00	31.00	40.7	18.1%
	Series1	CS-0800-160	440	30.0	34.0	10.30	31.00	40.7	18.1%
	Series1	CS-0800-200	450	31.0	34.0	10.60	31.00	40.7	18.1%
CS-0870	Series1	CS-0870-000	480	26.0	34.0	9.30	30.00	40.7	17.0%
	Series1	CS-0870-040	490	28.0	34.0	9.40	31.00	40.7	17.0%
	Series1	CS-0870-080	500	30.0	34.0	9.70	31.00	40.7	18.1%
	Series1	CS-0870-120	510	31.0	34.0	10.00	31.00	40.7	18.1%
	Series1	CS-0870-160	520	32.0	34.0	10.30	31.00	40.7	18.1%
	Series1	CS-0870-200	530	33.0	34.0	10.60	31.00	40.7	18.1%
CS-1070	Series1	CS-1070-000	550	28.0	34.0	9.30	30.00	40.7	17.0%
	Series1	CS-1070-040	560	30.0	34.0	9.40	31.00	40.7	17.0%
	Series1	CS-1070-080	570	32.0	34.0	9.70	31.00	40.7	18.1%
	Series1	CS-1070-120	580	33.0	34.0	10.00	31.00	40.7	18.1%
	Series1	CS-1070-160	590	34.0	34.0	10.30	31.00	40.7	18.1%
	Series1	CS-1070-200	600	35.0	34.0	10.60	31.00	40.7	18.1%

† Based on Caelux Amplified Glass Module Design[†] (Perovskite and PERC cells). Perovskite layer efficiency measured under standard conditions. ©2026 Caelux Corporation | All rights reserved.

Max system voltage = 1500V | Maximum fuse rating = 25A | NOCT (°C) = 42 ± 2 | Operating temperature range (°C) = -40 to 85

This is an advanced product designed and built for use in the solar industry. The electrical characteristics are subject to change without notice. Caelux reserves the right to change the specifications without notice. For more details, contact Caelux.

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Management Team with >125 years Combined Solar Experience



John Iannelli
President & Founder



Charlie Hasselbrink
CTO



Jeremy Ferrell
CFO



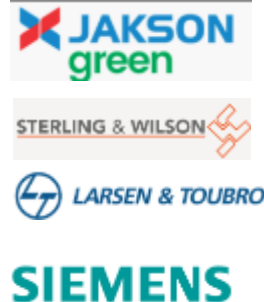
Aaron Thurlow
CCO



Eric Kuo
VP and General
Manager, Asia



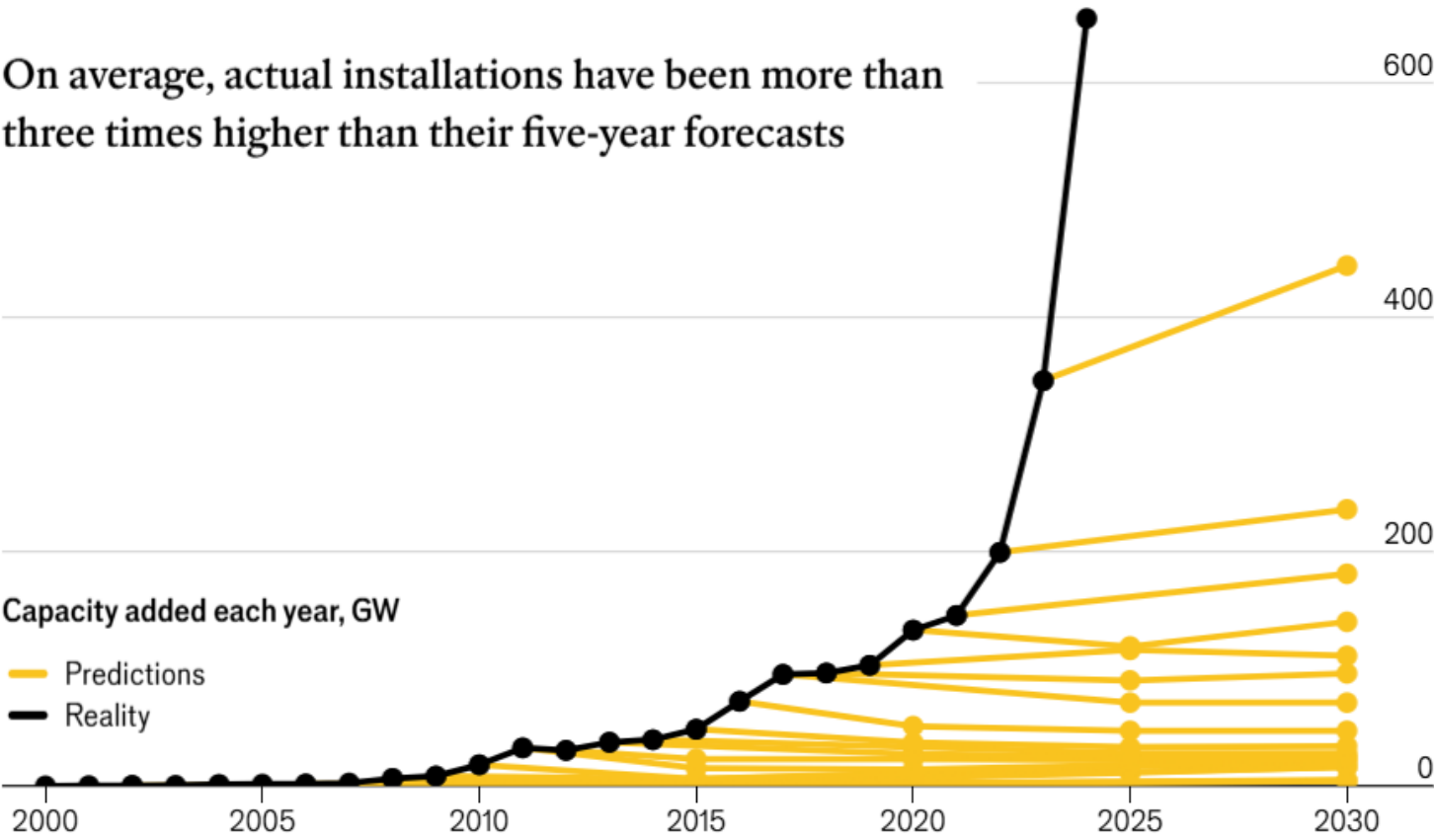
Vish Iyer
Managing Director
India & Middle East



Solar is Growing Exponentially



On average, actual installations have been more than three times higher than their five-year forecasts

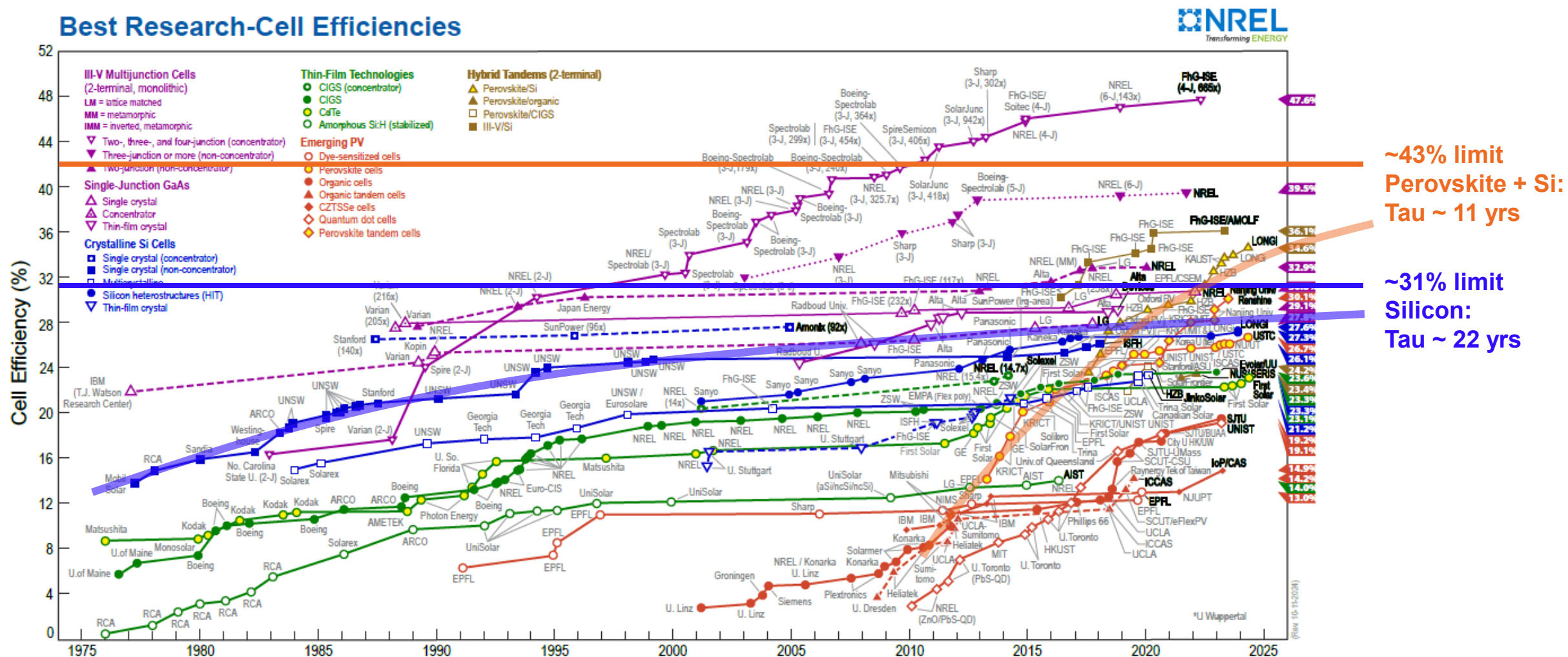


Installations for 2024 are an estimate from BloombergNEF for direct current solar capacity
Sources: IEA; Energy Institute; BloombergNEF

Industry experts consistently under-predict the growth rate.

The Economist, "Sun Machines", June 20 2024

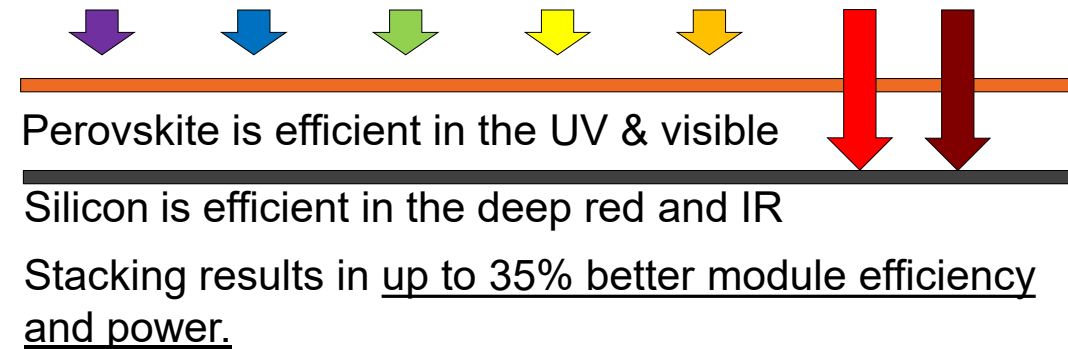
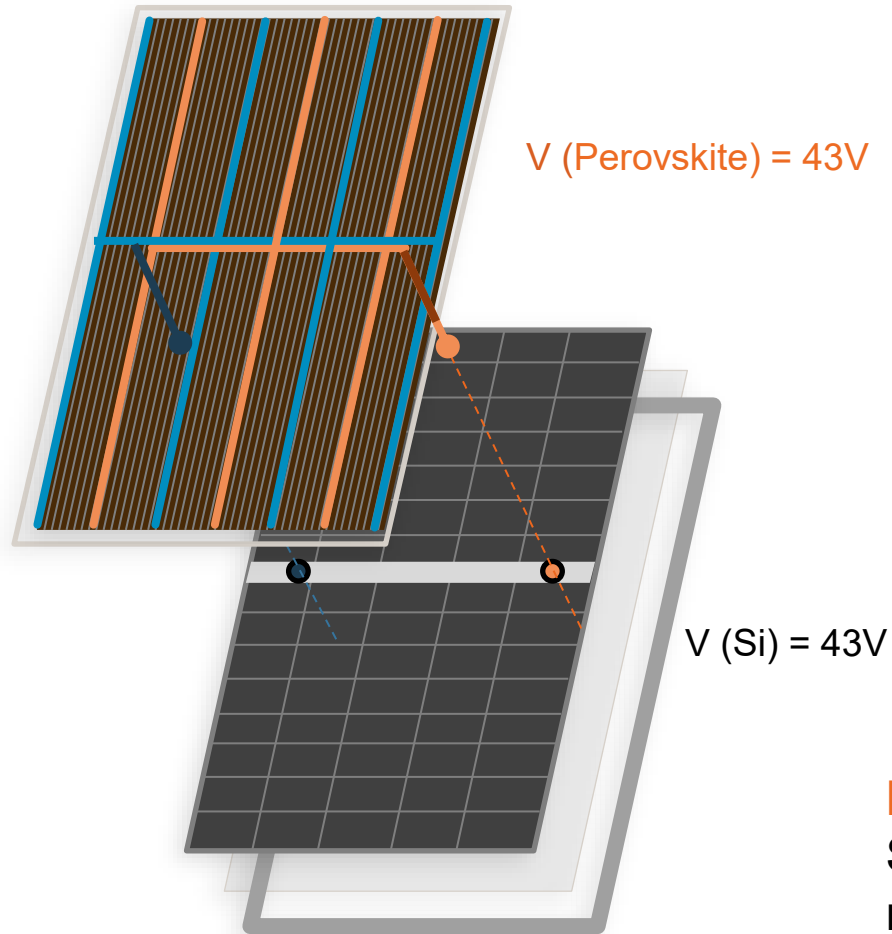
Efficiencies are Asymptotic



Caelux Makes it Easy to Make Any Si Module More Powerful

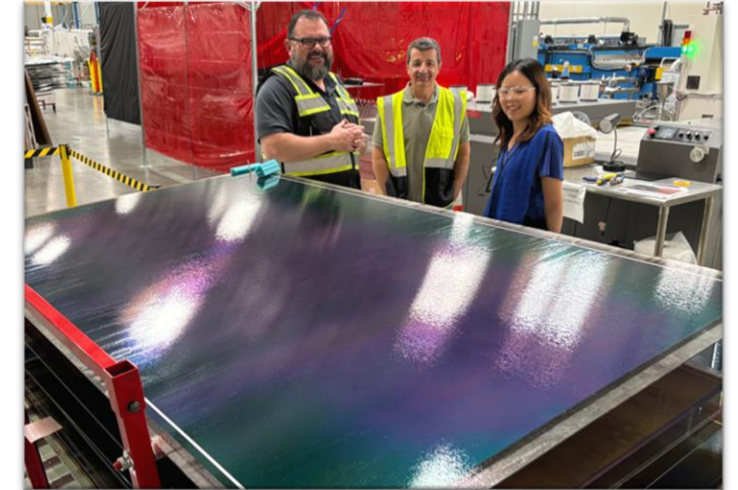
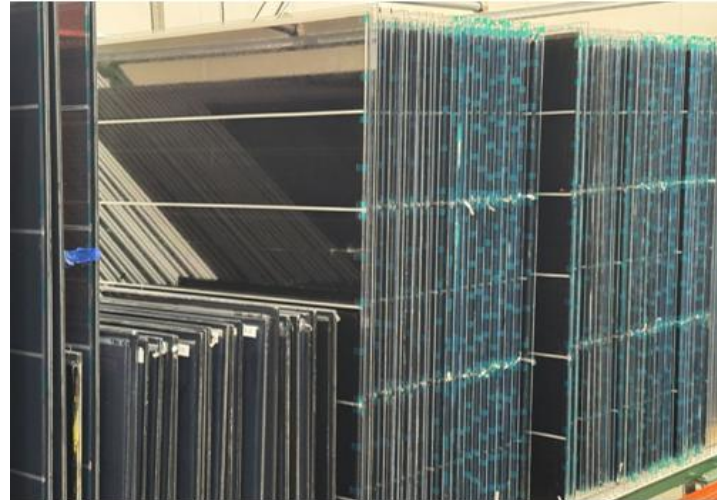


Plug & Play for Module Manufacturers: substitute Caelux Energy Producing Glass, attach Caelux busbars to Si busbars, and laminate.



Plug & Play for Developers: System voltage is unchanged. Simply size conductors and inverters to handle 20%-35% more current.

Nearly 5,000 1x2m Units Caelux Glass to Date



The only 1x2m American-made perovskite panel on display at the National Lab of the Rockies

May 4, 2026 – Audrey Robertson, assistant secretary of energy at DOE, with Caelux panel on display at the Energy Materials and Processing at Scale (EMAPS) facility at NLR's South Table Mountain (STM) campus.

(Photo by Joe DelNero / NLR)

Production & Technology Roadmap



Cell Technology	p-PERC	n-PERC	TOPCon	HJT	xBC	Product Availability
Silicon Module Efficiency	21.5%	22.5%	23.5%	24.0%	25.0%	
Hybrid-Tandem™ Caelux1	26.7%	27.2%	27.6%	27.8%	28.2%	Now
HT Caelux2	27.2%	27.7%	28.1%	28.3%	28.7%	2027
HT Caelux3	28.2%	28.7%	29.1%	29.3%	30.0%	2028
HT Caelux4	29.3%	29.7%	30.1%	30.3%	30.7%	2028 2029

**Caelux internal estimated projections.*



Caelux Unlocks Significant Gains



- Efficiency is the single biggest lever to drive down the cost of solar electricity and improve speed to power
- Caelux Glass boosts output and plant economics

cSi Solar (PERC)
300MW, 21% Module Efficiency



\$58.17/MWh LCOE
12 Month Installation

PERC+Caelux1 (2026)
300MW, **26% Hybrid-Tandem™**



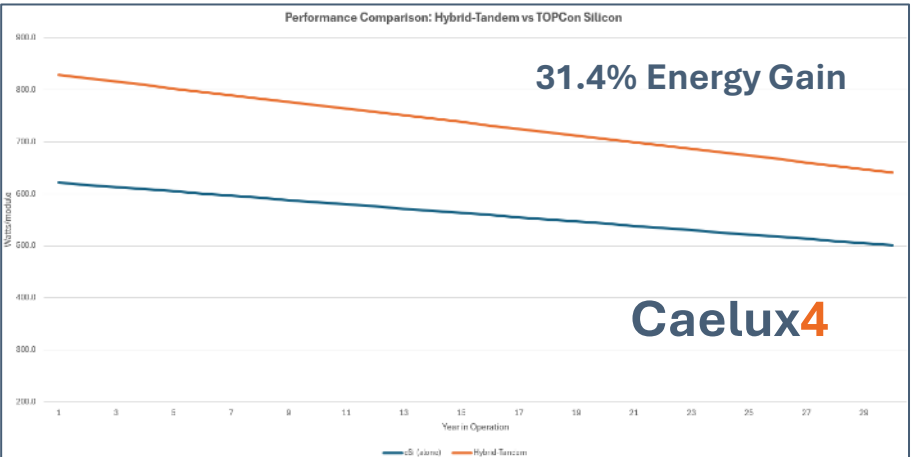
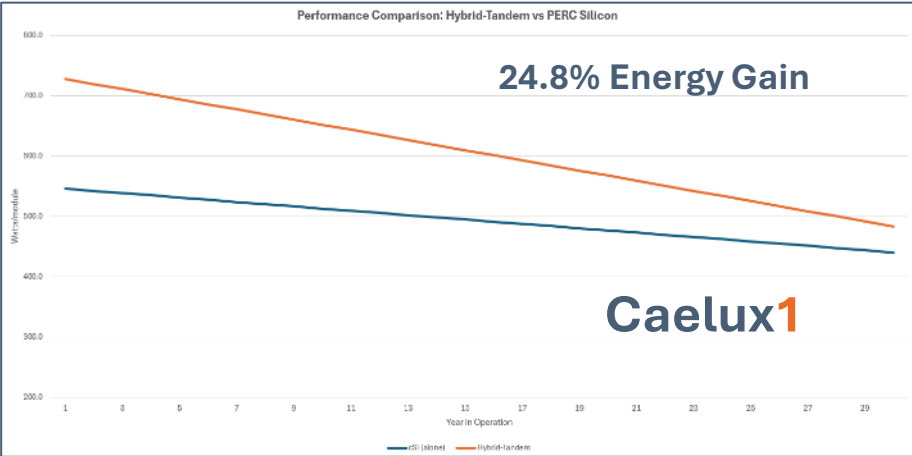
\$53.82/MWh LCOE
↓ 7.5% LCOE
20.8%↓ Land
10.1 Month Installation

TOPCon+Caelux4 (2029)
300MW, **30% Hybrid-Tandem™**



\$52.36/MWh LCOE
↓ 10% LCOE
30%↓ Land
9.2 Month Installation

**Illustrative examples based on Caelux modeling.*



Reliability testing focuses on light/heat (ISOS-L-2) and outdoor test



Accelerated testing station

Light / Heat (ISOS-L-2) capacity of 72 mini-modules



Onsite outdoor testing station

8 large panel capacity with MPPT
32 minimodule capacity with MPPT



Caelux Accelerated Aging Test Results

T80 > 50 YEARS¹ @ 42°C NOCT (20°C ambient) | T80 >14 YEARS¹ @ 57°C Tropical environment (35°C Ambient)

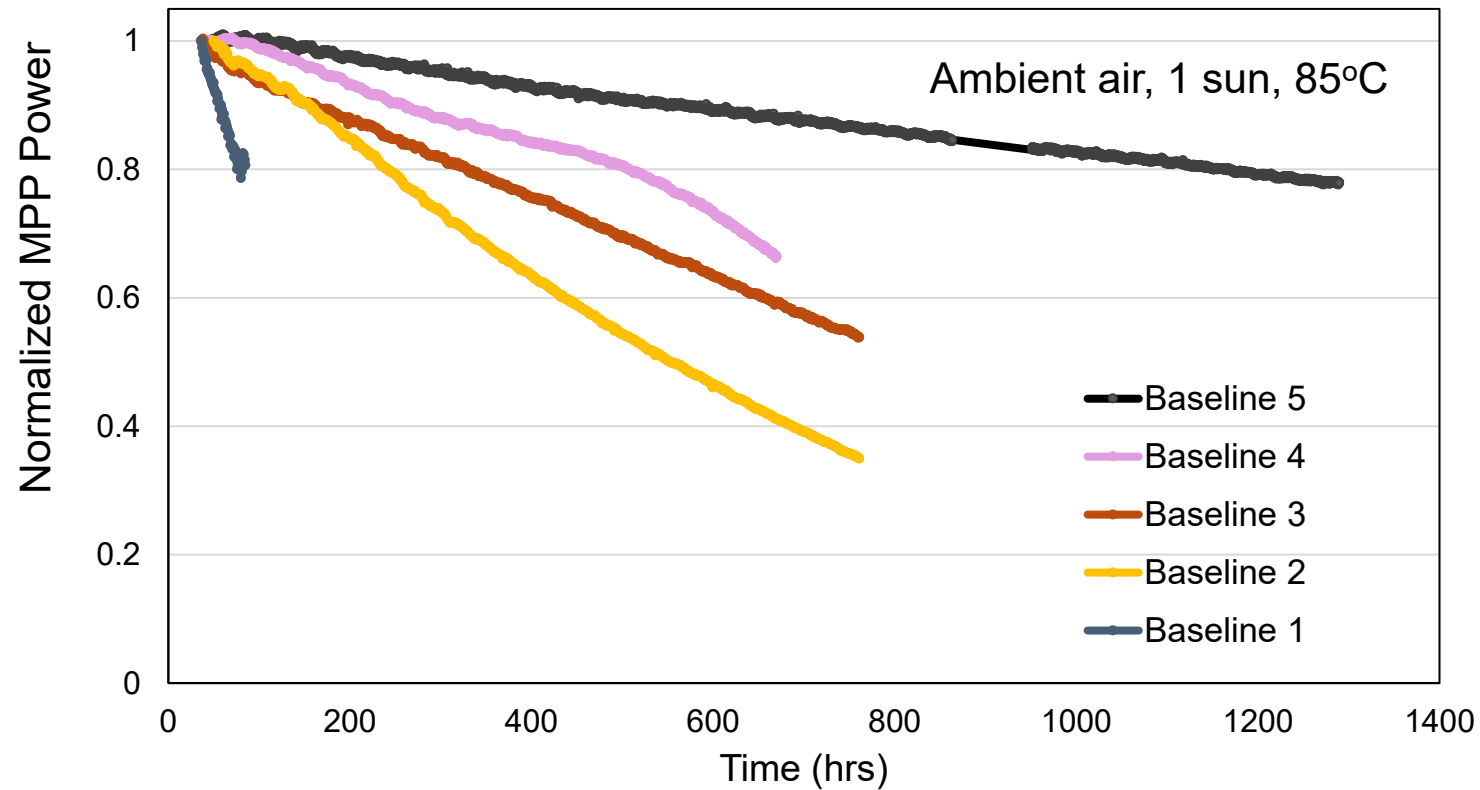


Chart is an update of data provided at IEEE PV Specialists Conference June 2026

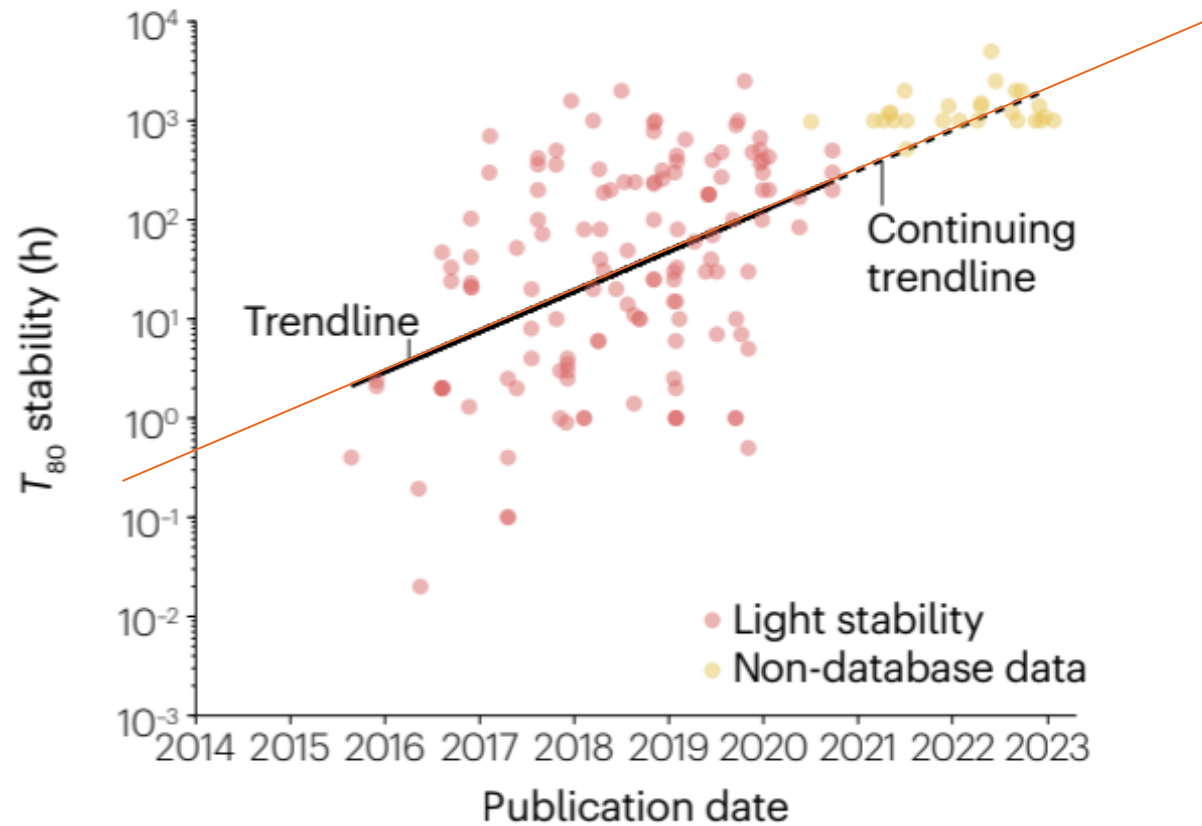
¹ Projection using Arrhenius equation. Activation energy determined using 3-Temperature Arrhenius analysis at 65, 75, 85°C.

Perovskite T80 light stability improvement is exponential (~2x/year)



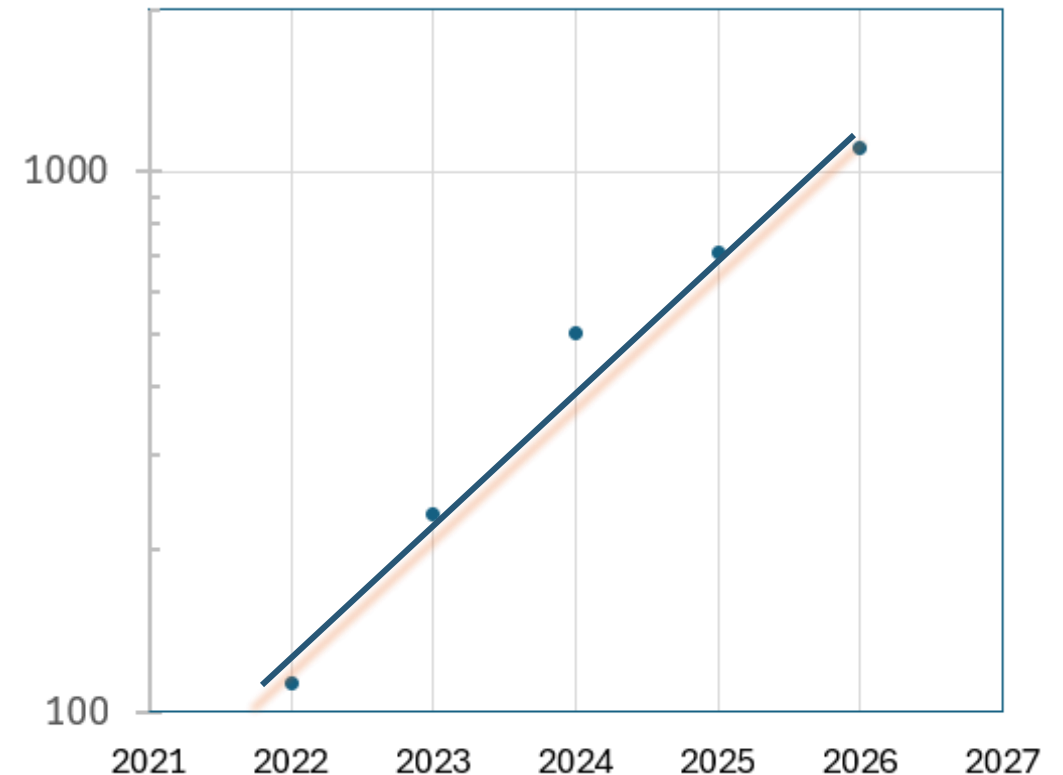
Worldwide Literature Review

Zhu et al, *Nature Reviews Materials* 8, 2023



Caelux Track Record

T80 in ISOS-L-2, 75-85°C





Thank you.



<https://caelux.com>

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