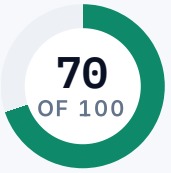
A close run between six modules

LR7-54HVH-490M delivers 12,759 kWh over 30 years at 0.71 c/kWh, which makes its energy 17% cheaper per kilowatt-hour than the dearest module in this report. It is not the cheapest sticker price in the set - €69 is - and it still wins.

BEST LONG-TERM CHOICE

LONGi **LR7-54HVH-490M** 490 Wp

- **Most energy produced.** 12,759 kWh over 30 years, 1,110 kWh ahead of the next module.
- **Best composite in the set.** It scores highest across lifetime energy, cost per kWh and warranty length taken together, even though it is not the cheapest energy in the set.



COST PER KWH
0.71 c/kWh

RANKING LEADER	HIGHEST 30-YEAR YIELD	LOWEST COST PER KWH	MODULES COMPARED
LR7-54HVH-490M Score 70 of 100	12,759 kWh 1,750 kWh above the lowest module	0.61 c/kWh 29% cheaper than the dearest	6 Prices entered by the requester

ASSUMPTIONS Cell temperature 55 °C · Installation Flat roof · Baseline yield 1,000 kWh/kWp · Horizon 30 years · Currency EUR

01 · SIDE BY SIDE

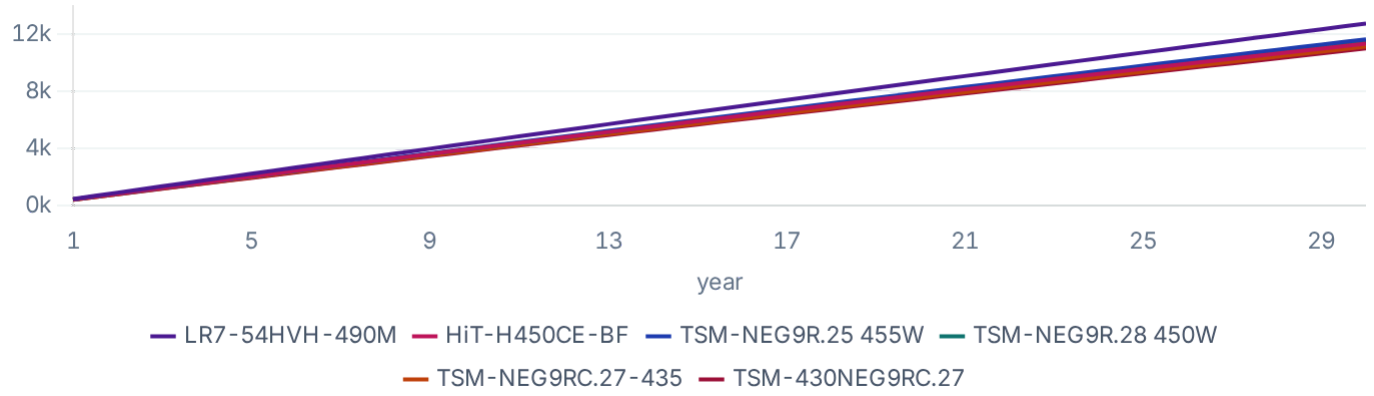
#	MANUFACTURER / MODEL	POWER	PRICE	YEAR 1	30-YEAR	PER KWH (C)	SCORE
1	LONGi LR7-54HVH-490M	490 Wp	€90	447	12,759	0.71	70
2	HYUNDAI ENERGY SOLUTIONS HiT-H450CE-BF	450 Wp	€69	409	11,347	0.61	61
3	Trinasolar TSM-NEG9R.25 455W	455 Wp	€81.90	411	11,648	0.70	51
4	Trinasolar TSM-NEG9R.28 450W	450 Wp	€83.19	407	11,520	0.72	45
5	Trinasolar TSM-NEG9RC.27-435	435 Wp	€94.12	393	11,136	0.85	21
6	Trinasolar TSM-430NEG9RC.27	430 Wp	€94.12	389	11,008	0.85	19

better worse — Colours and scores are relative to the 6 modules in this report only.

02 · WHERE THE DIFFERENCE COMES FROM

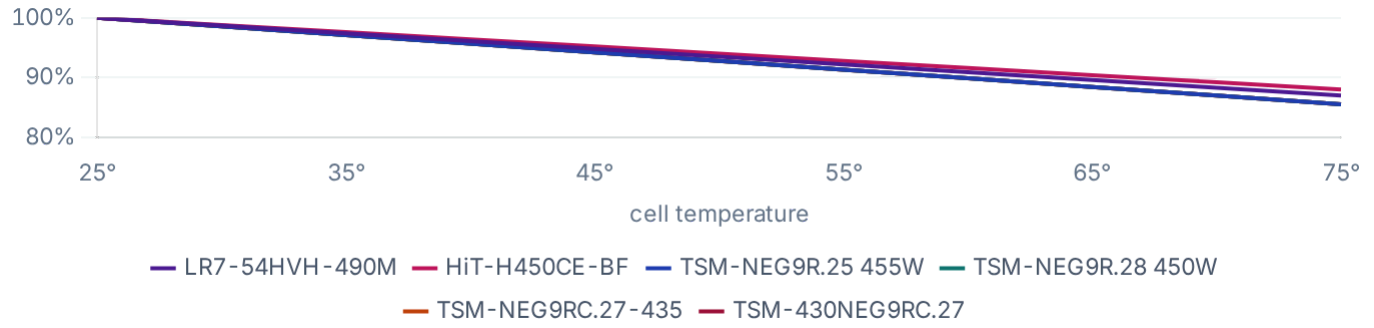
Cumulative energy over 30 years

Kilowatt-hours added up year by year. The gap widens with every year - by year 30 it is 1,750 kWh between the highest and lowest module.



Output retained as the cell heats up

A module is rated at 25 °C; a working roof sits well above it. At 55 °C the -0.24 %/°C module still delivers 92.8% of nameplate, the -0.29 %/°C module 91.3%.



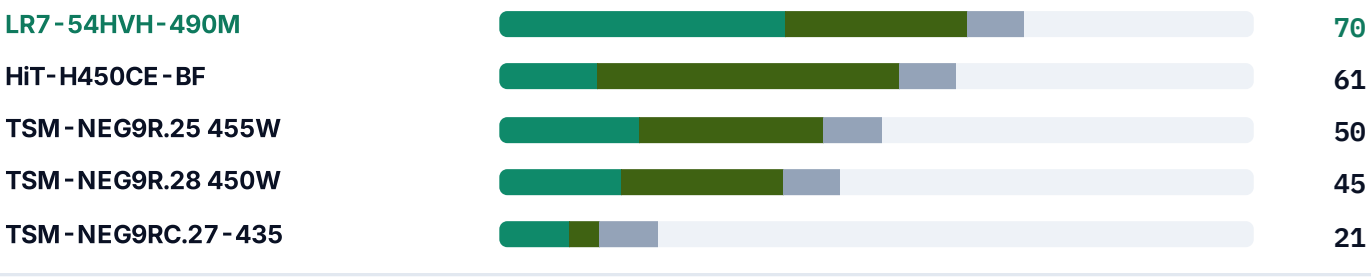
03 · MILESTONES

Cumulative kWh per module

MODULE	Y5	Y10	Y15	Y20	Y25	Y30
LR7-54HVH-490M	2,221	4,403	6,547	8,654	10,724	12,759
HiT-H450CE-BF	2,024	3,993	5,908	7,771	9,584	11,347
TSM-NEG9R.25 455W	2,040	4,039	5,999	7,920	9,803	11,648
TSM-NEG9R.28 450W	2,018	3,995	5,933	7,833	9,695	11,520
TSM-NEG9RC.27-435	1,950	3,862	5,735	7,572	9,372	11,136
Difference, best to worst	+293	+585	+878	+1,169	+1,460	+1,750

Ranks 1 to 5 shown. The remaining 1 module(s) are in the table on page 1.

04 · WHAT DRIVES EACH SCORE



Ranks 1 to 5 shown. The remaining 1 module(s) are scored in the table above.

30-year yield · 45% Cost per kWh · 40% Warranty · 15%

05 · HOW EACH FIGURE IS BUILT

1 Annual yield

Panel watts times the installation baseline of 1,000 kWh/kWp, times a temperature factor from the module's own coefficient at 55 °C, times whatever degradation has left that year.

2 Degradation

Each module ages at its own datasheet rate - LR7-54HVH-490M loses 1% in year one, then 0.35% a year. Where a manufacturer publishes no curve, the 2% / 0.55% convention is used.

3 Cost per kWh

Offer price divided by the thirty annual yields added together. The only figure that lets a dearer module win, and often it does.

4 Score

A 0-100 composite: lifetime energy 45%, cost per kWh 40%, warranty 15%, each normalised across this report's modules. A dimension they all tie on splits evenly.

⚠ What this report does not model

Energy price inflation, inverter and installation cost, local irradiance, weather, shading, or a degradation curve worse than the datasheet promises. Prices were entered by whoever requested this report, not quoted or verified by ComparePV. This compares modules against each other, not a full system business case.

06 · TERMS USED IN THIS REPORT

Cost per kWh (LCOE)
Offer price divided by lifetime yield. What one kilowatt-hour from this module actually costs. Lower is better.

Baseline yield
Energy one kWp produces per year. Set by installation type: ground mount around 1,100, pitched equator-facing 1,050, east-west 950.

Tc Pmax
Temperature coefficient of maximum power, %/°C. How much output drops per degree above 25 °C. Smaller is better in heat.

Score
Relative ranking of this offer within this set only. The same module at the same price scores differently against different competition.

The live version stays online

Change the temperature, the installation type or the prices and the comparison recomputes. Anonymous and shareable.

comparepv.com/panel-report/de9b26ea-57d7-4b28-9b09-fab2f36d19ec