

DIGITALIZING SOLAR ENGINEERING

Automating design and engineering of utility-scale solar PV projects to push the industry forward, make it more efficient and accelerate the energy transition

Reducing LCOE by focusing on early project phases

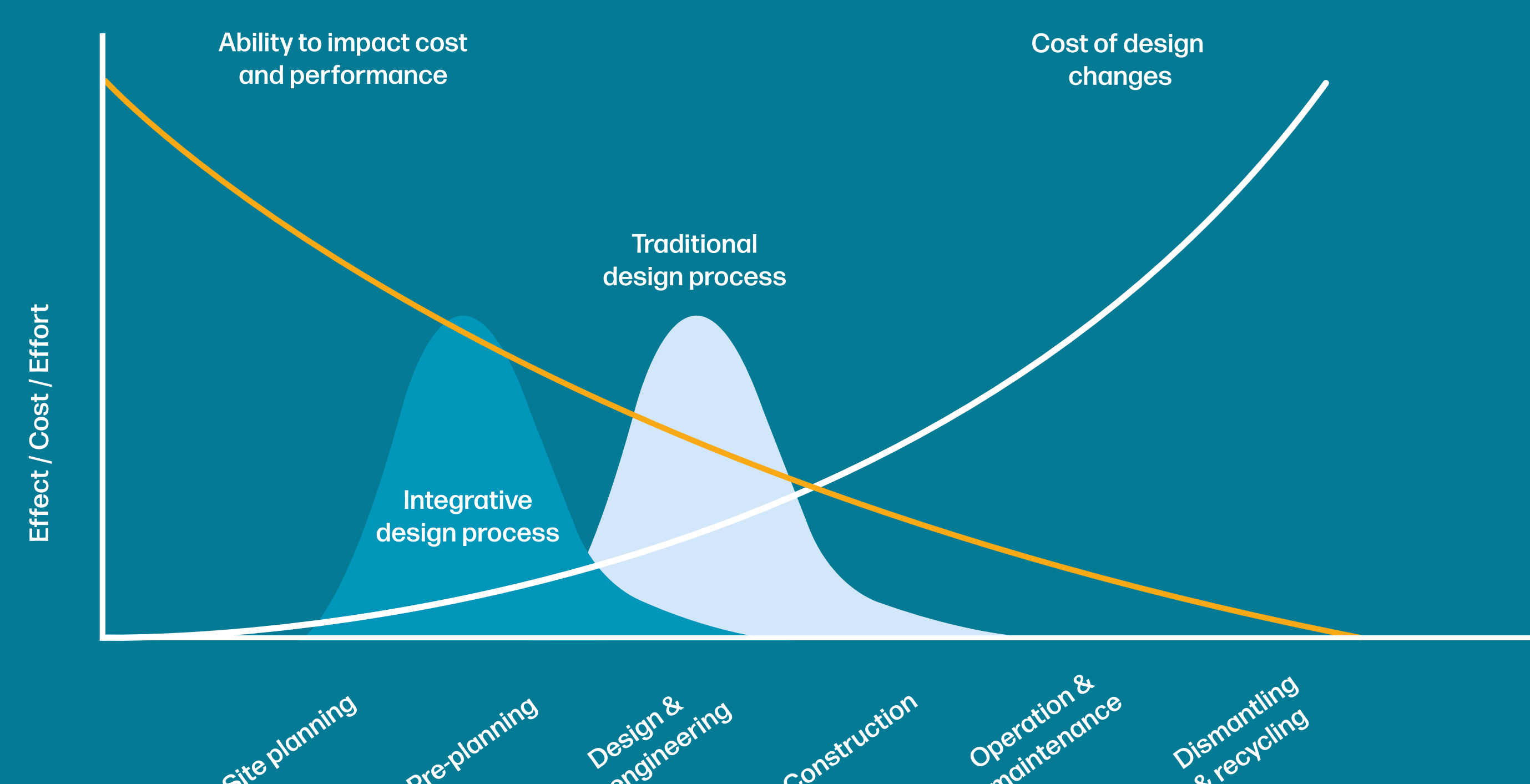
- According to the US Office of Energy Efficiency and Renewable Energy, $\frac{2}{3}$ of the costs of a PV project are soft activities like design and engineering.
- Focusing on early project stages is a strong opportunity for solar players to **reduce** LCOE. The framework anchors its roots on the MacLeamy Curve.
- The MacLeamy curve and the integrative design process is on what BIM methodology is based and first approaches to this dates from 1976.
- The further along is the project in the design process, the greater the cost of design changes. It makes a powerful case for an integrative design process.
- Traditional workflow for solar plant feasibility studies and basic engineering takes several weeks.
- This happens because traditional PV engineering and design is a **non-integrated workflow with too much back and forth**.

66%

Soft costs

34%

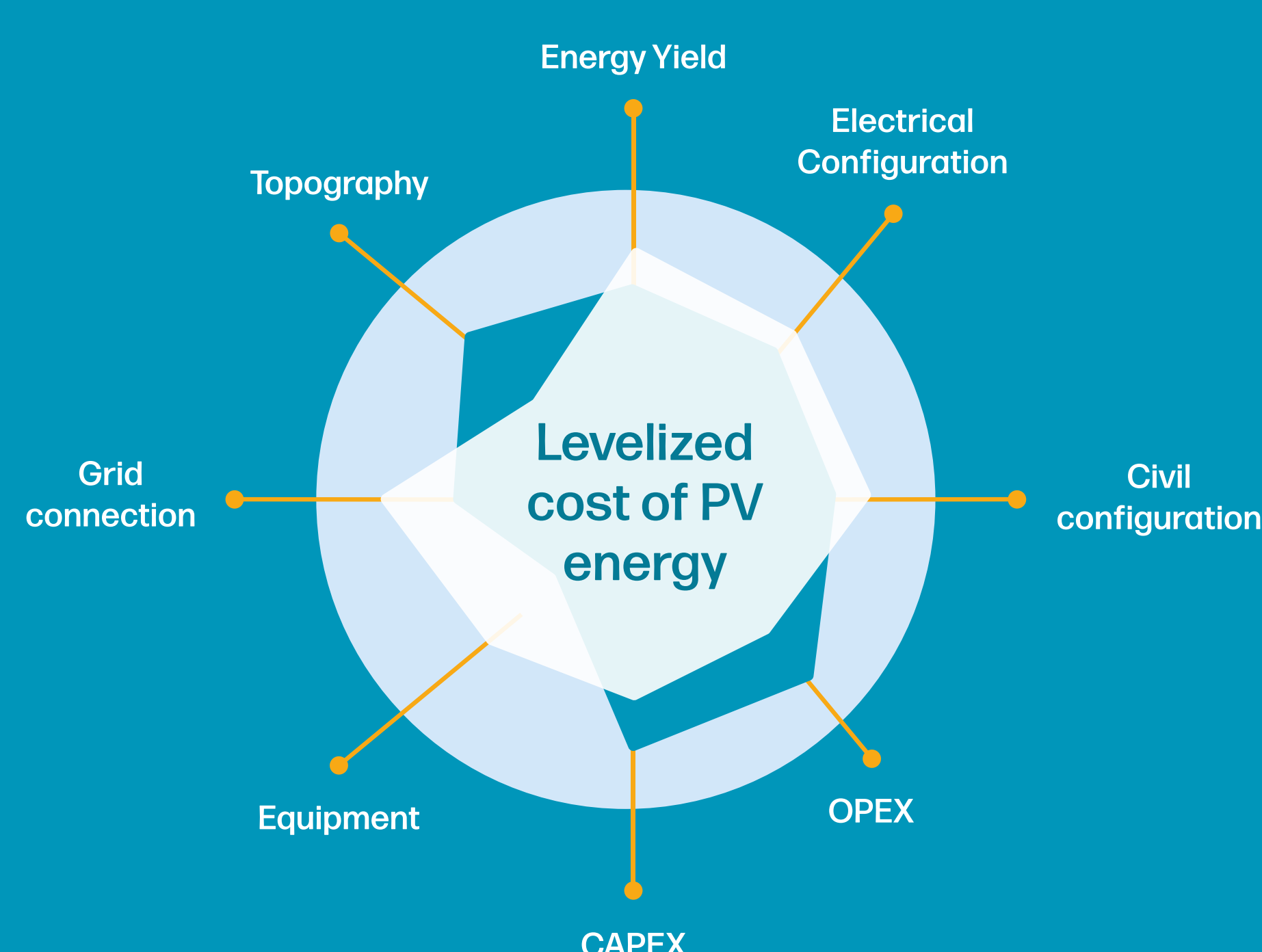
Hard costs



The goal

1. Make better, faster and cheaper decisions by letting solar designers refine inputs in order to optimize design, reduce costs, and increase the value of a PV system.
2. Easily create and compare dozens of designs for a given site. Perform quality analysis to figure out the trade-offs between design, system cost, system footprint, energy yield and maintenance.

How? Enabling 360° analysis to make profitable decisions in minutes



Step by step

- **Smoothering the planning & prospecting process**
An automated planning process facilitates decision-making.
- **Accelerate time-to-layout**
Fastening the process means taking repetitive tasks off the plate and focusing on added value ones.
- **Optimize the PV project**
The goal is to choose the best LCOE. Optimizing also means working smart.
- **Get the technical documentation**
Detailed technical documentation is essential for the tendering process.

Tailoring solar digitalization to the US market

23.6 GW 15%

of installed solar capacity
in the US in 2021

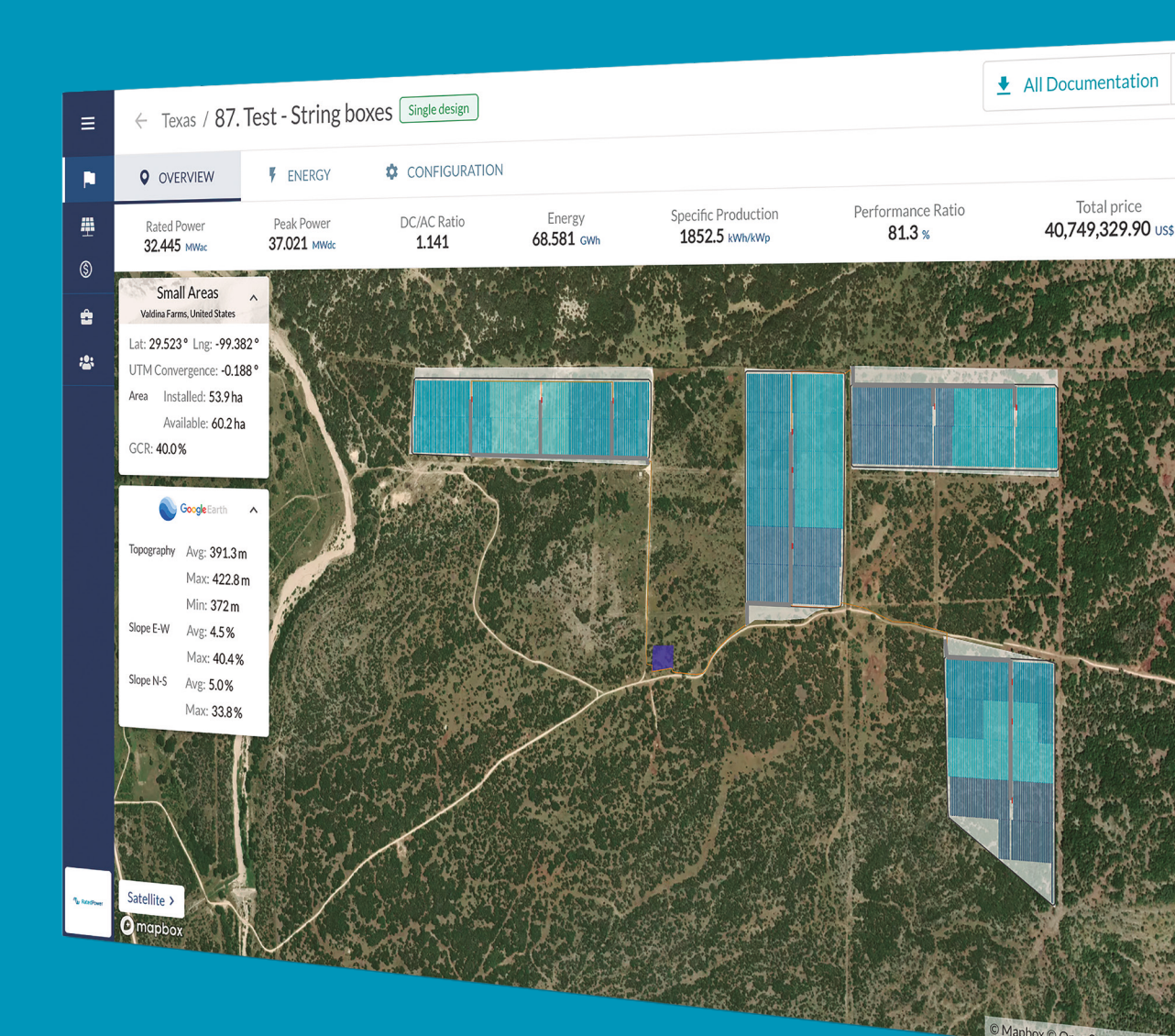
of total global PV additions
in 2021

Taking these numbers into account, when building a **standard software** that can be used worldwide, the particularities of the PV market in the United States market must be considered.

1. **Module technology:**
Mono c-Si vs CdTe
2. **Electrical standards:**
NEC & IEEE vs IEC
3. **Unit system:**
imperial vs international

Industry outlook: Solar + storage

With 135 GW of PV capacity additions and only 5 GW of battery storage deployment in 2020, it seems like a requirement to be able to more rapidly integrate these two technologies in order to address the hour-to-hour variability of solar. **Software solutions** will need to adapt to this new reality and provide solutions that can allow the faster study of this kind of projects.



An automation software should generate a detailed BESS layout according to the land constraints of the user. It should be able to meet capacity requirements, and include different system design options, such as AC or DC coupling. The software would also have to include a battery energy calculation model, with the capability of simulating different dispatch strategies."

Félix Ignacio Pérez Cicala
Software Developer & PV Engineer at RatedPower



Discover more