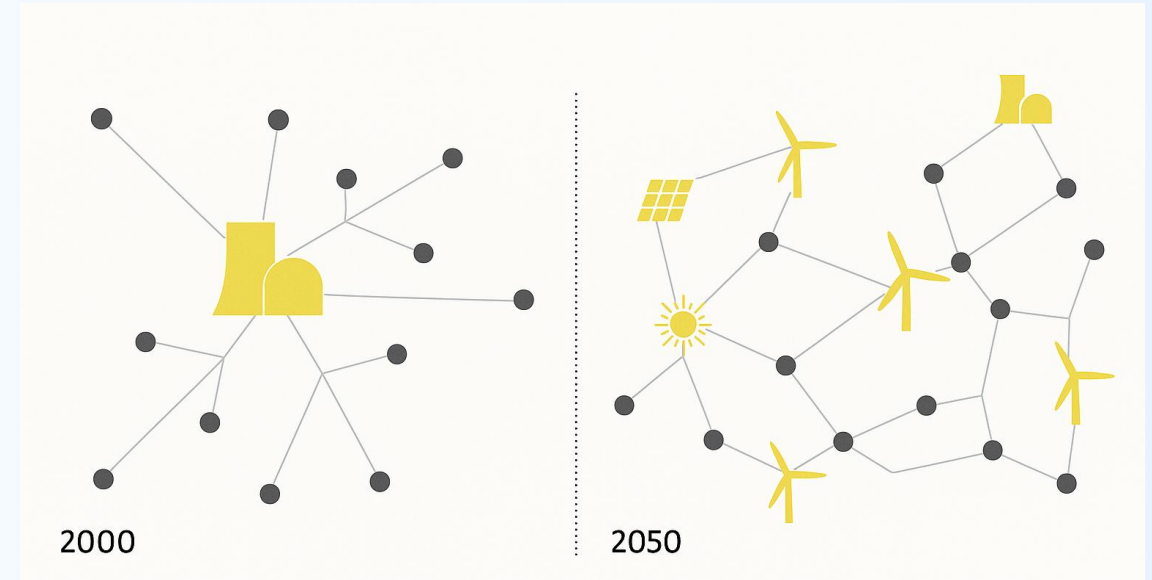




NCCS Gap Analysis: PV and DER

ESC on cybersecurity in the electricity sector

Brussels, Oct 16, 2025

Today's goals & scope

Goal:

- Gaps: Initial framing
- Solution highlights

Scope

- NCCS – Yes
- NIS\CRA – No



Why listen to me

eurostat 

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 English

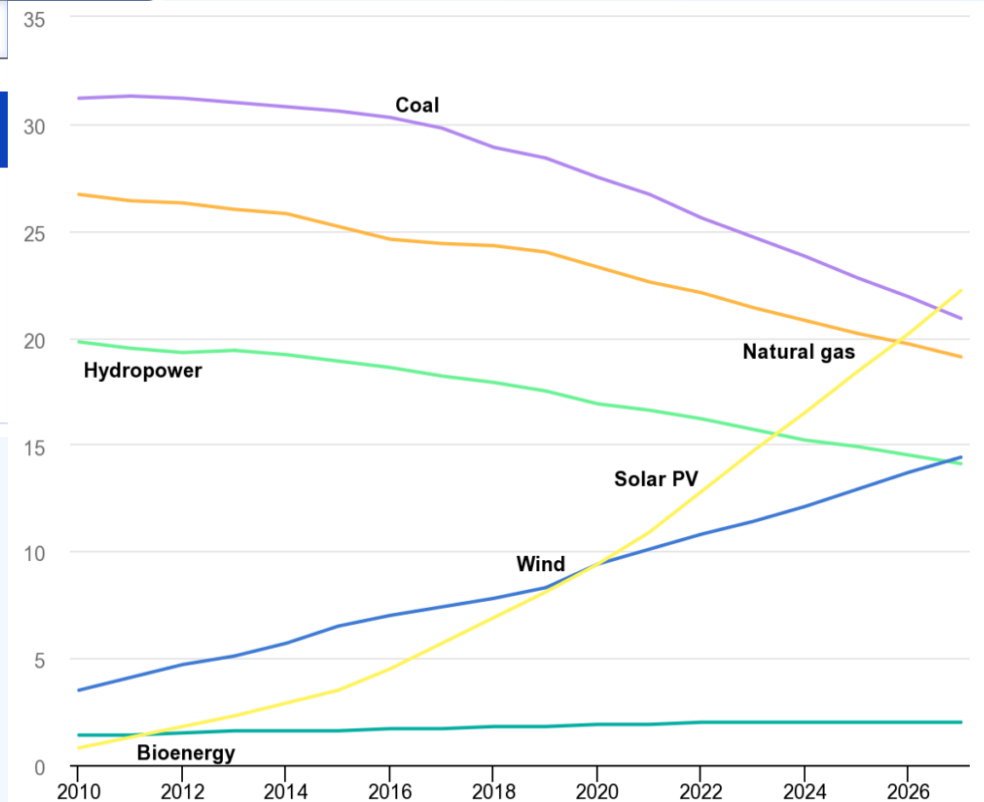
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NEWS ARTICLES | 29 September 2025

Solar: main source of EU electricity in June with 22%



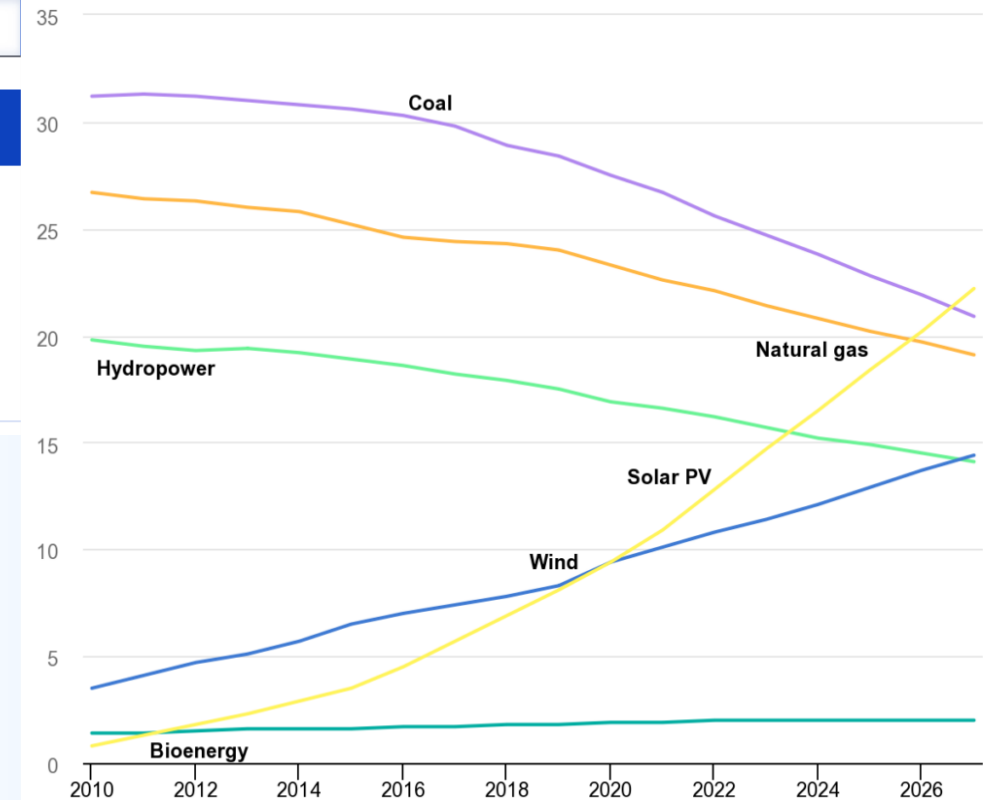
Source: IEA 2022; Share of cumulative power capacity by technology, 2010-2027



Why listen to me

Solar: main source of EU electricity in June with 22%

- Elected by members
- SolarPower Europe – 40 years, 300 members
- Independent expert (SolarDefend)
- Global perspective (US, AUS)



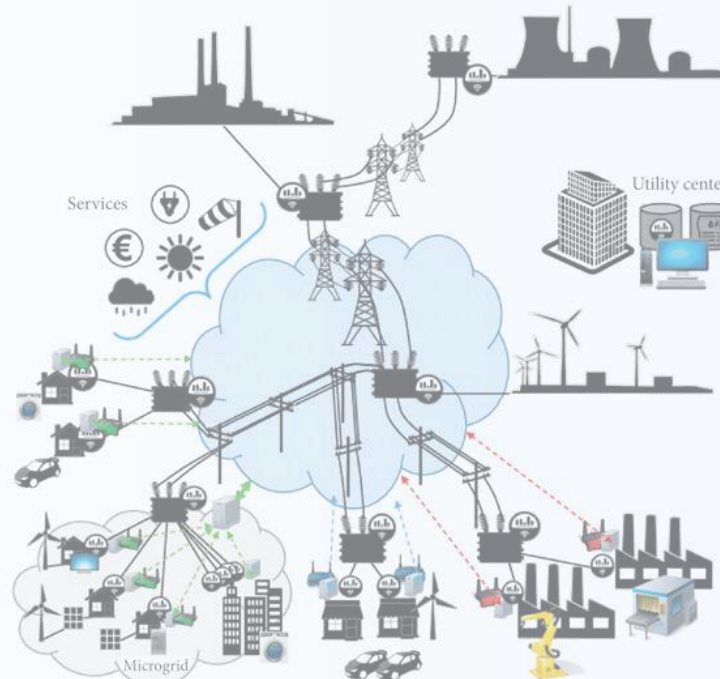
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Some numbers

Paradigm Shift for the European Grid

- **Consumers becoming producers**
- **>10 million** solar installations powering Europe and UK
- **>75GWp** (residential only)
- **>450GWp** total power

Power grid



Internet



Some numbers

Paradigm Shift for the European Grid

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What's next?

(2030 estimates)

- Heat Pumps (100-**300GW** peak)
- EV Chargers (100-**150GW** peak)
- Datacentres (**25GW** peak)
- Batteries



Smart Grid



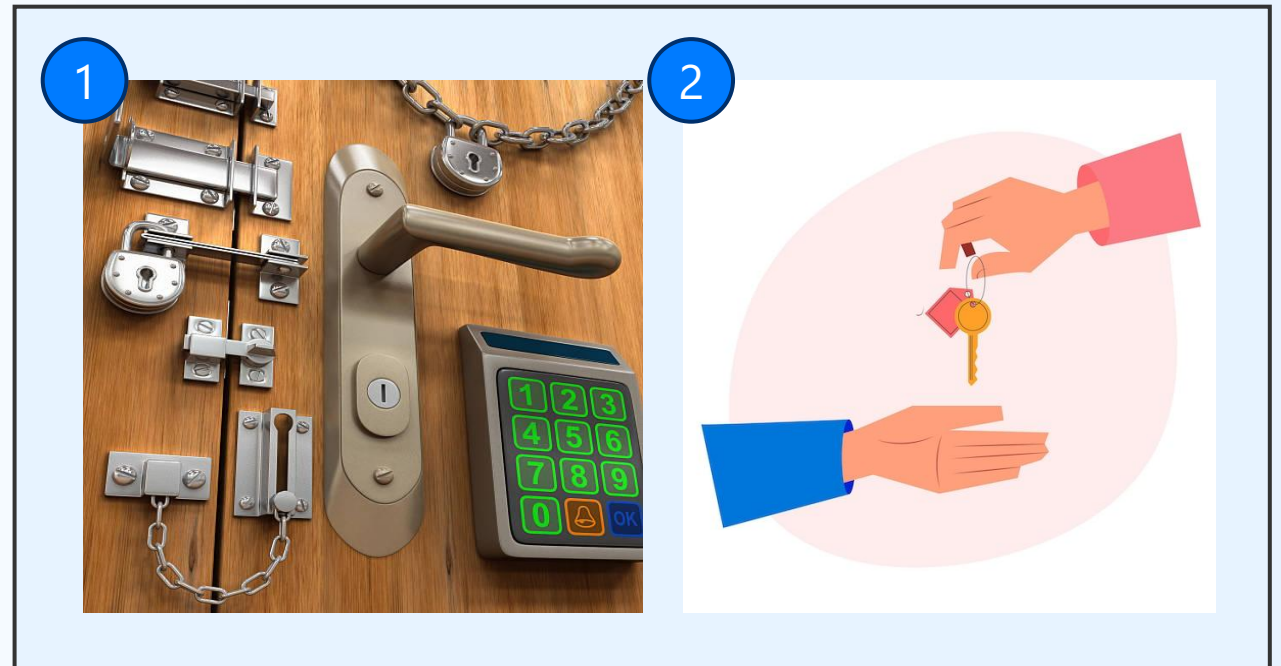
The Problem

Smart Grid Manipulations

- A system built on low-cost \ consumer logic (like the 1990s internet)
- Critical infrastructure definitions do not apply (eg. ECII Criteria)
- 10 GW $\neq$ Σ 10GW

Two cyber problems:

1. Technical – protective measures
2. Political – sovereignty of supply



The Solution (Tools)

In scope for today

- Interconnection permit requirements
- Non-price procurement criteria
- Export & Flexibility contracts & renewals

Out of scope

- Laws (NIS 2, CRA, Germany's KRITIS, Lithuania's Article 733, etc)
- Tariffs
- Standards & Certifications
- Insurance requirements



Some Complexity

- Union-wide coordination \ consensus required
- New types of companies (grid startups?)
- The solar sector is actually 2+ sectors



The Consumer Segment

1

Consumer solar



Residential
2-30kW



C&I
50-1,000kW

The Industrial Segment

1

Consumer solar

2

Utility solar



Common Utility
1-50MW



Large Utility
50MW – 500MW

Key Stakeholders

Key players

1

Consumer solar

Residential Installers, C&I Installers,

**** Inverter OEMs**

VPP platforms & operators

2

Utility solar

Developers & EPCs

**** IPPs & Asset Owners**

PV Monitoring Companies

O&Ms

OEMs

BESS and Tracker Operators

Investment funds & Insurers



Key Stakeholders

	Key players	Perceived owner
1 Consumer solar	Residential Installers, C&I Installers, ** Inverter OEMs VPP platforms & operators	 
2 Utility solar	Developers & EPCs ** IPPs & Asset Owners PV Monitoring Companies O&Ms OEMs BESS and Tracker Operators Investment funds & Insurers	 



The Solution (requirements)

In scope for today

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What TSOs and DSOs can require

- Bind system owners to critical infrastructure requirements of your country

The Solution (requirements)

In scope for today

- Interconnection permit requirements
- Non-price procurement criteria
- Export & Flexibility contracts & renewals

What TSOs and DSOs can require

- Bind system owners to critical infrastructure requirements of your country
 - Localization of **operational control**, not data. (e.g. TikTok settlement, Tesla in China settlement)
 - Audits
 - Supply chain risk analysis
 - Foreign Direct investment audits
 - See attached "Legal Proposal to mitigate PV Cyber Risk"

The Solution (requirements)

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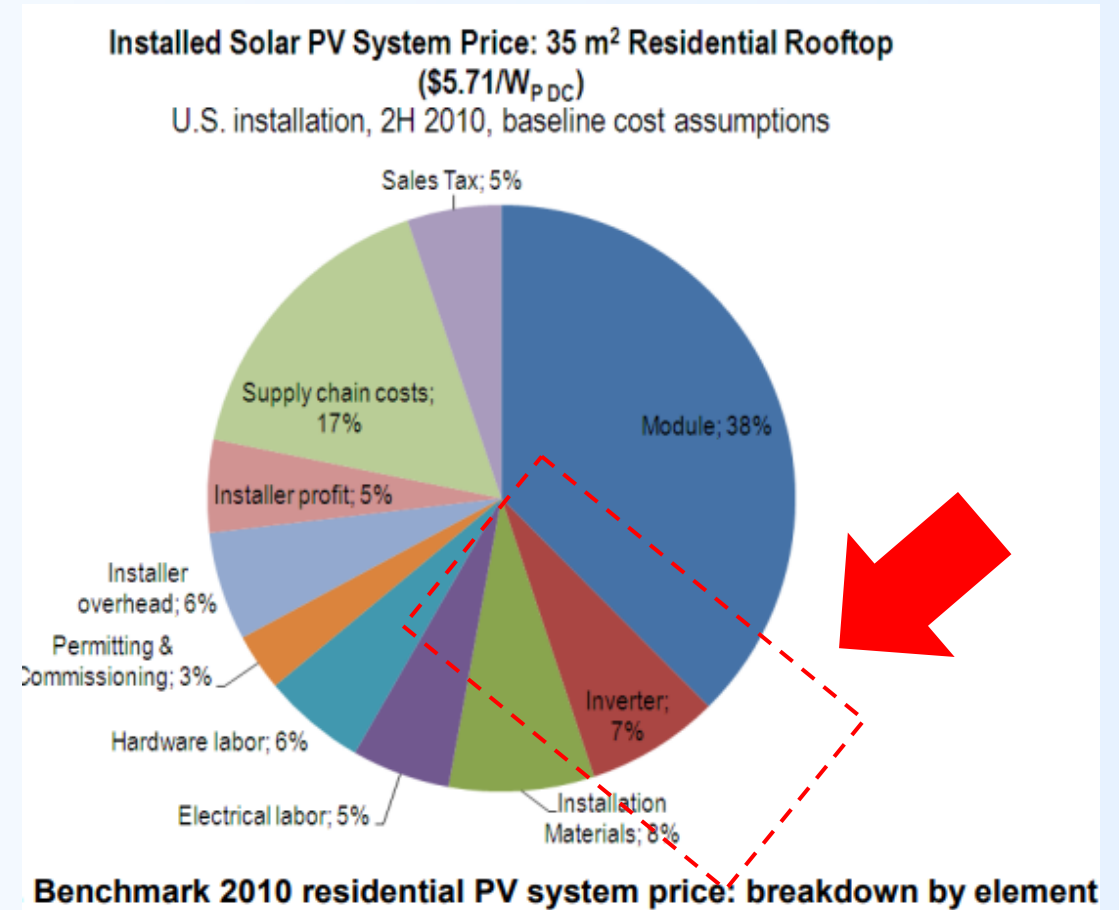
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- **Extend ECII criteria to "aggregated" systems!**

Frequently Asked Questions

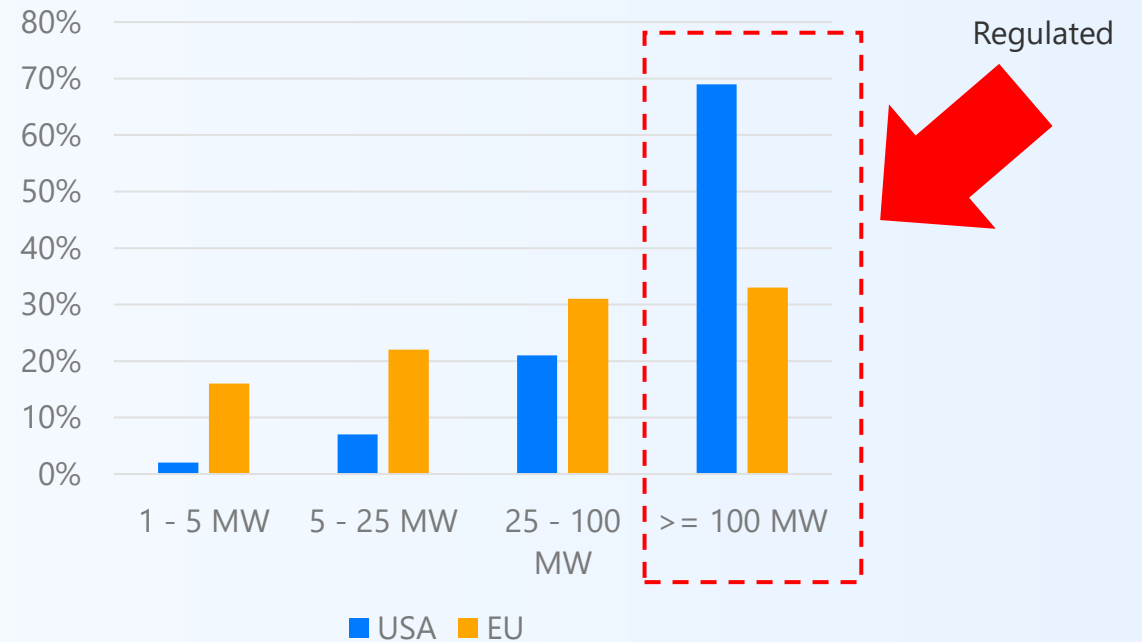
- Common concerns
 - Impact on solar electricity costs
 - Impact on solar job market
 - Impact on green energy goals
 - Impact on energy independence goals
 - Impact on trade relations: reciprocity principle
- SolarPower Europe concerns:
 - Costly retrofits
 - Distrust of industry (e.g. Nuclear)
 - “Digital Asbestos” problem
- Important fact
 - Inverter lifetime = 10-15 years



Annex: Global references

- USA
 - NERC CIP 15
- Germany – 99.2% of 110GW is unregulated as KRITIS
- China
 - MLPS 2.0 (2019)

PV Plant, by Size



Source: WoodMac

Summary

- Europe's grid is digitizing
- New risks of security & sovereignty to be addressed
- Solar is first of several technologies
- For an attacker: 10 GW = Σ 10GW, defenders must catch up
- ENTSO-E \ DSO Entity members decide:
 - **"Who can connect"**
 - **"Who can sell electricity"**
- Should add Cybersecurity & Sovereignty criteria
- What criteria? **Extend existing critical infrastructure rules**
- Union-wide coordination: A "must"
- ACER can **update ECII** (10 GW = Σ 10GW)
- NRAs can do more (CRA, NIS2, other tools) – let's talk



Questions



Thank you



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<https://www.linkedin.com/company/solardefend/>

