Merchant PV, a new dawn for PV development and challenges

Session 1:
Merchant PV and commercial PPAs: a new perspective on competitive PV development

EU PVSEC – September 9th, 2020

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GENERAL DIRECTOR
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What is **UNEF**?

The Spanish Photovoltaic Union **(UNEF)** is the reference Association of the Spanish PV sector.

An Association that brings together **practically all the industry**: producers, installers, engineers, manufacturers of raw materials, modules and components, distributors and other related companies.

UNEF also holds the Presidency and Co-Secretariat of **FOTOPLAT**, the Spanish Technological Photovoltaic Platform.

The Platform brings together Universities, Research Centers and leading companies of photovoltaic R & D in Spain.
UNEF represents

≈ 470 companies

85% of the PV sector

- Installers & Engineers
- Mixed
- Producers
- Manufacturers
- Distributors
2019: New record of PV capacity

Utility-scale ground mounted (MW)

Installed annually
Accumulated

Annual installed capacity (MW)
Accumulated installed capacity (MW)

Source: REE
What about the future? PNIEC

Renewables 74% of electricity generation

Renewables 42% of final energy consumption

Emissions - 23 % with respect to 1990

In 2030

Parque de generación del Escenario Objetivo (MW)

<table>
<thead>
<tr>
<th>Año</th>
<th>2015</th>
<th>2020*</th>
<th>2025*</th>
<th>2030*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eólica (terrestre y marítima)</td>
<td>22.925</td>
<td>28.033</td>
<td>40.633</td>
<td>50.333</td>
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<tr>
<td>Solar termoeléctrica</td>
<td>2.300</td>
<td>2.303</td>
<td>4.803</td>
<td>7.303</td>
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<tr>
<td>Bombeo Mixto</td>
<td>2.687</td>
<td>2.687</td>
<td>2.687</td>
<td>2.687</td>
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<tr>
<td>Bombeo Puro</td>
<td>3.337</td>
<td>3.337</td>
<td>4.212</td>
<td>6.837</td>
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<tr>
<td>Biogás</td>
<td>223</td>
<td>211</td>
<td>241</td>
<td>241</td>
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<tr>
<td>Otras renovables</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>80</td>
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<td>Biomasa</td>
<td>677</td>
<td>613</td>
<td>815</td>
<td>1.408</td>
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<td>Carbón</td>
<td>11.311</td>
<td>7.897</td>
<td>2.165</td>
<td>0</td>
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<tr>
<td>Cogeneración</td>
<td>6.143</td>
<td>5.239</td>
<td>4.373</td>
<td>3.670</td>
</tr>
<tr>
<td>Fuel y Fuel/Gas (Territorios No Peninsulares)</td>
<td>3.708</td>
<td>3.708</td>
<td>2.781</td>
<td>1.854</td>
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<tr>
<td>Residuos y otros</td>
<td>893</td>
<td>610</td>
<td>470</td>
<td>341</td>
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<tr>
<td>Nuclear</td>
<td>7.399</td>
<td>7.399</td>
<td>7.399</td>
<td>3.181</td>
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<tr>
<td>Almacenamiento</td>
<td>0</td>
<td>0</td>
<td>500</td>
<td>2.500</td>
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<tr>
<td>Total</td>
<td>107.173</td>
<td>111.829</td>
<td>133.802</td>
<td>160.837</td>
</tr>
</tbody>
</table>

*Los datos de 2020, 2025 y 2030 son estimaciones del Escenario Objetivo del PNIEC.

Source: PNIEC
We need a **stable deployment**

Stable evolution of photovoltaic capacity (MW) to meet the 2030 target scenario of PNIEC

Source: REE and PNIEC
Network access and connection permits (GW) for PV

Uds: GW

Source: REE
How do we get there?

Market (€/MWh)

Auctions
Held by the regulator for a price for the energy generated (€/MWh)

PPAs
Private energy purchase and sale contracts at a certain price (€/MWh)

Merchant
Obtain the income only from the market assuming the price risk

The new projects have three formulas of economic exploitation with different degrees of income stabilization.
Prices during covid-19

Average daily price (€/MWh)

- 2020
- 2019
- 2018
- 2017

State of alarm
(14th March)

March

| M | T | W | T | F | S | S | M | T | W | T | F | S | S | M | T | W | T | F | S | S |

April

| W | T | F | S | S | M | T | W | T | F | S | S | M | T | W | T | F | S | S | M | T | W | T | F | S | S |
Impact of covid-19

Daily average of spot price in Spain (€/MWh) and Renewables share (%)

- RES Share (%)
- Market price (€/MWh)

Source: OMIE and REE

Start of social distancing measures

January
February
March
April
May
June

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Impact on Utility Scale Plants

• **Short term:**
  • Delays in the planning process
  • Delays in the connection of plants in construction

• **Medium/Long term:**
  • How the investors will integrate these day’s low electricity prices in their investment decisions?
  • Will the banks change their financial terms?
Recovery Plan Proposal

Ground Floor

- Speeding the planning process
- Auctions
- Access to good terms financing
The PV sector on the crossroad: Auctions versus merchant. What is the best solution?

Auctions:
• Give stability
• Easier finance
• Allow more players

But... too aggressive prices

Difficult finance
Big pressure on technological enterprises
The PV sector on the crossroad: Auctions versus merchant. What is the best solution?

P.P.A.:
• Strong pressure to reduce prices due to COVID19 electricity prices and auctions prices
• Not enough offtakers for PNIEC targets

Merchant:
• Inadequation of the marginalist price system
• Big incertitude about future price curve: canibalitation
• Not all the banks are ready to finance
• Less players
Thank you for your attention