

WORKSHOP

Urban-rural partnerships – Key to the energy transition

6 October, 13.00 to 14.30



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Creating Renewable Energy Urban-Rural Partnerships

Dr. John Green, Plymouth City Council



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Unlocking the potential

- How public bodies can procure energy in a manner that supports rural, community, renewable energy
- New subsidy free business models



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Procurement Issues

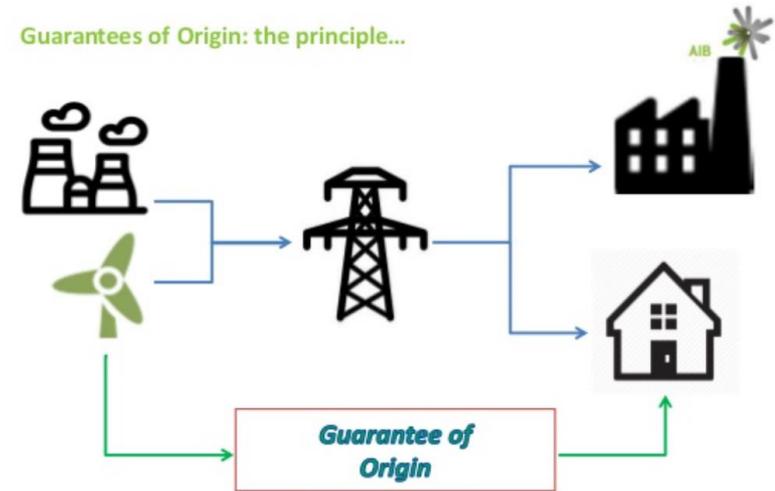
- Most electricity from renewable sources generated in rural areas
- Most electricity consumed in urban, sub-urban & industrial areas
- How can you match supply with demand?

Guarantee of Origin (GO) certificate is an instrument defined in EU legislation that certifies electricity is from renewable energy sources

1 GO = 1 MWh from renewable sources

Some suppliers claim to offer '100% renewable' tariffs, despite holding no contracts with renewable generators

Guarantees of Origin: the principle...

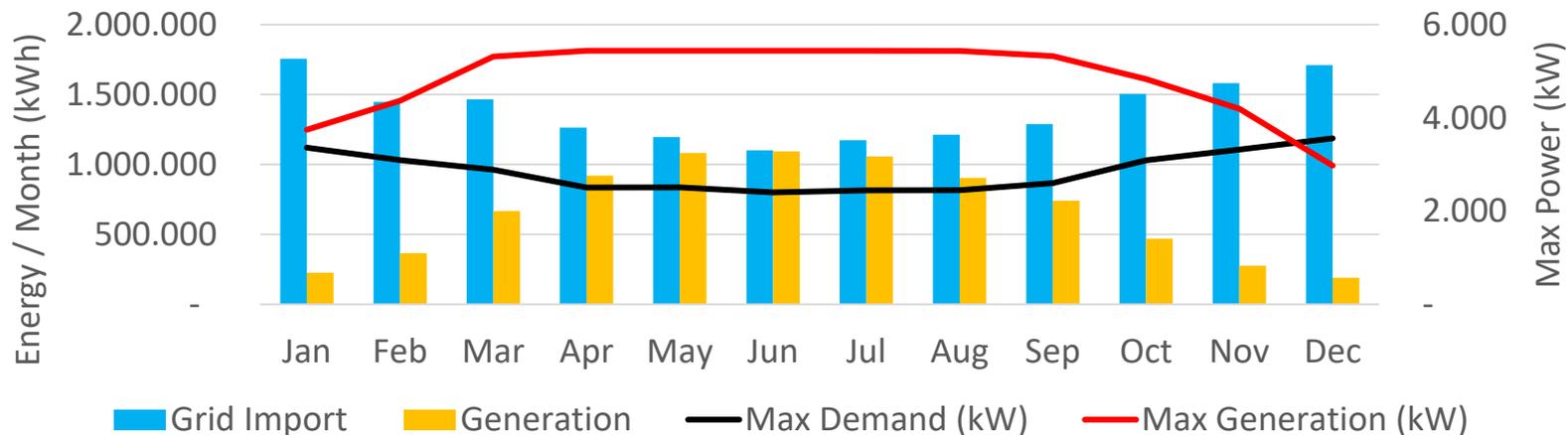


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Matching demand with supply

- Are there financial benefits to both parties from matching urban demand with rural renewable energy generation?
- Energy from generation matches very well
- Significant mismatch in peak demand / generation power

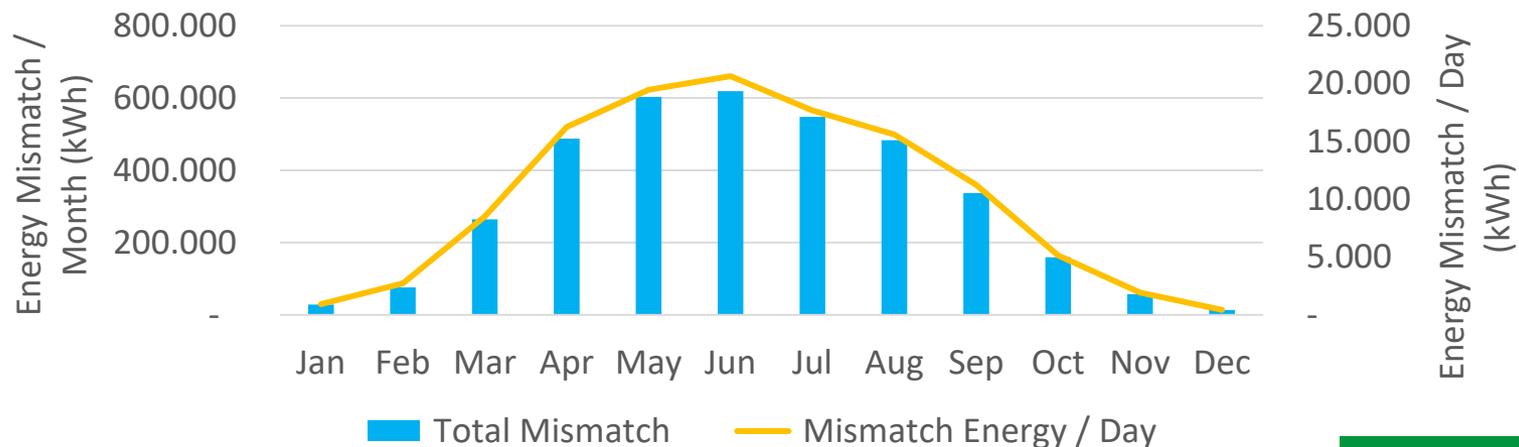


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Matching demand with supply

- How should we match supply and demand: at each moment, half-hourly, or annually?
- Does energy storage enable a better economic model for the local community-owned, renewable energy generators?
- The difference in power values translates to mismatch per year of 3.6GWh – this is 50% of generation
- Peak power export from difference is 4.6MW in June



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What is the value?

- Impact on Power Purchase Agreement (PPA) offered by better real-time matching would be €0.005 per unit of electricity (kWh)
- Annual value in the order of €1.20 / kWh of energy storage capacity
- Given energy storage prices in the order of €275 / kWh this implies a simple payback of over 200 years
- Would need balancing value of over €0.10 / kWh (20x higher) to achieve close to a 10-year payback
- Balancing urban / rural does not create an economically viable route to market for new renewable energy generation
- Introducing battery systems to rural renewable generation can enhance returns by providing flexibility services



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European Regional Development Fund



Option 1: Guarantess of Origin

Pros:

- Low cost
- Certificates to demonstrate supply matching our demand
- Easy to explain

Cons:

- Low demand for GOs means their purchase is widely considered to be accounting exercise, providing no additionality (i.e. does not lead to new renewable energy generation)
- There will be times of the day/year when generation from renewables does not match the implied demand (i.e. the demand from organisations stating that they purchase green electricity will be greater than supply at certain times)

Costs:

- Approximately €0.50 per GO (for example, Plymouth City Council it would add approximately €8,000 to the Council's energy costs per annum)



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Option 2 – Direct wire



Pros:

- Supports a specific project, ensuring additionality
- Carbon emission reductions achieved are clearer to communicate
- On-site demand for electricity reduces network fees and charges, which improves the economics
- Opportunities to export electricity from the site for our own consumption in other buildings

Cons:

- High initial cost
- Difficult to achieve due to land availability and constraints near to existing demand

Costs:

- Very dependent upon the site, scale and technology used
- A sleeved Power Purchase Agreement to enable other Council buildings to purchase the electricity exported from the site, at fee of €2/MWh



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Option 3 – Sleeved PPA



A sleeved Power Purchase Agreement (PPA) is where a generator enters into an agreement to supply electricity over the distribution network. Contracts arranged through a licenced supplier.

Pros:

- Supports a specific project, though not necessarily a new project

Cons:

- Not clear whether there is additionality in cases where the project is already generating and receiving subsidies

Costs:

- An additional cost above the price that is being paid for grid electricity
- Where supply and demand are not matched on half-hourly basis, an additional balancing fee is paid to supplier



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Option 4 – Contract for Difference

Contracts for Difference (CfD) structured as a financial instrument. Serves to smooth changes to components of the long term electricity price.

A strike price is agreed, with payments being made between the buyer and seller dependent upon the difference between this strike price and the market price for electricity.

Pros:

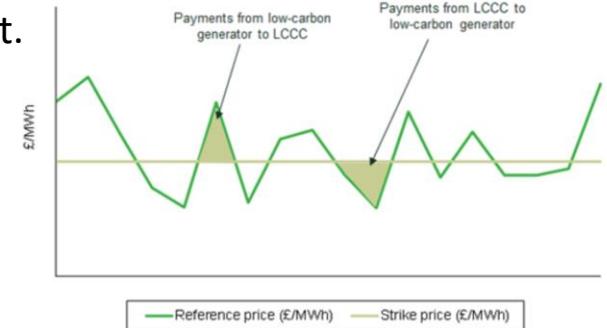
- Provides certainty in the long term (e.g. 15 years) for some component of the electricity price
- Ensures that there is additionality if it leads to a new project being constructed

Cons:

- It is not easy to explain a CfD
- It does not in itself require generation from renewable energy, nor a new project

Costs:

- It could reduce long term costs for electricity
- The cost will be driven by the requirements for specific technology type, length of contract and pricing structure



Source: Oxera.



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Q&A



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