

ENERGY SOLUTIONS CONFERENCE 07

Micro Electricity Generation !

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MicroGen

- WHAT is it and WHY would we want to do it?
 - MicroGen is local electricity generation
 - More efficient and requires little infrastructure
 - Encourages sustainability
 - Electricity is the ONLY dynamic energy source
 - MicroGen can have zero fuel bills
 - It has the single biggest lift in the new BER Building Energy Rating, (A+ rated buildings)
 - Zero energy and zero carbon buildings
 - Carbon taxes, Fuel Miles, etc

Sources of MicroGen

- Solar Photovoltaic
- Wind Turbines (2 classes)
- Water Turbines
- CHP, (fuel required)
- Generators, (Diesel, Bio fuel, etc)
- Sizes conflict, 50kw(p), 250kw(p), 1MW?
- 2 Main uses, Independence & Auto Prod

Planning exemptions.

- Current domestic exemptions in place
- Commercial exemptions very advanced
- Up to 20kw Wind Turbine (Class 1)
- Solar photovoltaic cladding issues
- Economics of auto production are a NO BRAINER !

Republic of Ireland, Feb 2007							
Exempted Development Provisions for Micro-Renewables							
Micro-Renewable Technology	Conditions						
Stand-alone Wind Turbines	10m max mast height (max total height = 13m)	No exemption for building-mounted turbines	6m max rotor diameter, plus blade material must not deflect telecoms signals	Min distance from boundary = total height + 1m, or distance from nearest neighbouring inhabited dwelling < 23dB(A), or < 5 dB(A) above background noise	3m minimum clearance between lower tip of rotor and ground	Only 1 turbine per house and must be behind front wall of house	No advertising or logos
Building-Mounted Wind Turbines	No exemption	15cm max between plane of pitched roof and the panel	50cm max between plane of flat roof and the panel	50cm min from edge of roof	On front or back roof		
Building-Mounted Solar Panels	12m ² aperture area or 50% of total roof area, whichever is lesser	2m max height	Behind front wall of house	Min 25m ² of useable space remaining			
Stand-alone Solar Panels	12m ² aperture area	2m max height	Behind front wall of house	Min 25m ² of useable space remaining			
Ground Source Heat Pumps	Max 1m alteration to ground level	Min distance from nearest neighbouring inhabited dwelling < 23dB(A), or < 5 dB(A) above background noise	2.5m ² max size	50cm min from edge of wall	Behind front wall of house		
Air Source Heat Pumps	No exemption						
Water Source Heat Pumps	No exemption						
Biomass	Class 2 of existing exemptions amended to include fuel storage tanks or structures						
Hydro	No exemption						

Notes:
 A planning exemption which has been used for Solar Photovoltaic is still available in the 2001 planning regulations exemptions list to 25 sqm.
 Whilst, the above exemption allows wind turbines up to 6 metres in blade diameter, all turbines above 3M in diameter will need significant sites to meet the very low noise controls at the boundary or with neighbours, (i.e. large land banks or farms)
 A wind charger will not meet these noise regulations. A braking control system will be needed to avoid noise complaints.
 Surface Power designs all its systems to comply with the tightest regulations.
 If you install a wind system that fails a noise test, you will be forced to remove it.

Safety, Standards, Regulation & Consultations

- Safety is paramount, CER - ETCI.
- EN50438 is the new EU standard for BGC
- New Wind Turbine standard (Pre-EN61400-2)
- CER – Up to 1 MW exempt from Nov 7th
- CER – New micro generation process
- CER – SMART metering
- CER – SMART, REFIT & REGO payments
- G10 and G10 compliance issues

Domestic options

- Off grid is where you are completely independent: OFG -> PGT
- On-grid is now considered a basic grid connection due to age
- Private grid systems are both grid connected and off-grid systems combined to take advantage of SMART
- Big disadvantage to domestic basic grid connections is the power outage factor.
- (exc comm)

On-Grid Regulations – EN50438

- Only Solar PV makes sense currently
- 5.75 kw single phase or 11 kw 3-phase
- Only makes sense for daytime commercial use, such as schools, office buildings, etc
- Free electricity within 7 years
- PGT systems are not limited by size
- PGT systems can also export if required

Auto Production

- A grid connected solar or wind system which slows down or stops your meter
- A 1 MW system should not phase anyone
- Limiting factor is MEC, (Max export capacity)
- Regulatory and technical requirements are straight forward
- No Queue

Envelope Economics

- Wind farm gets 7c per kWh
- Auto production Wind/Solar gets the cost of unit purchase which is being offset by slowing the meter: i.e. 18.03c per kWh
- Significant carbon certificates
- No fuel requirement
- ROI: is a no brainer !

What to do ?

- You CAN make free electricity using wind and solar systems, doing it is easy !
- Governments will encourage you (by grant or other method) to change from Oil to a fuel source, why –
- VAT.-VAT is money, you have it and they need it !
- It's important to understand that a Government's objectives are different to personal objectives
- Its very unlikely that the Dept of Finance will fund initiatives which remove exchequer income from fuel reduction

Case Study Example



Summary

- Micro Generation can have no fuel bills
- Slows down your meter/ stops your meter
- Single phase, 3 Phase, 230 VAC, 10KVA, etc
- Is the most dynamic energy type and can even process water from waste
- Is unlimited in size of installation
- Is fully scalable with time
- Has the added benefit of carbon offsets



- Thank You.
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