

RENEWABLE ENERGY DIVERSIFICATION CUTTING COSTS



BORD BIA - POULTRY & EGG CONFERENCE 2014

ROB MEADLEY – HEAD OF RENEWABLE ENERGY SERVICES

1. Reducing Energy Costs
2. Improving Energy Efficiency
3. Generating Your Own Energy



Reducing Energy Bills

Switch it OFF!



The cheapest unit of energy is the one you don't use!

Reducing Energy Bills

It is important to know and understand the terms and rates of your energy bills

Terms to consider:

- Price per unit (€/kWh) – day/night rates
- Standing Charges – admin and network charges
- Capacity Charges – for available capacity
- Socio/Enviro levies – rebates or exemptions - PSO Levy
- Contract period – usually 3 years
- Metering – standard or 1/2 hourly

Options for Reducing Energy Bills

- Review and negotiate with energy companies yourself
- Use professional energy broker services - able to provide tailored contracts from a range of electricity providers
- Use buying groups – usually have a preferential agreement with one electricity provider and buy in bulk

Capacity & Backup

- Assess your import / export requirement – future proof for business expansion, it may be worthwhile upgrading site infrastructure
- Possibility of demand response payments for stand-by generators – could be worthwhile



Energy Efficiency

For the energy you have to use – ensure it is used efficiently!



**Voltage
Optimisation**

LED Lighting



Inverters



Electric Motors

Energy Efficiency

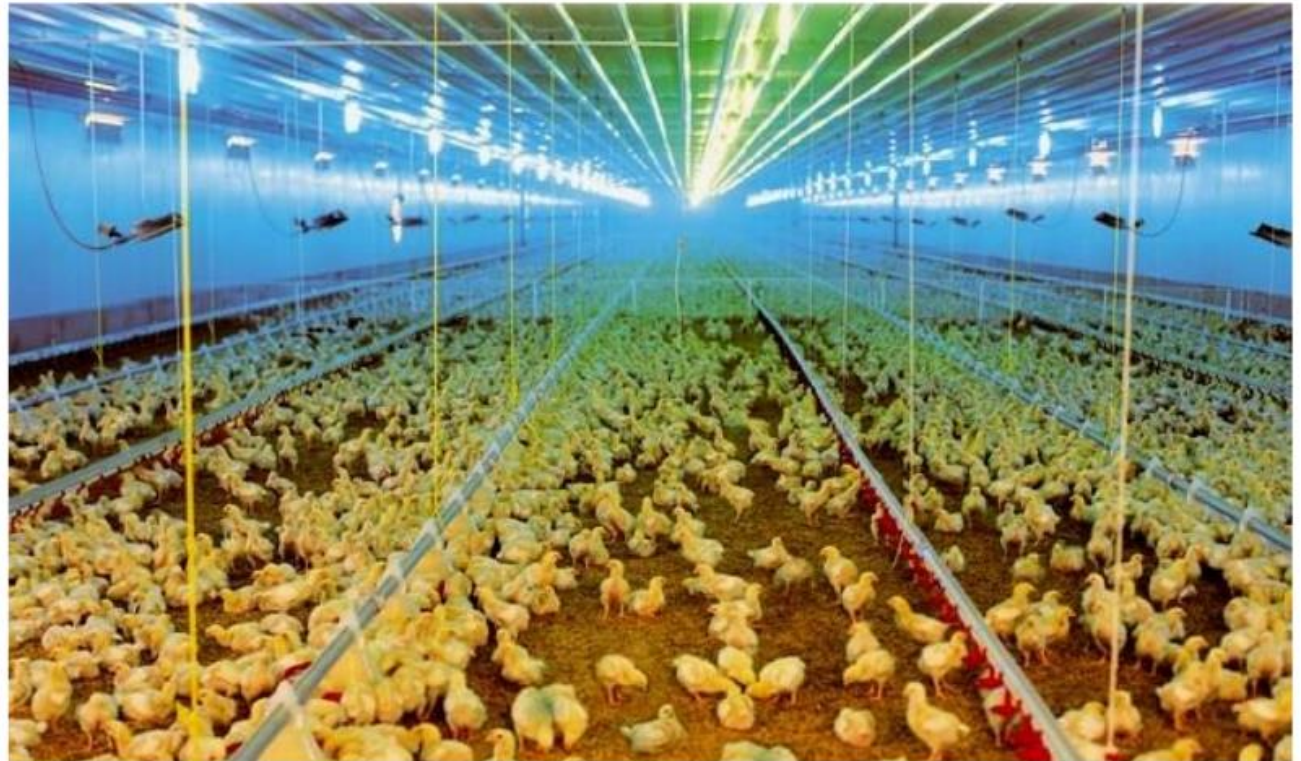
- ✓ Review onsite energy usage – use professional Energy Consultants – Energy Audits

- ✓ Take the easy steps first!
 - ✓ Timers
 - ✓ Motion Sensors
 - ✓ Thermostats
 - ✓ Energy Saving Bulbs / LED

- ✓ Review capital cost versus savings on existing buildings
- ✓ New buildings – No brainer!

LED Lighting

- Up to 90% energy reduction
- No flickering
- Lower operating temperature
- Improved animal welfare



Generating Your Own Energy



Making it Pay!

Renewable Energy Technologies

Review your available resources:

- Buildings
- Land
- Feedstocks / Wastes

Review your energy requirements:

- Electricity – all year round / seasonal
- Heat – base load / high peak demands

Assess potential feedstocks:

- Slurry / manures
- Biomass – wood / agri by-products
- Energy crops
- Sun
- Wind

Limiting Factors

Grid Connection

- Check early on as part of any feasibility
- Local capacity varies and can be taken up by other projects and affect your connection cost



Planning Permission

- Varies greatly across the country but it is always advisable to take professional advice
- Consult early with local stakeholders and consultees
- Stress – “farm based project”

Farm Scale Wind – 10kW – 500kW



Solar PV – Ideally Suited?

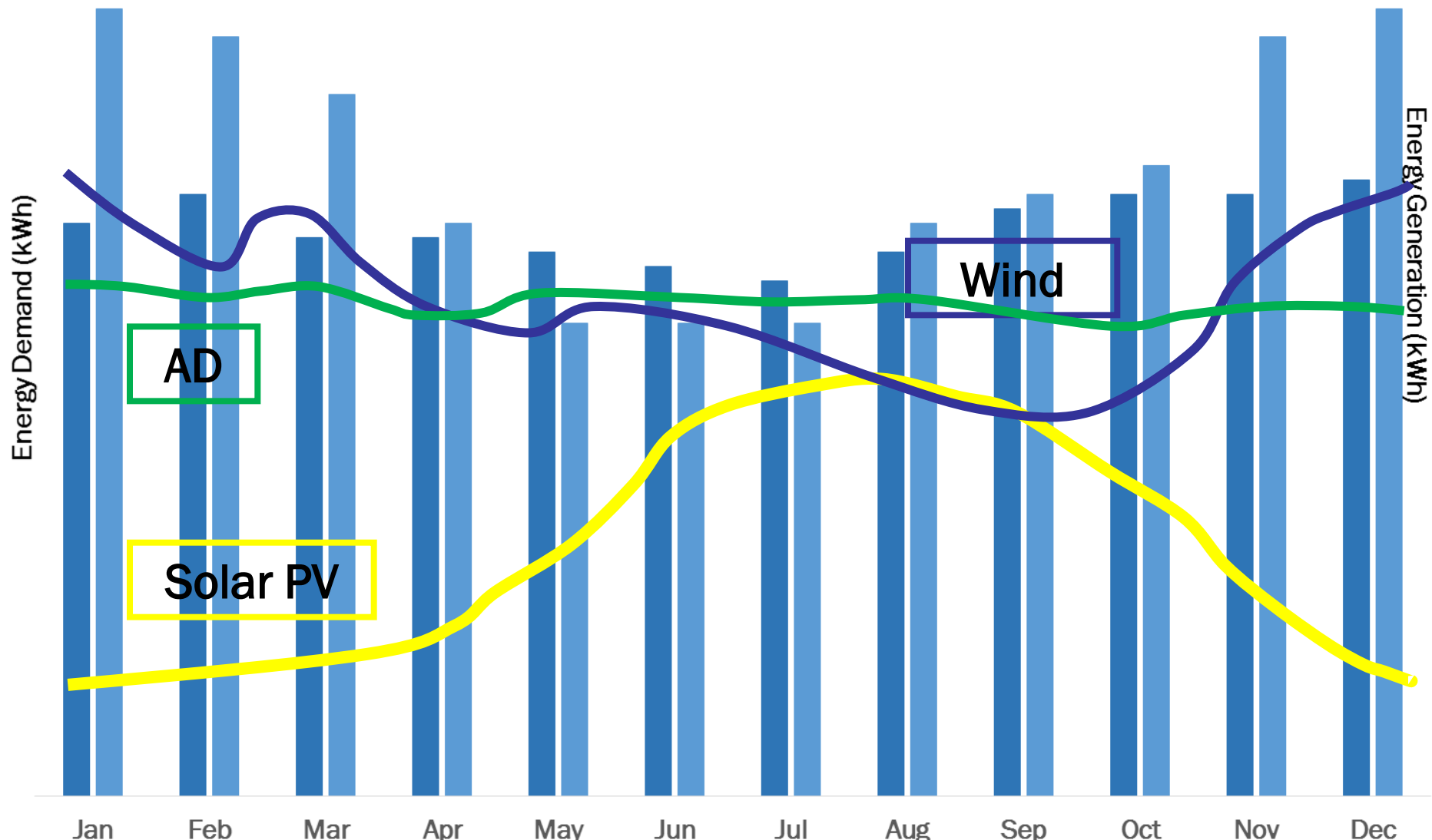


Anaerobic Digestion (AD)

- Available Feedstocks – slurry / manure
- Onsite use for the electricity (or neighbour)
- Onsite use for the heat (or neighbour)
- Utilisation of spare labour



Matching Demand to Generation



Biomass Heating



Heating Options



- New Buildings Or Existing Sheds
- One boiler per shed
- District heating system

System Design

- Need to carryout a heat demand / loss calculation for the proposed system (ideally by an independent heating engineer)
- Take your time with the system design and try to keep it simple!
- Practicalities and “Hassle Factor”
- Have your system design reviewed by an independent expert
- Consider your feedstock and design in any flexibility requirement



Heat Losses!



Fuel / Feedstock



Woodchip



Waste Wood



Wood Pellets



Straw



Litter



Energy Crops

Fuel / Feedstock

- Can you be self sufficient?
- Is there a reliable local supply of fuel / feedstock?
- Moisture content
- Particle size
- Chemical composition
- Air quality emissions
- Fuel supplier – certification?
- Careful planning for fuel storage and handling
- Ensure the boiler warranties are not void by using the wrong type of fuel!

Fuel / Feedstock

Fuel	Price per unit	kWh per unit	pence per kWh
Wood chips (30% MC)	£110 per tonne	3,500 kWh/t	3.1p/kWh
Wood pellets	£210 per tonne	4,800 kWh/t	4.4p/kWh
Natural gas	4.9p/kWh	1	4.9p/kWh
Heating oil	58p per litre	10 kWh/ltr	5.8p/kWh
LPG (bulk)	43p per litre	6.6 kWh/ltr	6.5p/kWh
Electricity	15.0p/kWh	1	15.0p/kWh

Costs & Returns: 199kWth Woodchip boiler

Boiler, buffer tank, pipework, storage hopper = £150,000

- Boiler operational time 40% per annum
- Subsidy Income (paid on metered heat use = £32,000 per annum
- Return 18.5%* + (including costs, interest and depreciation)

* (Based on woodchip £110 per tonne using 80 tonnes per annum & Includes a £10,000 saving on Bulk LPG)

Additional Benefits.....

- Drier litter – easier to clean out sheds
- Reduced ammonia and carbon dioxide levels – improve environment and bird health
- More even house temperature – benefit whole flock
- Bird performance (weight gain and general health) also improved – increase profitability!



Project Considerations

- Service and Maintenance – can you enter into an agreement with the installer?
- Insurance – is the project correctly insured?
- Back up systems – Do you need back up systems in place?
- Heat meters – subsidy rules or charging users are heat meters correctly installed?
- What are the possibilities of Combine Heat & Power (CHP)?

Recommendations

1. **Switch off** – review energy use and modify usage if possible
2. **Shop around** – use professional services to get the best deal for your business
3. **Improve efficiency of energy used** – review use and look at new technology and/or upgrading existing equipment
4. **Generate your own** – review available renewable energy technologies and take advice to get the best project to meet your business needs using available resources to maximise onsite usage

The Future



Any Questions???

