

Energy Management for SME's

#1 - Introduction

Shannon Region

June 2007

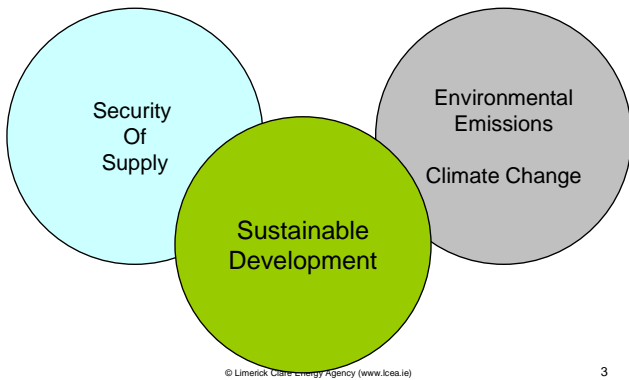


Contents

- Established July 05
- Investors are Limerick County Council & Clare County Council (no external funding)
- Sponsors include, LEADER groups in Limerick & Clare & University of Limerick
- LCEA is one of 16 agencies forming an all – island association - AIEA



Sustainable Development





SME's & Energy Management

- SME's are particularly vulnerable to increases in the cost base
- Energy inflation in Ireland has been running at 10 – 20 % per annum for the past 5 years
- SME's typically do not have dedicated staff to address their energy costs
- After staff, high energy costs are now being cited as deterrents for investment by large multi national companies
- SME's employ more people than large multinational companies
- Difficulties for SME's are less visible but have the potential to effect far more people in our economy



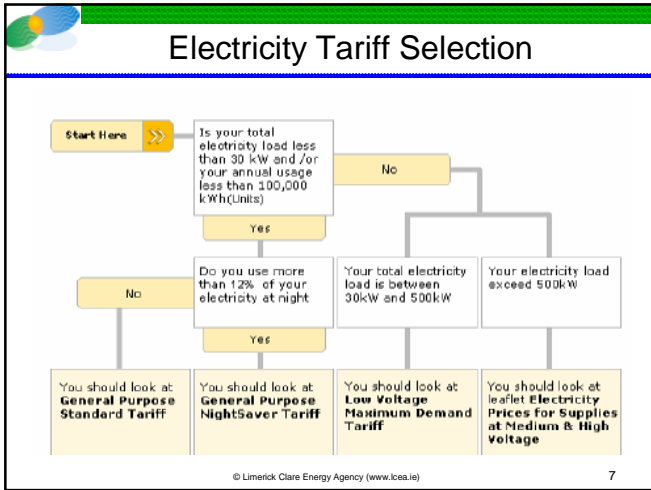
Energy Costs

- Energy cost is usually your first indicator of energy performance
- Energy cost can be deceiving as an indicator
- Energy costs are sometimes difficult to get (direct debit, filing by period / cost code)
- Important that you have a clear understanding of all energy costs
- Energy will have environmental costs attached in the near future.
- Need at least two years energy bills to begin energy management (three is better)
- Must gather performance indicator data for the same period.



Electricity Providers

- Public Electricity Supply (**PES**)
- Independent Power Provider (**IPP**)
 - Airtricity
 - Energia Veridian
 - Bord Gas
 - ESB IE
 - CHP Power



Energy Standard Unit

Energy is sold in many different units.

To make sense of your energy you need to convert all forms to a standard unit – kWh.

| | | | | | | |
|--------------------------------------|--------------|---|-------|---|-----|-----|
| Natural gas | Therms | x | 29.31 | = | kWh | |
| | Cubic feet | x | 0.303 | = | kWh | |
| | Cubic metres | x | | = | kWh | |
| Liquid petroleum gas (LPG) | kWh | x | 1 | = | kWh | |
| | Litres | x | 7 | = | kWh | |
| | Tonnes | x | 13900 | = | kWh | |
| Gas oil (35 sec) | Litres | x | 10.6 | = | kWh | |
| Light fuel oil (290 sec) | Litres | x | 11.2 | = | kWh | |
| Medium fuel oil (950 sec) | Litres | x | 11.3 | = | kWh | |
| Heavy fuel oil (3500 sec) | Litres | x | 11.4 | = | kWh | |
| Coal | Tonnes | x | 7600 | = | kWh | |
| Anthracite | Tonnes | x | 9200 | = | kWh | |
| Wood chip (Moisture content 35%-50%) | Tonnes | x | 3500 | = | kWh | |
| Wood chip (Moisture content >50%) | Tonnes | x | 2800 | = | kWh | |
| Wood pellets | Tonnes | x | 4800 | = | kWh | |
| Electricity | kWh | x | 1 | = | kWh | |
| Total energy use for the year | | | | | - | kWh |

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- ## Performance Indicators
- Choose a performance indicator that:-
 - Makes sense to you
 - Is used in your industry
 - Common Performance Indicators
 - kWh / m² of Treated Floor Area
 - kWh / Bed
 - kWh / meal
 - kWh / person using service
 - kWh / unit of production
 - kWh / hours of service performed
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Standard Calculator

Excel Spreadsheet

Prepared by LCEA

Download from Web site

www.lcea.ie





Energy Policy Elements

| ITEM | DESCRIPTION | PAGE |
|------|--|------|
| 1 | Declaration of Commitment | 1 |
| 2 | Policy Statement | 1 |
| 3 | Objectives | 2 |
| 4 | Action Plan | 2 |
| 5 | Resources & Costs | 3 |
| 6 | Management | 4 |
| | Glossary of Energy Terms | |
| A | Appendix | |
| A1 | Schedule of Buildings & Equipment | A1 |
| A2 | Summary of Fuel Consumption | A2 |
| A3 | Specific Energy Analysis | A3 |
| A4 | Specific Environmental Impact Analysis | A4 |
| A5 | Performance Indicators (Bench Marking) | A5 |



Energy Policy

Draft Policy available to download from LCEA web site

www.lcea.ie

Energy Management Process

Five Step process

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Step 1

- Throughout organisation
- Must start at the Top
- Energy Policy - Statement of Commitment
 - Link to business objectives
 - Measurable targets
 - Allocate responsibility
 - Link to environmental policy

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Step 2

- Making use of available data
- Carrying out a site survey
- Get hold of the last 12-months energy and water bills, longer if possible.
- Prepare a summary spreadsheet and chart the consumption pattern
- Read the supply company meters, record the data and check the bill

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Step 3

- Establishing objectives and targets
- Organise the human resources
- Identify financial resources
- Prioritising energy schemes
- Gaining support

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Step 4

- Initiating prioritised energy schemes
- Appoint "Energy Champion"
- Involve all areas of workforce
- Address:
 - Programme
 - Resources
 - Responsibilities
 - Priorities


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Step 5

- Establishing a management framework
- Monitoring & targeting
- Establishing continual improvement
- Energy Awareness and Motivation Campaign
 - Training
 - Low Risk/Low Cost
 - Potential Savings : 5 to 25%

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| Level | Energy Policy | Organising | Motivation | Information Systems | Marketing | Investment |
|-------|--|--|---|--|---|--|
| 4 | Active commitment of top management | Fully integrated into general management | All staff except responsibility for saving energy | Comprehensive system with effective management reporting | Extensive marketing within and outside organisation | Positive discrimination in favour of 'green' schemes |
| 3 | Formal policy but no commitment from the top | Clear delegation and accountability | Most major users motivated to save energy | Monthly monitoring and targeting for individual premises | Regular publicity campaigns | Same appraisal criteria used as for all other investment |
| 2 | Unadopted policy | Delegation but line management and authority unclear | Motivation patchy or sporadic | Monthly monitoring and targeting by dual type | Some ad-hoc staff awareness training | Investment with short-term payback only |
| 1 | Unwritten set of guidelines | Informal part-time responsibility | Some staff awareness of importance of energy saving | Invoice checking | Informal contacts used to promote energy efficiency | Only low cost measures taken |
| 0 | No explicit policy | No delegation of energy management | No awareness of the need to save energy | No information systems or accounting for consumption | No marketing or promotion | No investment in energy efficiency |



What Are Energy Benchmarks?

- Petrol Consumption - MPG of a car at 56 mph
- Electricity / Gas - kWh / bedroom / M2 / annum
- Electricity / Gas - kWh / M2 / annum
- Water - Litres / guest / day
- Electricity / Gas - kWh / units of production / annum

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Benefits of Benchmarking

- Assess your performance against other similar hotels
- Compare like with like
- Benchmarks look to the future not the past
- Assess potential savings for Gas / Electricity and water
- Set realistic targets for energy reduction (not a % reduction)
- Avoids over-investment
- Targets Poor performing hotels and individual areas for investment / staff training

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Energy Efficiency Opportunities


- Heating
 - Are temperatures correct? Neither too hot or too cold?
 - Are thermostats and time clocks set correctly?
 - Is the boiler plant serviced and maintained on a regular basis?
 - Are pipes and storage tanks insulated and is the insulation in good condition? Are windows and doors kept closed when heating is on?
 - Is heating isolated in unused areas? Can heating system be 'zoned'?

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Energy Efficiency Opportunities

- Heating
 - Heating by fossil fuel is preferred to electricity
 - Heating with biomass is gaining popularity
 - District heating is very efficient
 - Avoid using 'supplementary heating' unless absolutely essential
 - Regular servicing of boilers identifies inefficient operation and reduces cost



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Energy Efficiency Opportunities

- Hot Water
 - Can water temperature be controlled?
 - Don't heat it when it's not needed
 - Timer control is almost always worthwhile
 - Store at correct temperature
 - 60 °C is adequate for most applications
 - Have local hot water generators been considered for locations remote from central boiler plant?
 - Consider Solar
 - REHEAT grant scheme

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Energy Efficiency Opportunities

- Air-Conditioning and Ventilation
 - Are heating and cooling systems in simultaneous use in the same part of the building?
 - Is 'free cooling' benefit of low temperature outside air used?
 - Do not cool below 24Deg C (22 Deg. C for hotels)
 - Do not heat above 20 Deg C
 - Use time controls and zoning
 - Where possible install cut off devices for manual override



Energy Efficiency Opportunities

- Air-Conditioning and Ventilation
 - Maintain the system regularly
 - More efficient lighting results in a reduced cooling load in air-conditioned buildings - an additional energy saving
 - Connect to your Building Management System – and get to understand how it works – or appoint someone who does.



Energy Efficient Lighting

LIGHTING CAN BE

40%

OF THE TOTAL LOAD



Energy Efficient Lighting

Controls

- Lights on only when required
- Automatic control
- Time switch
- Time lag switches
- Presence Detectors
- Daylight linking / switching
- B.M.S.





Refrigeration

- Commercial refrigeration energy use is a major cost in the food and drink industry
- Refrigerators usually run throughout the year
- Often set to a lower temp. than required
- Location impacts on the efficiency of the cooling process



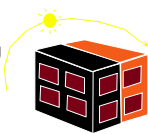
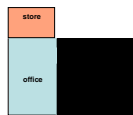


Building Zoning

to meet requirements of different areas

According to:-

- occupancy patterns
- temperature requirements
- different tenants
- number of floors
- orientation
- more than one building
- separate circuits





Remember

- Energy is a controllable cost but only if it is managed
- Savings from energy conservation go straight on the bottom line – that means more profit
- A 10-20% saving is generally achievable by simple no or low cost measures
- The longer you wait the more you waste



LIMERICK CLARE
energy agency



RURAL
RESOURCE
DEVELOPMENT

Energy Solutions for Sustainable Development

Energy Management for SME's

#1 - Introduction

Thank You
