

Sustainability of Public Services - Policy and Practice

1 June, 2007

Wind Turbine Generator

**Antrim Area Hospital
Northern Health and Social
Care Trust**

Introduction

- Long term commitment to energy conservation and improved efficiency
- Ongoing capital investment (modest!)
- Targets:
 - 1990 – 2000: 15% reduction in energy usage: ACHIEVED
 - 2000 – 2010: 20% reduction in CO₂
 - Difficult to achieve by 'traditional' means:
 - Natural gas – CHP (Whiteabbey, Moyle, Braid Valley)
 - Ongoing energy conservation / efficiency measures
- Renewable energy

Wind Turbine Generator

- Planning phase:
 - Wind resource assessment (strength & availability)
 - Location:
 - AAH on greenfield site
 - No dwellings within 90m, few within 400m
 - Elevated site
 - Minimum visual disturbance

Wind Turbine Generator

- Planning (continued)
 - 5 locations considered – photomontages
 - Environmental Impact Statement (noise, flora, fauna, archaeology etc.)
 - Other impact (television interference, flight paths)

Wind Turbine Generator

■ Timetable

- Outline Planning Permission granted December, 2002
- Project funding approved January, 2003
- Tenders by October, 2003
- Full Planning Permission granted April, 2004
- Turbine installed January, 2005 (3 days)
- Fully operational, February, 2005
- Timescale of about 3 years from ‘idea stage’

Wind Turbine Generator

- Capital cost = £490,000 (Estimate £450,000)
- Central Energy Efficiency Fund grant of £400,000
- Industry practice of substantial prepayments
- Long lead times



Wind Turbine Generator

- Environmental benefits
 - CO₂ reduced by 1,500 tonnes
 - SO₂ reduced by 17 tonnes
 - NO₂ reduced by 5 tonnes



Wind Turbine Generator

- Financial benefits

	Planned
kWh generated ($\frac{2}{3}$ day)	1,800,000
Average cost per unit	5.5 p
Net annual savings	£92,000
Payback	4.9 years

Wind Turbine Generator

- Financial benefits (2006/07):

	Planned	Actual
kWh generated	1,800,000	965,000
Average cost per unit	5.5 p	7.8 p
Net annual savings	£92,000	£78,000
ROCs		£23,000
Payback	5.3 years	4.8 years

Wind Turbine Generator

- Lessons
 - Vagaries of nature
 - Strobing effect on laboratory
 - Expectations too optimistic?
 - Lower generation compensated for by higher electricity prices and ROCs
 - Otherwise, longer payback period
 - 9.2 years, without ROCs
 - 6.5 years, with ROCs
 - Entry barriers: need sponsorship

