Scottish Water’s approach to Energy Management and development

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Key strategic drivers

1. Large consumer – 450GWh c£45m p.a.
   Portfolio of 4500 supplies

2. Rising demand – growth & quality enhancement

3. Risk of rising prices & market volatility

4. Our water resources, assets, topography and people.
Energy ambition

**Short term 2018:**
- Host the generation of renewable energy amounting to over twice the level we consume – via private and self-investment on our assets.
- Continue to reduce the cost of providing water and wastewater services to our customers.
- Become the lowest carbon operator of water and wastewater services in the UK.

**Long term**
- Become self-sufficient in our energy needs – where economical to do so.
1. Energy Efficiency
- Installed over 4000 smart meters, improved operational control and optimisation
- Alternative treatment technologies – delivering least whole-life cost & carbon

2. Increase self-generation
- Deploying technologies that maximise value from our asset base
- Using treatment works and networks as energy factories

3. Hosting private investment
- Where compatible with providing excellent service quality, environmental protection and enhancement

An integrated “Single Programme” – seeking best return on investment for customers
Energy efficiency

FLOW AND LOAD MONITORING
ENERGY DASHBOARDING
STOD AND TRIAD MANAGEMENT
ELECTRICITY DEMAND SUBMETERING

VSD PUMPING

OPTIMISED DESLUDGING

HIGH EFFICIENCY AERATION
RELIABLE AND MAINTAINED INSTRUMENTATION
ADVANCED REAL TIME CONTROL
Self-generation: renewable diversification

**Hydro**
- 43GWh from 27 turbines
- 10 in development
- 17 sites operational
- 12 in development / planning

**Wind**
- 16 sites operational
- 30-40 in development / planning

**PV**
- 17 sites operational
- 12 in development / planning

**Anaerobic Digestion**
- Existing 6GWh food waste plant
- Sewage-fed plants Cumnock and Galashiels

**PV**
- Over 45 sites fully or partially sufficient

18% net reduction in carbon emissions since 2007

**Wind**
- Doubled our capacity since 2013
Hydro: Reservoirs and Water Treatment Works

Integrated into existing civils structures.

1 on compensation flow
1 on reservoir spill
2 on inlet to WTW

2.3 GWh p.a.

Annual generation greater than annual consumption.
Network – ‘in-line’ generation

• Zeropex ‘DifGen’

• UK first on a major trunk main

• Dual benefit – service and power

• Payback under 6 years

• Developed further…
  ➢ modular design
  ➢ pre-fabricated off-site
Wind – small scale

Stornoway Wastewater works
60% reduction
Anaerobic Digestion

- Make use & improve a redundant asset
- Supports SW growth and energy ambitions
- Supports national waste policy
- Started food waste collection business

Local Authority contracts for food waste

6 GWh/annum
3. Hosting private investment

Where:
- An attractive return for customers, and
- Compatible with providing a high quality water service, environmental protection and enhancement.

Large wind Farms - SW land

- 350 GWh operational
- 550 GWh consented
- 3 in planning / development 260GWh
- Facilitating over £0.5bn investment
- Landlord rental or discounted power purchase agreement

Scottish Water is making a significant contribution to national renewable targets and a low carbon economy.
Finally.....developing new opportunities

- Heat from sewage
- Biomethane
- Renewable heat

Local community

Trusted to serve Scotland
Thank You