



Report to: Cabinet

Subject: Use and Generation of Energy Review

Date: 6 September 2012

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Working Group Members: Councillors Collis, P Andrews, Hughes, Hughes, Poole, Glover

Purpose of the Report

To present the final report and recommendations of the Use and Generation of Energy Review

1. Background

The Policy Review Scrutiny Committee established a scrutiny review in September 2011 to consider the use of energy and resources by the authority. This followed an earlier review, The Gedling Carbon Footprint Review, which had sought to identify how the authority was planning to reduce its Carbon Footprint. This review recommended that a further review should be established to consider how the authority uses energy and resources in its council owned buildings.

The Use and Generation of Energy Review focused on a range of issues related to the use of energy by the authority, considered ways to reduce consumption and examined techniques that could be used to generate energy.

The review sought to:

- identify how much and where energy is used by the authority
- consider the opportunities and systems that are available to reduce energy consumption
- examine techniques that could be used to generate energy
- ascertain if there are any plans to harness new types of technology.

The review received briefings from the Portfolio Holder for Environment and Sustainability, the Service Manager Planning and Environment, Service Manager

Waste Services, the Environmental Steering Group and Dr. Keith Baker Director of the Environmental Technology Centre based at Nottingham University.

2. Information

Buildings belonging to Gedling Borough Council use a total of approximately 7000 cubic tonnes of energy per year. The borough estate has the lowest carbon emissions for a local authority in the country after receiving assistance from the Carbon Trust:

5000 tonnes per capita - 2009

4,500 tonnes per capita – 2011.

Owing to the Severn Trent's anaerobic digester at Stoke Bardolph Gedling is ranked the 7th highest borough for the micro generation of energy.

Leisure Centres and some Community Centres are the borough's biggest users of energy. The high level of consumption by leisure centres has triggered some work to be done in conjunction with **QUEST**. This is a UK quality scheme for Sport and Leisure, which provides a series of specific industry standards and good practice for operators to work.

- **Energy Conservation**

The current Gedling Borough Energy Policy and Action Plan 2010 -2012 outlines the Council's commitment to tackling the causes of climate change by reducing the emissions from greenhouse gasses through reducing energy use. It outlines what has been achieved rather than long term aspirations. The plan carries a commitment to reduce energy consumption within its estate and throughout the borough. This includes setting targets for the reduction of the amount of natural resources being used and agreeing measures for the targets to be met. Currently this is an aspirational document and no targets have been set. The policy also has ambitions to organise ongoing staff energy training, establish a group of environmental champions across all service areas, ensure the planning committee is trained on sustainable energy and low carbon issues, and promoting personal travel plans for staff.

The Policy and Action Plan will be further developed and refined by the newly appointed Sustainability Officer. The purpose of this role is to develop, coordinate, promote, measure and report on the council's sustainability programme which includes energy use and generation. The officer will develop and implement the Council's Energy Policy in terms of environmental management and the Policy and Action Plan will form a programme of priorities and activities aimed at reducing the

organisation's impact on the environment and promote sustainable development. This will include managing the collection and interpretation of data to monitor environmental performance and identification of key indicators. In addition there will be an expectation to design and deliver environmental and carbon management related training and awareness programmes to staff and elected Members.

A number of energy saving initiatives have been introduced into the authority's buildings including movement sensitive lighting, new swimming pool covers, new fridges and voltage optimisers. Low energy, high frequency light tubes have been installed in new light fittings at Jubilee House (part of the office alteration work), LED light tubes installed to external lighting columns in Arnot Hill Park and the Council car parks and technical changes to reduce the number of servers operating in the I.T server room.. Movement sensors which switch lights off when the space is not occupied have been introduced in council offices but Members considered there may be scope to introduce them in other buildings or sporadically occupied spaces like meeting rooms and corridors.

Vehicles used for refuse collection have adopted more efficient routes which have resulted in miles travelled reductions thus reducing fuel consumption.

The use of fuel efficient vehicles is considered when purchasing new vehicles. Gedling Borough Council is part of the Nottinghamshire Vehicle Consortium which purchases vehicles through a joint procurement exercise. Vehicles with a higher 'green' specification are more expensive to purchase. The consortium is continually looking at new ideas and innovations and as part of this has considered electric vehicles, electric refuse bodies and electric bin lifts to reduce fuel costs and carbon emissions. After demonstrations and trials of the electric vehicles a capital resource bid to purchase a Ford electric van was approved. The bid was based on savings for fuel and tax that would be equivalent to a diesel van over 5 years, the van would be replaced after nine years and not the usual seven years. Currently the company that supplies the Ford Connect conversion has gone into administration and the purchase is now on hold until another supplier can be found

The use of voltage optimisers which control and optimise the output voltage from the main supply to electrical equipment, ensuring that the amount of electricity used is what is needed have been ordered for installation at Richard Herrod

GBC Environmental Steering Group Members have undertaken a range of actions to reduce energy use and waste and increase recycling by employees in the authority. The group was started in June 2006, membership is voluntary and there are no designated budget or staff hours. The group's activities have included energy awareness weeks, waste audits and waste awareness weeks; it has promoted green transport by supporting the National Car Free day, encouraging staff to find alternative ways to work. A cycle to work day with the incentive of a Dr Bike session

to have basic maintenance checks on bikes has taken place. A magazine cull when an audit of magazines, circulars and leaflets that are received by the authority was undertaken to reduce the number of brochures/magazines received, thus reducing paper wastage.

Member considered car sharing schemes would reduce the number of single journeys to work. This would require some type of incentive that would encourage people to take up this scheme for example priority car parking spaces. Further investigation to find out if such a scheme would be viable is needed and it might be necessary to carry out a staff survey to find out if there are any particular barriers to car sharing that need to be addressed. Car sharing along with a bus pass loan scheme, an on line cycling and walking route directory, car pool were included in recommendation arising from the 2010 Carbon Footprint Review scrutiny review which requested funding to enable a detailed Travel Plan be developed.

Members were informed about the work of the Environmental Technology Centre, The University of Nottingham which was established to help businesses make improvements to make a more efficient use of resources. It is able to offer advice to small and medium enterprises and receives European funding to enable them to offer this service. This support can include between 2 and 5 days assistance on specific initiatives. A number of case studies from private small and medium sized enterprises were discussed and the wider energy production initiatives including the use of were discussed including: Ground Source Heat pumps, Slinkies, Solar thermal, Solar PV, Combined Heat and power, waste to energy, Biomass Energy controls smart metering anaerobic digestion, Microbial Fuel Cells, occupancy controls invertors' controls, voltage optimisers and wind turbines. Members heard that simple solutions for example insulation, staggering switching on electrical appliances – lights, computers reducing the expensive energy 'spike' - can be very effective and a real contribution to energy saving.

- **Energy generation**

Members felt it important to consider ways in which the authority could generate some of its own electricity and the recent installation of the Photovoltaic panels recently installed at the Civic Centre and the depot is a good example of how this will benefit the authority.

Figures of electricity fed back into the grid after three weeks indicate the panels are performing well. A display meter to track progress for staff to see the benefits should be fitted soon.

Figures for the first three weeks after installation were

Depot – 506 Kilowatt hours

Civic Centre (1) - 299 Kilowatt hours

Civic Centre (2) - 490 Kilowatt hours.

Members considered the collection of food waste to produce biogas – which could be used to produce electricity or power the council's fleet of vehicles- using Anaerobic Digestion technology. Nottingham City Council undertook a six month pilot scheme to test the feasibility of using food and other organic waste in such a scheme but this was not continued due to the closure of the anaerobic digestion plant in Lincolnshire which resulted in the scheme being no longer viable.

A consistent supply of food waste is required for such a scheme to work and in Gedling the cessation of weekly refuse collections, and non separation and collection of food waste means that such a scheme is currently not feasible. The location of an accessible anaerobic digestion plant further detracts from the implementation of such a scheme. Members, however, consider that this is a recycling method that should be pursued by the authority and that the viability of constructing a plant in conjunction with other authorities in Nottinghamshire is investigated.

The installation of Ground Source Heat Pumps using the lake in Arnot Hill Park was discussed. These systems are most cost effective when used with a heating system such as under floor heating which require a lower flow temperature than a standard radiator system. There is some under floor heating in the Civic Centre but the majority of heat is provided by radiators which require a higher circulation temperature than could be obtained by Ground Source Heat Pumps. Retrospective installations would involve potentially expensive adaption to the existing heating system which would increase in costs. Ground source heat pumps are more cost effective as part of new builds. Members considered that the use of ground source heat pumps should be encouraged for all new builds and planning policy should be used to promote renewable energy systems. Currently developers are strongly encouraged to consider all renewable energy generation options but cannot insist on it without an evidence policy in the Core Strategy or Supplementary Planning document. Policy 1 of the Core Strategy, which is currently under consultation, encourages a much wider sustainability approach.

Information received and issues that will be taken forward to the review which will be considering the Council's role in promoting sustainability.

The Warmstreets initiative offers free and discounted loft and cavity wall insulation to all homeowners and private tenants. Installing insulation in a loft and cavity walls is the most effective way to make homes warmer and cheaper to heat. It can reduce annual heating bills by up to £160 and save around two tonnes of CO2 a year.

The Dorket Head Refuse disposal site will be closing shortly and there will be extra costs incurred by the transfer of waste to the Materials Recycling Facility (MRF) at Mansfield.

The authority's sustainable purchasing policy.

Work is currently being undertaken to map possible sites for wind turbines in the borough.

Take up of the insulation measures available in the Borough through Green Deal which makes available an interest free loan for householders for energy saving devices.

3. Conclusions

Although there is an energy plan which has sound principles Members concluded that a written corporate energy policy and plan which outlines targets and aspirations was required if the authority is to achieve a reduction in energy consumption. The policy should be a practical document that is relevant to all staff working in the authority. It was considered that it may be necessary for a higher level officers group who has the commitment and the authority to make decisions may be required to plan and encourage effective energy saving initiatives by employees. In addition there is a lack of funding to back up energy saving schemes which needs addressing.

The policy needs to clearly communicate to staff highlighting ways that energy is wasted and the associated cost of this. The policy should include practical measures that can be undertaken by management and staff to reduce energy consumption in the council estate. The large screens in the Civic Centre and related articles in the GEN could be used to inform and remind staff of the different ways to conserve energy.

Members were aware that although there currently is no clear council energy efficiency policy for employees many staff do undertake energy saving actions and the Environmental Steering Group has undertaken some effective initiatives to reduce the consumption of energy. Members concluded more appropriate signage needs to be displayed alerting staff to the need to switch of lights; turn down thermostats etc. and funding should be made available to do this. The work undertaken by this group may be greatly assisted by a cross departmental senior officers group who are able to take forward initiatives within departments. This may be enhanced by a Member Champion to promote and lead this work and to emphasise the importance of the need to conserve energy.

It was felt on strategic level schemes to generate energy should be encouraged. The benefits from the fitting of the photovoltaic panels to the Civic Centre should be closely monitored and surveys should be undertaken to ascertain the suitability of other buildings for installation. In addition the use of voltage optimisers should be rolled out to other suitable buildings.

Members are aware that many energy saving initiatives have to be installed during the construction stage of new buildings or the refurbishment of existing stock and concluded that any new or refurbished buildings should include energy efficiency schemes in the building specification at the construction stage.

Members concluded that as the planning authority the Council should inform and encourage the wider community about the benefits incorporating energy saving/generation when planning new buildings and extensions

Members considered that the benefits of car sharing to reduce staff energy consumption on their journey to work should be promoted by the authority. Car sharing schemes have a number of problems, personal safety, car share partner changing plans and staff may need an incentive to take part in such a scheme. Members considered that such a scheme should be promoted by the authority and consideration be given to an incentive.

4. Recommendations

The working group makes the following recommendations:

1. As a matter of urgency the Council's Energy Policy and Action Plan should be refreshed and revised to include time lines and targets for a reduction in energy consumption.
2. That Dr. Keith Baker Director of the Environmental Technology Centre is invited to act as a consultant to help prioritise energy saving initiatives.
3. A policy is developed and communicated to staff which outlines practical low cost energy saving measures to reduce consumption in buildings. This should include information about how energy is wasted and its associated costs.
4. Signs be displayed throughout council buildings reminding staff and visitors to switch off appliances, lights etc. This should include information and reminders on the large screen in the Civic Centre and the GEN publication.

5. The Borough through its planning consent polices ensures that the use of ground source heat pumps and other energy generation schemes has been considered during the development of plans.
6. A leaflet is produced which outlines the benefits of insulation information and other energy saving/generation and included with planning approvals.
7. The authority should actively explore the use of anaerobic digesters along with neighbouring authorities.
8. Consideration to installing movement sensitive lighting installation in all council buildings and in particular extended to sporadically used areas.
9. To implement voltage maximisers as a matter of priority.
10. Whilst recognising that this is outside of the scope of the review we would like to recommend that the executive consider developing a policy for the location of wind turbines in the Borough.
11. That the performance of the photovoltaic panels is regularly monitored and the outcomes reported into the Covalent performance monitoring system, both in terms of levels of energy generated and payback received. Also, that the performance of the panels is made available in the public domain.
12. A review of the energy and action plan and an appraisal of the current reviews recommendations is undertaken in 12 months. Input from the Sustainability Officer is sought for the follow up Review.

Members concluded that some of the recommendations from the earlier Carbon Footprint Review had not been addressed

13. Consider using solar power to heat our swimming pools, especially in the light of feed in tariffs.
14. Funding is sought to enable a detailed Travel Plan to be developed for employees travelling to work.



Scope

Scrutiny committee:	Policy
Working Group:	Use and Generation of Energy
Chair of group:	Cllr Suzanne Prew-Smith
Working group members:	Cllrs Glover, P Andrews, S Poole, B Collis, P Hughes
Portfolio holder/s:	Cllr. P Feeney

(1) Scope

Why this review is being undertaken

(List the specific outcomes – **S**pecific, **M**easurable, **A**chievable, **R**ealistic and **T**ime bound)

To identify the energy usage by the authority, consider ways to reduce consumption and to examine techniques that could be used to generate energy.

Aims

Aim	Corporate Values
<p>Identify how much and where energy is used by the authority including buildings and fleet vehicles.</p> <p>To consider what opportunities and systems are available to reduce energy consumption</p>	<p>An efficient Council (one that is responsible with its resources; that avoids waste and makes the most of what it has; one that seeks out new funding opportunities)</p> <p>Priority Reduce the volume of waste</p>

<p>Examine techniques that could be used by the authority to generate energy.</p> <p>To ascertain if there any plans to harness new types of technology for future use e.g. electric cars?</p>	<p>generated and increase recycling</p> <p>Reduce the Council's and the Borough's carbon footprint and energy usage</p>
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(2) Timetable

The review will commence in:	December 2011
Milestones:	Information gathering January - May
The review will report in:	To be established
Committee dates:	TBA
Frequency of meetings:	Monthly

(3) Information gathering and consultees

The working group has requested the following information:

<p>An audit of the authority's energy usage – how much is used, not just cost.</p> <p>The authority's approach to reducing energy consumption</p> <p>Severn Trent's energy production system</p> <p>The 'pond loop' system at Kings Mill reservoir</p> <p>Initiatives used by other local authorities to reduce energy consumption</p> <p>Notts. County Council's Enviro Champs initiative</p>

What are the main questions to be asked and of what parties?

<p>Peter Baguley Gedling Boroughs Councils energy consumption data, energy plan, plans for the future.</p> <p>Severn Trent – information regarding their energy production system</p> <p>Kings Mill reservoir – how effective is the 'pond loop' system beneath the Kings Mill Reservoir</p> <p>Ludlow Council – how effective is their anaerobic digestion scheme.</p> <p>Derbyshire County Council – the efficiency of the Chesterfield recycling scheme</p> <p>The efficiency of the Nottingham City waste incinerator</p>

The working group will be inviting the following persons/organisations to one or more meetings to help with the review:

Gedling Borough Departmental Officers
Severn Trent
Sherwood Forest Hospitals Trust - Kings Mill Hospital
Nottingham City Council.

Visits

The working group might need to consider a visit to:

Dependent on information required, visits could include Severn Trent anaerobic digester plant.

(4) How the community will be consulted, informed and involved

The working group wishes to consult through:

Contacts magazine
Website

(5) Equality of opportunity

The following Equality impact Assessment method will be applied

No obvious relevance but will be kept under review

(6) Resources

The working group is supported by:

Member Services Officer
Members Services Manager

(6) How the effectiveness of the review will be measured

After the initial review the working group will...
(Review date to be included in Scrutiny Forward Plan)