

7 December 2011

Reducing energy costs and our impact on the environment : progress report

Report by the Chief Officer

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1 Summary

- 1.1 Good progress has been made on a number of initiatives to reduce our energy costs and carbon footprint. But there is a disappointing outcome from the work undertaken to assess the financial viability of installing solar photovoltaic systems.

2 Recommendations

- 2.1 That, given the lack of a financially viable business case and the likely earlier registration deadline for reducing the level of feed-in tariffs, that no immediate action be taken to pursue the installation of solar photovoltaic systems.
- 2.2 That the Chief Officer be requested to periodically review the financial viability of installing solar photovoltaic systems in order to take into account any favourable changes in equipment and installation costs and/or feed-in tariffs.
- 2.3 That progress on the energy-saving initiatives outlined in paragraphs 5.1 to 5.6 of this report be noted.

3 Introduction and background

- 3.1 At its meeting on 29 July 2011, the Finance and General Purposes Committee:
- recommended that a 'statement of commitment' to the Public Sector Carbon Management Programme be produced and jointly signed by the Chairman of the Authority and the Chief Officer;
 - gave approval for improvements to be made to the heating and hot water systems at Headquarters;
 - agreed that work on the development of a business case for Solar Photovoltaic installations on major buildings be progressed.
- 3.2 The statement of commitment to the Public Sector Carbon Management Programme was signed at the last meeting of the Authority; and, we continue to receive support and guidance from the Carbon Trust on a range of carbon-reduction and energy efficiency initiatives we are pursuing.
- 3.3 Work is well underway to develop solutions that will significantly improve the energy

efficiency of the Headquarters' heating and hot water systems. It is expected that works will commence in December 2011 and extend into 2012. This work is likely to be funded from the Authority's improvement and sustainability reserve.

- 3.4 The development of the business case for solar photovoltaic installations was due to be presented to the last meeting of the Finance and General Purposes Committee on 28 October 2011. The intention was to identify any financially viable installations and make appropriate recommendations to the Authority at this meeting. The Authority would then consider any future investment decisions alongside, and in the context of, the report on the draft budget for 2012/12 [also on the agenda].
- 3.5 However, work on the business case could not be fully completed in time for the reports deadline for the Committee's meeting. This was not a failing on the part of our property advisers in Hampshire County Council. The final business case was presented on 1 November. Nevertheless, sufficient information was available - by the day of the meeting - to reach a provisional view that there was not a strong business case to justify significant levels of investment in solar photovoltaic systems.
- 3.6 In the light of this disappointing news the Committee resolved:
- That work on assessing the costs/benefits of installing photovoltaic systems on some of the Authority's buildings be progressed urgently in collaboration with property and financial advisers from Hampshire County Council with priority being given to those major buildings most likely to support the installation of photovoltaic systems.
 - That a further report be presented to the Authority at its meeting on 7 December, 2011 seeking a way forward to enable the necessary urgent approval to be given to any priority scheme(s) on major buildings which satisfy a rigorous business case, prior to the Government's current favourable feed-in tariffs expiring on 31 March 2012.

Note: When the Committee passed these resolutions, the Government [Department of Energy and Climate Change (DECC)] hadn't announced its intention to bring forward the date when the value of feed-in tariffs would be reduced.

4 Solar photovoltaic systems: financial viability and proposed changes to the feed-in tariff

- 4.1 Solar photovoltaic systems (solar PV) is only one element in developing our environmental improvement strategy. The main focus is on reducing energy use and energy costs in our buildings (see section 5). Solar PV installations will not reduce our own energy consumption, they provide an alternative renewable energy source. However, due to the expected reductions in the value of feed-in tariffs (originally anticipated to be from 1 April 2012) the case for considering solar PV installations was given priority over other energy-saving work.
- 4.2 As previously reported, the Hampshire Climate Change Partnership did not identify a lead organisation for collaborative action on solar PV installation. Instead, each organisation would consider whether or not to pursue their own projects. Hampshire

County Council proceeded with its own business case for solar PV on its sites and had begun procurement. Because of this, our property advisers from Hampshire County Council were in a very good position to provide expert advice (under our existing Service Level Agreements) to help us develop the business case(s) for solar PV on our buildings.

- 4.3 On 31 October 2011 – while the work on our business case was being completed – the Government released its consultation on the future of feed-in tariffs. The proposals included higher than expected cuts to the tariffs from 31 March 2012 (about 50% reductions); and, significantly, the bringing forward of the deadline to register for tariffs – from 31 March 2012 to 12 December 2011. This means any installations completed and registered after the 12 December 2011 would be on the lower rates for the 25 year duration of the scheme. Even if there were any compelling business cases to justify investment (on the basis of the current tariff), it would not be possible to meet the proposed new deadline of 12 December for their installation.
- 4.4 The main finding from the work on the business case(s) was that 26 of our buildings were assessed as being in the most suitable category (Grade A: good orientation, little or no shading, simple roof areas). These would give the highest energy returns and would involve installing about 2,117m² of solar panels.

Taking these buildings as a group, the current feed-in tariff rates provide the following model results:

- Simple payback = 10 years
- Discounted payback (based on net present value) = 19 years
- Internal Rate of Return (IRR) = 2.3%
- Capital cost = £744,444
- Whole-life cost = £2,319,506
- Income after discounted payback = £1,347,312

Even on the higher tariff, the business case for installations is not a strong one. But, reworking the figures under the proposed lower feed-in tariff, the same 26 buildings produces a more disappointing result:

- Simple payback = 25 years
- Discounted payback ... it doesn't pay back within the 26 years of the model
- Internal Rate of Return (IRR) ... there is no return.

- 4.5 When the best sites for installations were modelled the outputs showed that the Internal Rate of Return falls far below a level offering economic viability. Even by increasing the number of installations (to try and access discounts for economies of scale) the number of installations required to break even after 26 years is more than the estate can provide. Also, the total level of investment required would be prohibitive in the current financial climate.
- 4.6 Finally, given that it will not be possible to install and register any installations before 12 December 2011 (i.e. at the current, higher, feed-in tariff) there is not a viable financial case to justify investment in solar PV schemes. We will respond to DECC

consultation expressing our frustration and disappointment. We will mention our wasted costs and time spent on developing the business case on the basis of the current feed-in tariffs. We will also say that we have lost confidence in pursuing alternative energy initiatives as a result of this change in DECC policy.

- 4.7 Copies of the full reports: 'A review of Hampshire Fire and Rescue Service's outline business case for the viability of the installation of photovoltaic technology' contain commercially sensitive information. They are available to Members on request.

5 Energy efficiency in our buildings

- 5.1 Over the last few years we have focussed on ensuring that our building maintenance programme also significantly improves levels of insulation, as well as improving energy efficiency. Roof insulation (exceeding the levels required under Building Regulations) undertaken when flat roofs are replaced; and installing double-glazing in place of single-glazed windows are two significant examples of this type of work.
- 5.2 Between 2010-2012 we will have spent £775,500 on double-glazing projects and £213,000 on roof replacement and insulation projects. Based on standard estimates provided by the Carbon Trust (benchmark data from previous projects) these projects will have saved approximately 11% of the heat requirement for the relevant buildings. This equates to an annual carbon saving of 79 tonnes of CO₂e (Carbon dioxide equivalents) - about 1.7% of the total Service carbon footprint). The intention is to continue this work into 2012-2013 and 2013-2014 so that most of our buildings benefit from double-glazing and newly insulated roofs.
- 5.3 Some energy efficiency projects are interrelated and enable further financial savings to be made. The installation of double-glazing units reduces the need for external decoration and improves insulation to such an extent that it becomes possible to review the heating solution for a building. When boilers are replaced the maximum heat demand is much lower because the building is no longer losing large amounts of heat through the windows. In some cases it becomes possible to justify replacing old boilers purely on energy-saving grounds and not just immediate maintenance requirement.
- 5.4 Our Headquarters building is our least energy-efficient building. The current plans for improving the Headquarters heating system, including fitting thermostatic radiator valves, has been deliberately preceded by the fitting of double-glazing in January 2011. This will help optimise the efficiency of the new heating system.
- 5.5 Lighting refurbishment is also being planned for some of the Headquarters building in December 2011. It is estimated that electricity savings on lighting costs of around 70% are likely. This will be from a combination of more efficient LED based lights and occupancy detection. The investment of under £30,000 should give annual savings of 26 tonnes CO₂e. This is expected to set a new standard for lighting refurbishments in our buildings.
- 5.6 Current estimates of the potential for carbon savings from new energy efficiency projects being developed for our buildings total around 1000 tonnes CO₂e per year (21% of the total Service carbon footprint); this compares with around 115 tonnes of

CO₂e per year from installing solar PV in the 26 most suitable buildings (2.5% of the total Service carbon footprint). The paybacks expected on energy efficiency projects are mostly under five years. While these estimates are based on 'rules of thumb' and therefore subject to high uncertainty the potential for carbon savings from energy efficiency is eight times greater than the likely savings from a similar investment in solar PV.

6 Supporting our corporate aims and objectives

- 6.1 The work on reducing our energy consumption and carbon footprint directly supports our 'environment' and 'resources' priorities in the Service Plan.

7 Risk analysis

- 7.1 The financial case presented in the Government's consultation on solar PV and the setting of an eligibility date before the end of the consultation period is strongly indicative that the Government is unlikely to change its position. But, if following consultation, the Government did decide to revert to the originally anticipated eligibility date of 31 March 2012, we would still be unlikely to justify the scale of investment and complete sufficient installations to make it worthwhile.
- 7.2 If development of the case for solar PV installations continued it would require significant financial resources which would then be unavailable for the development of more certain energy efficiency measures.
- 7.3 Other energy efficiency measures will provide much greater short- and long-term cost and carbon footprint savings than the returns from investment in solar PV. The priority for the Authority should be its continuing work identifying savings from improving the efficiency of its buildings.

8 People Impact Assessment

- 8.1 The proposals in this report are considered compatible with the provisions of the European Convention on Human Rights, the Human Rights Act 1998, and the Race Relations (Amendment) Act 2000.

9 Background papers

- 9.1 The following documents disclose the facts or matters on which this report, or an important part of it, is based and has been relied upon to a material extent in the preparation of the report:
- 'A review of Hampshire Fire and Rescue Service's outline business case for the viability of the installation of photovoltaic technology'. Note: this document does disclose exempt or confidential information.

Note: The list excludes: published works.