

**Report to** Sustainable development panel  
24 September 2012  
**Report of** Executive head of strategy, people and democracy  
**Subject** Photo-voltaic (PV) panels on City Hall roof

**Item**

**9**

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**Purpose**

The purpose of this report is to update the committee on the performance of the PV panels on City Hall.

**Recommendation**

To consider the findings of the report.

**Corporate and service priorities**

The report helps to meet the corporate priority Value for money services and the key action to “reduce the council's carbon emissions through a carbon management programme”.

**Financial implications**

There are no direct financial implications.

**Contact officers**

Richard Willson, Environmental Strategy Manager 01603 212312

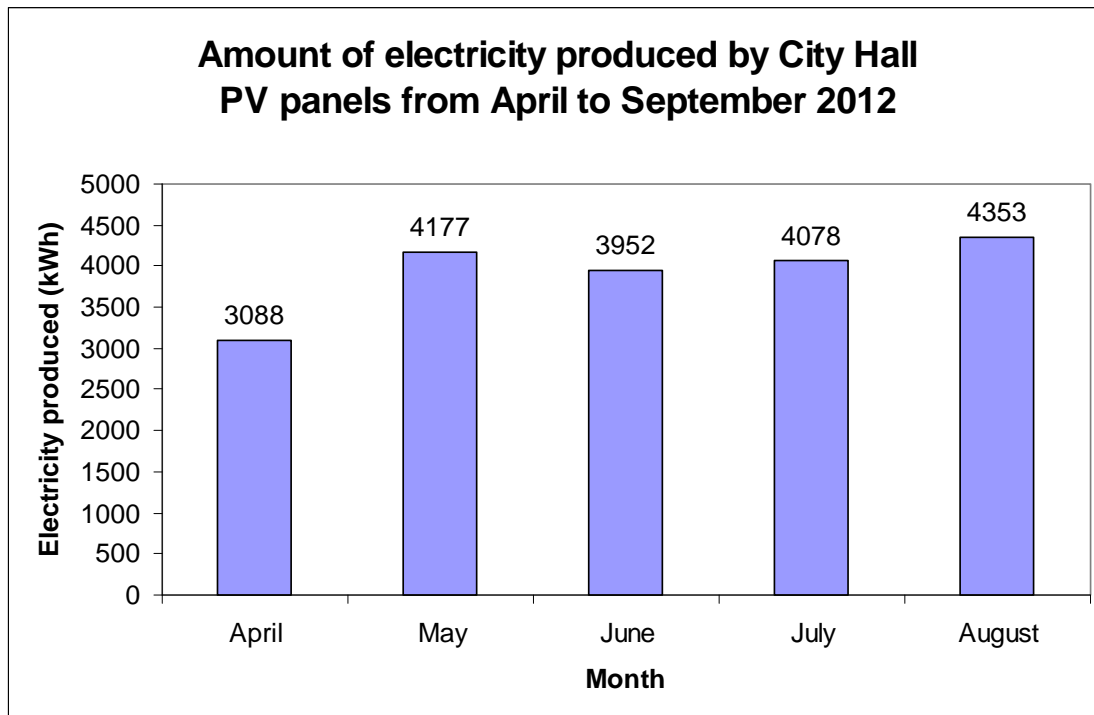
Claire Tullett, Environmental Strategy Officer 01603 212545

**Background documents**

None.

## Report

1. The photo-voltaic (PV) panels on the roof of City Hall became fully operational in March and daily kWh electrical output data from the panels has been collected since 27 March 2012. The system capability is 36KW maximum under optimal conditions. The purpose of this report is to provide an update on how the panels are performing.
2. Graph 1 (below) shows the number of kWh hours produced for April to September 2012.



3. To set this in context, table 1 (below) shows the optimal performance of the panels against actual performance for April to September 2012.

Month	Average hours sunlight	Optimal Output	Actual Output
April	6	5508 kWh	3088 kWh (56% of optimal)
May	6	5692 kWh	4177 kWh (73% of optimal)
June	7	6420 kWh	3952 kWh (61% of optimal)
July	7	6634 kWh	4078 kWh (61% of optimal)
August	6	5692 kWh	4353 kWh (76% of optimal)

4. The period during which the PV panels have been operational have not been optimal operating conditions. According to Met Office figures 2012 has been the wettest summer on record for 100 years and one of the duller summers on record with just 413 hours of sunshine, making it the duller summer since 1987. The PV panels work by converting energy from sunlight into electrical energy via semi-conductor material in the PV cells. With a poor level of sunlight the panels cannot produce the optimal levels of electricity. Also, the optimal performance figures do not take into account any shadow which may fall across the panels throughout the day which will also impact on output, although this has, as far as possible, been designed out of the project.
5. Despite the dull operating conditions the panels have performed favourably with both May and August producing around three-quarters of the possible optimal output.
6. There has been some discussion in the press recently about whether renewable technology is 'clean' technology e.g. whether it uses more energy to produce the technology than the technology actually saves across its lifetime. This is also known as the Energy Yield Ratio (EYR) which is the ratio of energy delivered over a panel's lifetime to the energy required to manufacture it. The Department of Energy and Climate Change (DECC) have researched the EYR of the average solar panel and have concluded that on average the EYR for a solar panel is 4. In other words that

over the course of its lifetime of approximately 25 years, that the panel will produce 4 times as much energy as it requires to manufacture it.

7. The Environmental strategy team will continue to monitor the PV panels performance, and this will be reported to the Sustainable Development Panel annually.