

Energy Services Annual Solar Report

2021-22

The Energy Services Annual Solar Report shows the performance of all solar photovoltaic (PV) systems installed through the WSCC Energy Services Team for the 2021/22 financial year (April – March).

Overview

- The County Council's solar farms performed well during 21/22 both in terms of generation and financial income. This was helped by very high energy prices on the wholesale energy market which will continue into 22/23.
- During 21/22 these systems generated enough energy to power 5,520 average UK homes for a year¹, and displaced 3,700 tonnes of CO₂ (in comparison to using electricity from the grid).
- Overall generation across all solar PV systems during 21/22 was slightly lower than the previous year due to technical issues, particularly relating to schools, but this is expected to improve in 22/23.
- New operation and maintenance arrangements were put in place for the County Council's solar PV systems in April 22 to improve performance and reduce outages.

¹ Using Ofgem's latest typical domestic consumption values

Westhampnett Solar Farm (7.4 MWp)

- During 21/22, the solar farm saw excellent generation which was closely aligned with the expected figure from the original business case (taking into account degradation since the site was energised in 2018).
- Westhampnett significantly over-performed against financial expectations due to exceptionally high sale of power prices from Sep 21 onwards, which look set to continue during this financial year. This is in comparison to a suppressed wholesale energy market before the start of the reporting year.
- The battery system was also optimised in October 21 to enable participation in additional National Grid services which were particularly lucrative during the winter period.
- E.ON, the Demand Side Response specialists who operate the batteries for the County Council, also successfully implemented a strategy to optimise revenue from the whole site (i.e. the battery and solar PV system) and reduce running costs to support financial returns.

Tangmere Solar Farm (4.86 MWp)

- Generation performance exceeded expectations during 21/22 and it was noted that the anticipated reduction in performance (through degradation of solar panels over time) did not occur at the rate outlined in the business case.
- Tangmere's financial performance also significantly out-performed expectations due to exceptionally high sale of power prices from Sep 21 onwards.
- New operation and maintenance arrangements will ensure that performance continues to be optimised in the future and opportunities, such as the completion of a new Power Purchase Agreement (PPA) contract from October 2022, are also expected to improve financial performance.

Solar for Schools (4.52 MWp total)

- Technical issues at a small group of schools with large solar PV systems led to a shortfall in generation and financial performance in 21/22 (details of all the schools affected are included in the full Annual Solar Report).
- Three of the underperforming sites (accounting for 59% of the total underperformance) relate to poor quality installation work carried out by a contractor employed by our delivery partner, Portsmouth City Council (PCC).
- There are ongoing discussions with PCC about liability for the installation work which has now been rectified.

- County Council's new operation and maintenance (O&M) contractor will ensure that future performance is optimised, and any issues resolved.

Crawley Homes (64 MWp total)

- Inverter failures on some of the systems installed on Crawley Homes properties led to a reduction in overall generation during 21/22.
- Replacement inverters were sourced under warranty by the County Council's operation and maintenance contractor.
- A management plan is in place to bring generation back in line with expectations and replacement inverters have been fitted, however there was some delay in accessing some properties to carry out the work due to Covid.
- A new Data Collector (DC) was also procured during 21/22 to improve metering comms and assist with accuracy of future reporting and system diagnosis.

Goodwood (16 MWp total)

- Electrical infrastructure issues led to part of the system installed at Goodwood Aerodrome (one of two systems on the Goodwood Estate) being isolated for part of the year, which impacted generation and financial performance.
- This technical issue was rectified in August 22.

Corporate systems (11MWp total)

- Solar PV systems are operated by the Energy Services Team at Crawley Library and the County Records Office.
- Generation performance for 21/22 appears reduced because the larger system at County Records Office experienced some commissioning issues with the generation meter which reduced the amount of output recorded.
- Both systems performed well financially by reducing the amount of imported power and therefore providing electricity revenue savings (which are expected to increase in 22/23).

Performance Summary

System Name	Expected generation (kWh) ²	Actual Generation (kWh)	Actual Generation Performance (%) 2021-22	Cumulative Generation Performance (%)	Expected Income Less Running Costs (£000's)	Actual Income Less Running Costs (£000's)	Actual Financial Performance 2021-22	Cumulative Financial Performance (%)
Westhampnett Solar Farm	7,259,734	7,076,488	97%	97%	£878	£1,204	137%	88%
Tangmere Solar Farm	4,922,334	5,019,830	102%	103%	£689	£909	132%	106%
Schools	4,229,399	3,224,378	76%	82%	£358	£288	80%	83%
Crawley Homes	643,768	501,011	78%	83%	£81	£78	96%	93%
Goodwood	151,480	133,764	88%	90%	£22	£21	93%	106%
Corporate (Energy Services)	71,186	55,344	78%	78%	£13	£11	81%	81%
Total	17,277,901	16,010,815	93%	95%	£2,043	£2,510	123%	95%

² Taking into account agreed degradation factors.