Committee:	Date:
Corporate Asset Sub-Committee	22 May 2017
Subject: Annual Energy Performance Update (2016/17)	**Public**
Report of: The City Surveyor	**For Information**
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Summary

This report provides a performance outcome on energy reduction targets set out in the Corporation's Carbon Descent Plan 2015 (CDP-15) and covers the twelve month period from April 2016 to March 2017.

The results show an overall decrease of ~0.6% (absolute energy consumption) compared to the same period in 2015/16 and against the annual target of 2.25%. However when the results are weather corrected, there is no reduction in consumption over the year.

This performance trend indicates the reduction target of 25% by 2017/18, as set out in the CDP-15, is unlikely to be met. However, revised targets, post 2017/18, are currently being assessed and will be supported by the implementation of the revised short term Energy strategy.

Recommendation

It is recommended Members note the contents of this report.

Main Report

Performance Monitoring 2016-17

Current Performance

1. The absolute energy consumption for April 2016 to March 2017 was 0.6% lower than the same period in 2015/16 as presented in Table 1. The 2016/17 was slightly milder than 2015/16 and when corrected for the weather there was no change in typical energy consumption between these two periods.

Table 1 Performance comparison (2016/17 with 2015/16)

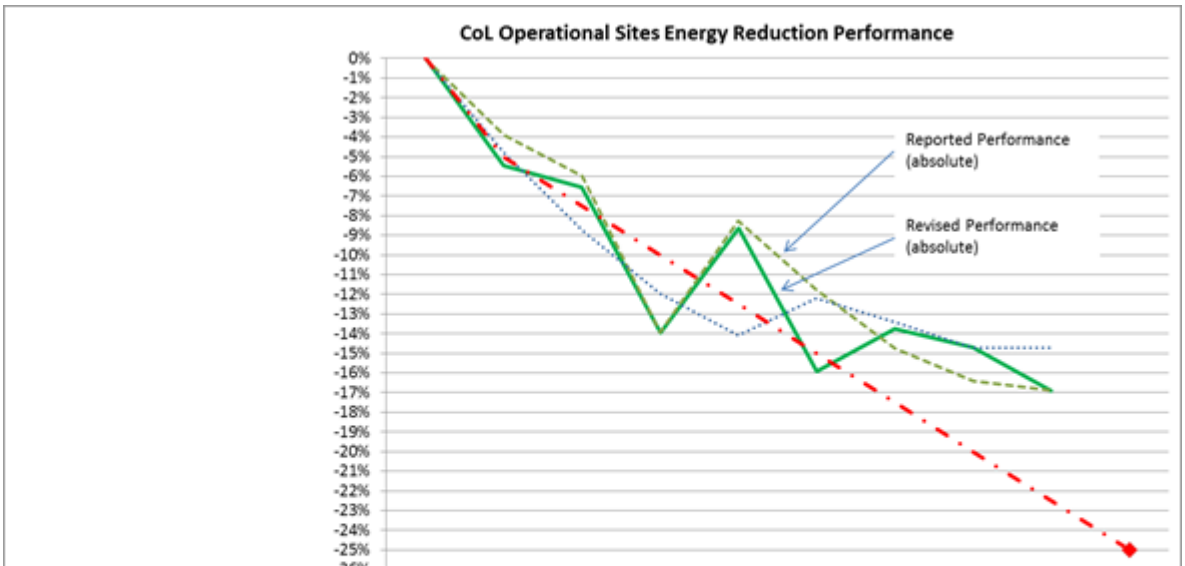
Dept.	15/16 (kWhs)	16/17(kWhs)	Diff. kWhs	Diff. %	
Markets & Consumer Protection	29,788,731	29,401,277	-387,454	-1.3%	⇩
Guildhall	21,867,379	20,865,169	-1,002,210	-4.6%	⇩
Barbican Arts Centre	16,022,453	16,239,046	216,593	1.4%	⇧
Courts	7,399,748	6,994,694	-405,054	-5.5%	⇩
Built Environment	7,338,806	7,249,686	-89,120	-1.2%	⇩
GSMD	7,199,507	7,357,929	158,422	2.2%	⇧
CoL Police	5,686,423	5,905,057	218,634	3.8%	⇧
Open Spaces	5,583,742	5,515,508	-68,234	-1.2%	⇩
CoL Freemen's	3,810,306	3,663,284	-147,022	-3.9%	⇩
Culture, Heritage & Libraries	3,298,849	3,576,681	277,832	8.4%	⇧
CoL Boys	2,813,357	3,152,575	339,218	12.1%	⇧

Dept.	15/16 (kWhs)	16/17(kWhs)	Diff. kWhs	Diff. %	
CoL Girls	2,017,955	2,039,855	21,900	1.1%	⇧
Mansion House	1,928,525	2,028,439	99,914	5.2%	⇧
Walbrook Wharf	1,745,730	1,839,445	93,715	5.4%	⇧
	116,501,511	**115,828,645**	**-672,866**	**-0.6%**	⇩

2. The aggregated performance difference between the two years is negligible; the reason behind the increased consumption at various sites (such as CoL School for Boys', Culture Heritage and Libraries, CoL Police, Barbican Arts Centre, and Guildhall School of Music and Drama) is due to a variety of reasons including plant maintenance issues, inefficient HVAC controls and increased demand on facilities.

3. The below chart represents the overall performance since the base year 2008/09. End of year performance for 2016/17 shows a 16.9% reduction on 2008/09, which is short of the 22.5% target. Based on the current trend it is highly unlikely the CoL will meet the 2017/18 target for a 25% reduction. The weather corrected results are also presented below and indicate 14.7% reduction.

4. Please note the graph below presents two set of performance figures - 'Reported' and 'Revised'. The reported figures were presented in past committee reports, however these have been revised due to ongoing improvements in data quality (meter reads etc.) to improve the accuracy of the results. Furthermore, please note due rounding, there might be minor inconsistencies in the table below compared to figures stated within the report.



	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Reported performance (absolute)	0.0%	-5.5%	-6.5%	-14.0%	-8.6%	-15.9%	-13.7%	-14.7%	-16.9%	
Revised performance (absolute)	0.0%	-3.9%	-6.0%	-13.9%	-8.3%	-11.8%	-14.7%	-16.4%	-16.9%	
Weather Corrected	0.0%	-4.8%	-8.7%	-12.0%	-14.1%	-12.2%	-13.4%	-14.7%	-14.7%	
CDP Targets	0.0%	-5.0%	-7.5%	-10.0%	-12.5%	-15.0%	-17.5%	-20.0%	-22.5%	-25.0%

Benchmarking

kWh/m2

5. At the 18 November 2016 CASC meeting, it was raised that while reducing energy consumption was important, it may be that consumption was not the most appropriate measure for energy usage, given it may not factor in a more intensive use of assets. Therefore, it will be beneficial to track its efficiency of energy usage, rather than just consumption.
6. As a consequence, the Energy Team commenced a Benchmarking Review and concluded the current government approved method of using Display Energy Certificates (DECs) for energy benchmarks based on kWh/m^2 provides only a very approximate indication of energy performance. This is mainly because DECs compare buildings against the typical performance of a very broad category for buildings of a similar type (e.g. a single category for all office types whether air conditioned or natural ventilated). It is therefore recommended for the Corporation not to use DECs for monitoring energy performance and an alternative method (locally devised) is pursued.

7. The local method (devised internally) will compare the overall kWh/m^2 for each building against the more specific benchmark categories set out in CIBSE Guide F (a guide published by the Chartered Institute of Buildings Service Engineers on Energy Efficiency in Buildings) rather than based on very broad categories used in the DEC method. Where a building/site has more than one function (e.g. part office, part workshop), a composite benchmark will be developed, weighted by the floor area for each functional use.
8. To demonstrate, below is an example comparing the Guildhall Complex performance against the DEC method and the CIBSE Guide F method:

Guildhall Complex	**Electricity (kWh/m2)**	**Heating (kWh/m2)**
Actual (15/16)	187	185
DEC benchmark	92	144
Result	**103% worse**	**28% worse**
CIBSE Guide F	226	250
Result	**17% better**	**26% better**

9. It can be seen from the above, the Guildhall Complex performs better when compared to the CIBSE Guide F method. This is because one of the main functions of the site is the provision of office space; however the DEC method compares all types of office under a single broad category called ‘general office’. All forms of office are included in this category, whether they are naturally ventilated (and hence lower energy intensity) or fully air conditioned (and hence higher energy intensity). As the Guildhall Complex is fully air conditioned, comparing its performance with the DEC benchmark does not represent a true comparison.

10. To establish the current practices, the Energy Team have consulted with other London Boroughs. This initial review indicated that the public sector bodies are only using benchmarking practices for a limited use and such practices differ from one organisation to another to accommodate individual circumstances. The

AECOM report also highlighted that ‘benchmark applicability is often a problem as it is rare for the building under scrutiny to be identical to the sample buildings in all respects and so there is an inherent error in the benchmark’. The Energy Team maintains a watching brief on best practice in energy performance benchmarking and will continue to review with similar organisations.

Other performance Indicators

11. It is recommended a method is developed to establish other energy performance indicators which can account for these variables in order to monitor the underlying energy efficiency, which may otherwise be masked by these fluctuations. The variables could include: number of workstation in an office, occupancy levels, occupancy hours, visitor numbers or attendee numbers at functions, number of cremations, or proxy indicators such as revenue.

12. Due to the complexity and diversity of CoL buildings and services it will take time to develop such performance indicators. Where sites have shared services and multiple functions, such as the Guildhall Complex, the production of accurate indicators will require additional energy sub-metering. The Energy Team are developing a corporate metering strategy in parallel to facilitate this task. Once appropriate indicators have been identified for each building/site, systems will need to be established to collect data on the variables that will be used for measuring performance and efficiency.

13. We seek to develop kWh/m2 and kwh/workstation benchmarks and performance results for Guildhall Complex and Walbrook Wharf, by Q1 2017/18 and by the end of 17/18 we shall be able to benchmark the Barbican Arts Centre (the combined consumption of both the Guildhall and Barbican is more than 30% of the overall consumption). We look to prioritise other key sites post 17/18.

Conclusion

14. A decrease of ~0.6% means the Corporation has failed to meet its annual reduction target of 2.25% for 2016/17 and will fall behind its planned target of reducing 25% by the end of 2017/18.

Next Steps

15. The Corporation needs to set new targets for energy consumption post the expiration of original targets in 2017-18. Revised energy reduction targets will be supported by the short term Energy Strategy that was approved in principle by this committee and the Energy Board in Feb 2017.

16. The Energy Team will come back with recommendations in the autumn meeting.

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