

## ABERDEEN CITY COUNCIL

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COMMITTEE	Finance Policy and Resources
DATE	3 December 2015
DIRECTOR	Pete Leonard
TITLE OF REPORT	Investment in Street Lighting LED Lanterns
REPORT NUMBER	CHI/15/306
CHECKLIST COMPLETED	Yes

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### 1. PURPOSE OF REPORT

This report is to seek approval from Members on the proposal of the PACE project to change from the current street lighting lanterns to LED lanterns in order to reduce the annual energy consumption and costs.

### 2. RECOMMENDATION(S)

It is recommended that the Committee:

- a) Approves the policy to move the current Street Lighting lanterns to LEDs;
- b) Approves the indicative capital spend profile for the change in lanterns contained within the report, the associated revenue budget savings which could be achieved, and refers them to the budget process;
- c) Instruct officers to continue to review the market for any new innovative systems which may be developed for street lighting during the proposed replacement programme;

### 3. FINANCIAL IMPLICATIONS

A investment sum of £1.5M would be required from the Non-Housing Capital Plan on an annual basis from 2016/17 to 2021/22 and £0.7M in 2022/23 to fund the change of the current street lighting lanterns from high usage energy lamps to LED's or a future equivalent.

Savings from street lighting electricity in future years will exceed the cost of financing this investment, so the investment can be considered “self-financing”.

#### 4. OTHER IMPLICATIONS

Failure to carry out the change to improved energy efficient infrastructure will leave the council with higher energy bills for street lighting along with increased cost for carbon usage.

#### 5. BACKGROUND/MAIN ISSUES

The cost modelling issues explored the funding for the planned programme of works:

- Early intervention vs. sunk capital costs issue (“true” cost of intervention)
- Use of rate of return or IRR approach to decide optimum replacement timing
- Maximising revenue savings

Currently LED replacement is considered to be between 10 and 12 years, for the purposes of this exercise an 11 year replacement programme has been considered. CRC has been calculated using a current charge of £16.90 per Tonne

##### **Current:**

Current Energy Usage 15967953 kwh per annum

Current Energy Cost: £1.996M

Current CRC Costs: £144 K

The initial project programme is for 5 years this will replace approx 74% of the current lanterns with a potential of £10.54M savings for an investment totalling £7.5M (See Table 1). (£1.5M per year)

##### **After Year 5**

Expected Energy Usage: 7729686 kwh per annum

Expected Energy Cost: £966K

Expected CRC Costs: £70 K

The complete replacement to low energy lighting can be completed within 7 years with a potential savings of £11.6M for an investment totalling £9.7M (See Table 2). (£1.5M for 6 years plus final year of £0.7M)

### **After Year 7**

Expected Energy Usage: 6297903 kwh per annum

Expected Energy Cost: £787K

Expected CRC Costs: £57 K

There has been a potential benefit from Aberdeen City Council not being “early adopter” of the change to LED lighting; this has allowed the continued development of the LED with a greater delivery of reliability.

The purchase price for LED lanterns has considerably reduced making the business case now potentially very good

Street Lighting maintenance revenue budgets will require careful management to ensure that there is enough funding within them to ensure the replacement of the lanterns at the end of their operational life. This is expected to be a minimum of 11 years from the start of installation. Currently there is insufficient evidence to say whether this will be by bulk change or by replacement when burned out.

## **6. IMPACT**

### **Improving Customer Experience –**

Customers should not notice a change to their existing lighting although the change from sodium lighting to white light will give the impression of a higher level of lighting

### **Improving Staff Experience –**

Staff training will be required to install and maintain the new LED's

### **Improving our use of Resources –**

The reduced period of maintenance should allow our staff to be further trained to take on other works associated with the maintenance of the roads infrastructure

### **Corporate –**

‘Aberdeen – The Smarter City’ identifies as a high priority that the Council will provide and promote a sustainable transport system, including cycling, which reduces our carbon emissions.

**Public –**

This report will be of interest to the public and the media

7. MANAGEMENT OF RISK



The replacement lantern programme will mitigate the risk to the council of additional charges with respect to our Carbon Reduction.

It sets out the work in priority operations across the city and the expected reduction in energy usage, this will be dependent on the availability of the LED lanterns as several other authorities are adopting a similar strategy at this time

8. BACKGROUND PAPERS

None

9. REPORT AUTHOR DETAILS

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**Table 1**

**Five Year Project Costs Replacing 77% of Street Lighting Lanterns**

	<b>Existing KWH</b>	<b>New KWH</b>	<b>Annual Saving</b>	<b>Cummulative Savings</b>	<b>Annual CRC Saving</b>	<b>Cummulative CRC Saving</b>
Year 1	15967953	12755460	£401,561.68	£401,561.68	£28,942.61	£28,942.61
Year 2	12755460	11343760	£176,462.50	£578,024.18	£12,718.56	£41,661.16
Year 3	11343760	9976357	£170,925.43	£748,949.60	£12,319.47	£53,980.63
Year 4	9976357	8805094	£146,407.83	£895,357.43	£10,552.36	£64,532.99
Year 5	8805094	7729686	£134,425.95	£1,029,783.38	£9,688.77	£74,221.76
Year 6	7729686	7729686		£1,029,783.38		£74,221.76
Year 7	7729686	7729686		£1,029,783.38		£74,221.76
Year 8	7729686	7729686		£1,029,783.38		£74,221.76
Year 9	7729686	7729686		£1,029,783.38		£74,221.76
Year 10	7729686	7729686		£1,029,783.38		£74,221.76
Year 11	7729686	7729686		£1,029,783.38		£74,221.76
			<b>£1,029,783.38</b>	<b>£9,832,376.50</b>	<b>£74,221.76</b>	<b>£708,669.72</b>

CRC Cost Charged Per Tonne CO<sup>2</sup> Produced = £ 16.90      Conversion Factor 1 kwh = 0.5331 kg

**Table 2****Full Project Costs For Replacement of 100% of Street Lighting Lanterns**

	<b>Existing KWH</b>	<b>New KWH</b>	<b>Annual Saving</b>	<b>Cummulative Savings</b>	<b>Annual CRC Saving</b>	<b>Cummulative CRC Saving</b>
Year 1	15967953	12755460	£401,561.68	£401,561.68	£28,942.61	£28,942.61
Year 2	12755460	11343760	£176,462.50	£578,024.18	£12,718.56	£41,661.16
Year 3	11343760	9976357	£170,925.43	£748,949.60	£12,319.47	£53,980.63
Year 4	9976357	8805094	£146,407.83	£895,357.43	£10,552.36	£64,532.99
Year 5	8805094	7729686	£134,425.95	£1,029,783.38	£9,688.77	£74,221.76
Year 6	7729686	6862819	£108,358.43	£1,138,141.80	£7,809.95	£82,031.71
Year 7	6862819	6297903	£70,614.45	£1,208,756.25	£5,089.54	£87,121.25
Year 8	6297903	6297903		£1,208,756.25		£87,121.25
Year 9	6297903	6297903		£1,208,756.25		£87,121.25
Year 10	6297903	6297903		£1,208,756.25		£87,121.25
Year 11	6297903	6297903		£1,208,756.25		£87,121.25
			<b>£1,208,756.25</b>	<b>£10,835,599.30</b>	<b>£87,121.25</b>	<b>£780,977.12</b>

CRC Cost Charged Per Tonne CO<sup>2</sup> Produced = £ 16.90

Conversion Factor 1 kwh = 0.5331 kg