

Bracknell Town Council's Carbon Reduction Working Group – using data to inform effective policy

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Abstract

In 2017 Bracknell Town Council (Berkshire, United Kingdom) committed to reducing its carbon footprint. The paper tells the story of how this commitment came about, how the Council was able to quantify its carbon footprint, and initiate a 10-year programme to reduce it.

Keywords – carbon footprint; air pollution; local government; evidence-based policy making

1 Introduction

In October 2017 Bracknell Town Council (Berkshire, United Kingdom) passed a Motion committing itself to reducing its carbon footprint i.e. the amount of carbon dioxide released through the Council's operations.

This paper outlines the background to this Motion, and once it was passed, how the Council used data to quantify its carbon footprint. The following section goes on to explore how this data was then used. A 10 year programme of various projects has been planned which will lead to the Council eliminating all direct sources of carbon dioxide emissions and other sources of air pollution. By May 2019 the Council had already made significant progress in implementing this programme. The Council will deliver a 60% reduction in its carbon footprint by the end of 2021. The final section of the paper advances a range of 'lessons learned' which could also be used by other local authorities, private companies, or indeed any other organization.

2 Background

Air pollution and climate change are increasingly viewed as key public policy issues, indeed, in 2016 The Royal College of Physicians released a report entitled '*Every breath we take: the lifelong impact of air pollution*'. The findings of this paper were damning:

- The annual mortality burden in the UK from exposure to outdoor air pollution is equivalent to 40,000 deaths;
- The cost to society, business, health services and individuals who suffer from illness and premature death caused by air pollution is more than £20 billion every year;
- Air pollution plays a key role in climate change;
- Air pollution is linked to respiratory disease, cardiovascular disease, diabetes, obesity, central nervous disease, cancer, and health problems during pregnancy such as miscarriage, stillbirth, premature delivery and low birth weight (RCP, 2016).

This report inspired the present author, who was a sitting Councillor on Bracknell Town Council at the time, to put forward a Motion to Full Council which not only sought to recognize air pollution and climate change as key public policy issues, but also set out achievable targets which would reduce air pollution and the Council's carbon footprint over a 20 year period. This Motion was submitted to the Full Council on 10th October 2017.

Wording of the Original Motion:

"This Council:

1. Recognises the clear and present dangers of air pollution and climate change, both locally, nationally and internationally;
2. Believes that it has a moral imperative to do everything within its power to reduce its own contribution to these dangers;
3. Believes that it has an important duty to provide community leadership in addressing these dangers.

This Council resolves:

1. To become a carbon neutral* organisation by 1st January 2027

2. To become a zero carbon** organisation by 1st January 2037.

*defined as having a net zero release of carbon dioxide into the atmosphere

**defined as causing no net release of carbon dioxide into the atmosphere" (Bracknell Town Council, 2017)

The Motion was greeted positively, however, concerns were raised that no costed project or programme had yet been developed to deliver it, and therefore, no cost could be estimated at that time. The Council understandably did not want to write a blank cheque and therefore an amended Motion was advanced.

Wording of the Amended Motion

“This Council (a parish council) resolves to endeavour to reduce its carbon footprint.” (Bracknell Town Council, 2017)

This Motion was passed unanimously with cross-party support.

2.1 Establishment of a Working Group

To deliver key policies, Councils in the UK will usually create a Working Group. The Council duly established the ‘Carbon Reduction Working Group’ to implement this Motion under the Chairmanship of the present author.

2.1.1 Quantifying the Council’s carbon footprint

The decision was made at the first meeting that, in order to deliver the Motion, it would be necessary to first quantify the Council’s carbon footprint. This would allow the Working Group to be able to subsequently develop projects.

To do this, the Council used the guidance paper issued by the Department for Business, Energy & Industrial Strategy (2017) entitled *2017 Government GHG Conversion Factors for Company Reporting – Methodology Paper for Emission Factors – Final Report*. This document allows companies and other organisations to quantify their carbon footprint based on their electricity usage (in kWh), gas usage (in kWh), water and sewerage usage (in m³), and petrol and diesel usage (in litres).

The Working Group used this guidance to develop an Excel model which could estimate the carbon footprint for each individual Council site/facility, and for overall petrol and diesel usage (an important factor when so much of the Town Council’s work involves the use of vehicles and petrol-powered tools).

To demonstrate how the Excel model works, Figure 1 shows the ‘emission factor’ which is applied to each litre of petrol and diesel. One litre of petrol produces 2.30075 kg of CO₂e (carbon dioxide equivalent), i.e. CO₂ (carbon dioxide) combined with the other climate change inducing pollutants CH₄ (methane) and N₂O (nitrous oxide).

To estimate the total carbon footprint, it is then a case of multiplying the number of litres of fuel used during the time period being evaluated by these emission factors.

Figure 1: Sample of the Excel model showing CO₂e (carbon dioxide equivalent) per litre of petrol and diesel.

Key	kg CO ₂ e	kg CO ₂	kg CH ₄	kg N ₂ O
Petrol (litres)	2.30075	2.28999	0.00704	0.00372
Diesel (litres)	2.67193	2.65020	0.00052	0.02122

Using utility and other billing data of the Council’s energy, water and fuel usage for January to December 2017 it was possible to estimate the carbon footprint for that year. Figure 2 shows estimates for CO₂e created by the Council’s use of petrol and diesel in 2017.

Figure 2: Sample of the Excel model showing CO₂e for petrol and diesel usage in 2017.

	Litres used	kg CO ₂ e	kg CO ₂	kg CH ₄	kg N ₂ O
Petrol used (litres)	2564.6 2	5900. 55	5872.96 11	18.0501 19	9.53636 44
Diesel used (litres)	20903. 79	55853 .5	55399.1 29	10.8032 94	443.575 14

Using this Excel model, the Working Group was able to estimate that the Council produced a total of 176.29 tonnes (2.d.p.) of CO₂e in 2017.

Figure 3: Headline 2017 carbon footprint taken from Excel model (kg of CO₂e).

Total emissions from sites	114,534.61
Total emissions from vehicles	61,754.05
Total	176,288.66

Being able to quantify the Council's carbon footprint was a major step-forward, even if it was only an estimate. Key limitations of the model were:

- It did not include raw materials used by the Council, e.g. play equipment, seeds, etc.;
- It did not include goods sold, e.g. food and drink, or materials used, e.g. paper cups, plastic cup lids and cutlery;
- It did not include the carbon footprint from the Council's vehicles manufacture.

Despite these limitations, the model provided strong evidence to encourage political support towards continuing the efforts of the Working Group. The benchmarking of the Council's carbon footprint in 2017 would also allow progress to be tracked over time.

3 10 year programme

The Excel model allowed the Working Group to identify which of the Council's sites and activities produced the most CO₂e and were therefore the most polluting. These were:

- Gas and electricity usage at all sites;
- Petrol trimmers, hedge trimmers and blowers;
- Diesel tractors and other vehicles.

To deliver the necessary reductions in CO₂ a 10 year programme (2018 to 2028) was developed consisting of 7 large projects:

1. Replacement of legacy non-LED lighting;
2. Switching energy tariffs to 100% renewables;
3. Replacement of vehicles with more efficient models;
4. Installation of solar panels (with storage) at existing sites;
5. Improvement of current buildings thermal efficiency;
6. Installation of electric vehicle (EV) charging facilities for Council's own EV facilities;

7. Provision of public EV charging facilities.

This programme was very much an emergent one, with each project only being started once a full cost-benefit analysis had been conducted and the appropriate political approval given (via Environmental Services Committee and Full Council).

4 Progress so far

As of May 2019, the Working Group was able to boast the following achievements:

- The replacement of non-LED lighting at a number of sites. Each replacement achieved a reduction of 90% of energy usage (and therefore carbon footprint) over conventional incandescent bulbs. This work is on-going;
- Renewable gas and electricity contracts were secured for all sites meaning a reduction of 60% in the Council's total carbon footprint by 2021 (when all the contracts will have come into force);
- The replacement of most petrol trimmers, hedge trimmers and blowers with electric versions. By using electricity, the Council will save over £1,500 over three years even when the higher upfront cost of electric equipment is factored in. Electric equipment also has less noise, vibration and no direct air pollution making it much more comfortable to use for long periods;
- All vehicles replaced so far have been with more efficient versions. Leases of electric vehicles are being explored where affordable vehicles with the same capabilities exist.

5 Lessons learned

A number of lessons can be learned for other local authorities and other organizations looking to reduce their air pollution and carbon footprint:

- Strategic (political) support is key. To deliver such an ambitious programme requires a shift in the entire culture of the organization – especially where front-line staff will have to change the way they work;
- Quantifying an organisation's carbon footprint will be an estimate, but using a credible methodology,

software and support from suitably qualified individuals will make it a credible estimate;

- It can be done! Despite scepticism, Bracknell Town Council has proved that it is possible for even a small organization to dramatically reduce its carbon footprint and air pollution in a very short period of time without any reduction in service;
- It will save money. Using less energy, especially non-renewable energy which will be increasingly expensive going forwards, makes financial sense. Switching to renewable energy, which will be increasingly cheaper thanks to innovation and economies of scale in manufacturing and production, also makes financial sense;
- It will dramatically reduce direct air pollution, especially from 2-stroke engines which are highly polluting;
- Technology is still developing. One of the major challenges for the Council was that electric and hybrid vehicle technology is less developed for tractors, mowers and other types of municipal vehicle. In the future it will be possible for all the Council's vehicles to be electric, and to recharge using stored solar energy from the Council's own solar panels.

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References

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