Manchester City Council
Report for Information

Report to: Neighbourhoods and Environment Scrutiny Committee – 28 February 2018

Subject: Local energy solutions and renewable energy solutions

Report of: Deputy Chief Executive, Growth and Neighbourhoods

Summary

This report provides an update on local energy and renewable energy solutions in Manchester / Greater Manchester.

Recommendations

To note the report and welcome the development of local and renewable energy solutions.

To discuss ways to support new energy solutions and consider ways to finance them.

Wards Affected: All

Alignment to the Our Manchester Strategy Outcomes (if applicable)

Manchester Strategy outcomes	Summary of how this report aligns to the OMS
A thriving and sustainable city: supporting a diverse and distinctive economy that creates jobs and opportunities	The low carbon energy sector is becoming an increasingly important part of the local economy, generating jobs and new income.
A highly skilled city: world class and home grown talent sustaining the city's economic success	Training such as Carbon Literacy and smart energy solutions provide Manchester's companies with cutting edge technology and promote energy efficiency.
A progressive and equitable city: making a positive contribution by unlocking the potential of our communities	A key part of work in this area is to reduce energy poverty in Manchester and seek to support local community energy schemes.
A liveable and low carbon city: a destination of choice to live, visit, work	A core part of the work is to support the Council's carbon reduction plans for 2020 and becoming a zero carbon city by 2050.

A connected city: world class infrastructure and connectivity to drive growth	Much of the smart energy schemes notes in the report will assist in driving economic growth.

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Background documents (available for public inspection):

The following documents disclose important facts on which the report is based and have been relied upon in preparing the report. Copies of the background documents are available up to 4 years after the date of the meeting. If you would like a copy please contact one of the contact officers above.

MCC Climate Change Action Plan –
http://www.manchester.gov.uk/downloads/download/6033/mcc_climate_change_action_plan_201415_201617

City Verve Energy and the Environment –
https://cityverve.org.uk/project/energy-and-environment

NFLA latest update on decentralised energy in the UK and Ireland –
http://www.nuclearpolicy.info/wp/wp-content/uploads/2017/05/A273_NB160_Decentralised_energy_update.pdf

1.0 Introduction

1.1 Over the past decade, the UK energy market has seen significant change as moves towards decarbonisation escalate as part of wider strategies to mitigate the potentially harmful effects of climate change. This has allowed somewhat for the development of 'decentralised energy' giving local authorities and local communities the opportunity to develop renewable energy projects. At its height, a small number of local authorities have developed Energy Service Companies (ESCOs) to formally get involved in the wholesale electricity market, whilst a number of other Councils have developed 'mini-ESCOs' focusing on areas like district heating and renewable transport solutions. Nottingham and Bristol City Councils have put considerable investment in, and have taken a significant financial risk with developing these comprehensive energy generation and distribution models. These have seen significant losses in their first and second year of operation (£7.6 million for Nottingham's Robin Hood Energy in 2016/17 and £8.4 million for Bristol Energy Company for the same financial year), though they both assert they will be 'breaking even' in the next year or two.

1.2 As the major challenges became apparent with climate change, the Labour Government of 2005 – 2010 initiated a process of promoting the development of renewable and decentralised energy. That was followed between 2010 and 2015 by the Coalition Government assisting the development of decentralised and local energy projects through the creation of renewable energy support schemes like Feed-in Tariffs (FiTs). A policy idea taken from Germany, the Feed-In Tariff applied to small-scale generation of electricity using eligible renewable technologies. It encouraged domestic residents, community cooperatives and Councils to install solar PV and small wind turbines through a medium-term financial support scheme (over a 20 – 25 year period). The scheme was successful, with in the first year of its use in 2011 seeing over 28,000 solar installations around the UK, producing 78MW, along with 20.4MW of wind and 12MW of small hydro schemes. Many Councils took advantage of these schemes, particularly in the area of solar PV, to develop renewable energy schemes on Council buildings, schools and social housing. In Manchester 11 schools installed solar PV – Parrs Wood High School installed 998 panels alone with the other 10 schools installing smaller schemes of around an average of 40 panels per school. However, the cost of the schemes was seen by Government as becoming prohibitively expensive and tariffs were progressively reduced between 2012 and 2015. In 2015 the new Government considerably reduced the value of most FiTs (by as much as 90%) and completely abolished others, making it much more difficult for a number of low carbon schemes to be cost effective for local authorities to progress them. This poses a real challenge to continue to develop similar schemes at schools and on community buildings. As such, there has been both a local and national reconsideration of how decentralised energy can be developed and it is acknowledged that future progression requires more innovative solutions, moving more into the areas of renewable heat and transport. This report will look at some of those solutions.

1.3 Whilst also playing an important role in the reduction of carbon emissions, the development of local and renewable energy could also positively generate new jobs and economic activity at a local and a regional level. The most recent figures (for 2016) from the Office for National Statistics calculates that there are 84,000 local and renewable energy companies in the UK, with 208,000 employees generating turnover of £44.2 billion. However, due to the cuts to FITS, this is down from a high of £44 billion in 2014. In Greater Manchester, the Low Carbon energy sector is important to the local economy. The GM Business Growth Hub calculates that there is 5% year on year growth in the sector, making it the third largest low carbon and environmental goods and services sector in the UK. The sector is generating £5.5bn sales of low carbon and environmental goods and services from 2,043 companies and involving 37,000 jobs.

1.4 This report provides a short background of how Manchester City Council is seeking to develop local energy solutions involving renewable energy, particularly through cooperation with the Greater Manchester Combined Authority (GMCA), who are presently considering the creation of new models to develop a GM-wide Energy Enterprise. It will also briefly touch on other emerging solutions and positive developments in local government in this area, as well as considering emerging best practice.

2.0 Background – where we are and where we want to be

2.1 Manchester City Council has set a target to reduce its carbon emissions by 41% by 2020 and to become a 'zero carbon city' by 2050. Figures from the Council's Energy Management Team record that the Council is broadly set to meet its 2020 carbon reduction target, which is in itself a significant achievement. However, it should be noted that a part of that reduction is linked to a significant reduction of the Council's buildings portfolio along with significantly improved grid decarbonisation measures undertaken at the national and regional level. As part of this process, the Council's energy has been for some years purchased at a bulk level with preference for companies and tariffs that specialise in generating renewable energy.

2.2 Section 3 below outlines the specific areas of work the Council is currently involved in that seek to develop low carbon, decentralised energy solutions. Like many Councils, support had been re-prioritised in Manchester around areas where subsidy support is still available, such as with the development of a wide district heating network in the city centre and social housing networks.

2.3 The Greater Manchester Elected Mayor has a manifesto commitment to look at models to develop a GM-wide Energy Enterprise with the support of the 10 Greater Manchester Councils. This is currently being developed and could allow for a more comprehensive solution in the delivery of local and renewable energy solutions. At present, Greater Manchester as a whole has 140 MW of installed renewable electricity and 29 MW of renewable heat capacity. A Green Energy Summit is being planned by GMCA for the 21st March at Manchester Central to discuss such matters in much more detail and agree on

a blueprint for the future. Members of the Scrutiny Committee who are interested in this issue are encouraged to attend it.

3.0 Current Manchester City Council Renewable Energy / Low Carbon Schemes and consideration of the Energy Enterprise models

3.1 There are currently a number of substantive areas and one emerging area where low carbon renewable energy initiatives are underway in Manchester:

- **MCC Estates Carbon Reduction Programme** – The Carbon Reduction Programme is a 4 – 5 year programme of work to turn a £10m capital investment into annual revenue savings of circa £1m with 5,000 tonnes of carbon savings. Detailed work is currently focusing on carbon reduction measures within twenty Council buildings.
- **Manchester Civic Quarter Heat Network** - in cooperation with, and led by the GMCA Low Carbon Hub Team, the creation of a new district heating energy centre is being developed within the Manchester Central Conference Centre complex, supplying low carbon heat and power to 8 buildings within the city centre. The scheme will also allow for future expansion to other buildings. Cooperation is also taking place through GMCA for similar schemes along the Oxford Road Corridor with the two Universities and Central Manchester NHS Trust, the NOMA development with the Co-op and at Piccadilly Station with Network Rail.
- **Triangulum** - The Triangulum project is funded through the Horizon 2020 European Union 'Smart Cities and Communities' Programme and is seeking 'smart', low carbon and energy saving solutions across the cities of Manchester, Eindhoven and Stavanger. €9m funding has been provided to Manchester partners, University of Manchester, Manchester Metropolitan University, Siemens and Clicks and Links, with around €1m directly for MCC. The project is working across the themes of energy, mobility and ICT to explore innovative solutions to reduce costs, reduce energy consumption and engage with Manchester citizens. It will run until January 2020. Within the Energy theme, a number of notable installations have taken place in Manchester over the past few months. In January 2018, a new Siemens Building Energy Management system (BEMs) was installed, replacing the outdated one, at Manchester Art Gallery. Combined with Siemens' expert advice on setting the parameters, it is hoped that the new system will help the Gallery to achieve significant energy and cost savings. At MMU's Birley Campus, a 157kw solar PV panel installation took place in December 2017, increasing the amount of renewable generation on campus. This will complement not only the existing power infrastructure at the campus, but will also work in tandem with two other Triangulum-funded components, a 'central controller' which trials different energy saving scenarios, and a large (500kwh/400kw) Electrical Energy Storage system (Battery) which is due to be installed in April 2018. The aim is that the combination of these assets will allow the Birley campus to reduce its energy consumption at peak times as well as reducing costs.
- **City Verve** – this is a two year project (July 2016 – June 2018) funded by the Department of Media, Culture and Sport through Innovate UK. The project totals £16m, of which £10m is Innovate UK grant. There is a 21

partner consortium, which consists of public and private partners, and a number of SME's. It is led by Manchester City Council alongside the Lead Technical Partner, Cisco. City Verve aims to radically overhaul how a city's services are provided to its citizens focusing on four themes, one of which is Energy & the Environment, by using the 'Internet of Things' (IoT) technology to facilitate 'smart' improvements for those that live, work and study in the Corridor Manchester area. Innovative technology solutions are being deployed to reduce building costs, energy consumption and improve sustainability across Manchester Science Partnerships (MSP), Manchester Metropolitan University (MMU), the University of Manchester (UoM) and Manchester City Council estates located along the Oxford Road Corridor. The budget for this is over £2m. Examples of the installations taking place include a Next Generation Building Management System (BMS) within City Labs, which uses smart technology attached to existing BMS systems to monitor and forecast using external information sources and to manage building conditions dynamically. The software also allows building managers to help manage the grid through controlling demand within the building. This will also see the installation of an energy storage battery at the Bright Building in March 2018, which will be used to store surplus energy from the building. The Building Retrofit uses a "smart box" to allow building owners to connect existing equipment along with new IoT technologies and sensors to allow better management and energy efficiency. The Town Hall Extension will shortly trial Workplace Occupancy IoT Sensors, to provide real time Occupancy, Noise and Temperature data for Estate Management. This will also allow informed decisions on space usage and employee working conditions, and lead to energy cost savings.

- **Waste collection and fleet management** – initial discussions are taking place with Fleet Management and Biffa to look at electrifying waste collection vehicles and charging such vehicles from a proposed solar photovoltaic installation on the roof of the Hammerstone Road depot. An outline business case has been developed similar to a proposal from a company called Magtec, who are working with the Royal Borough of Greenwich on a similar project. A pilot project is being developed to demonstrate the scheme, and Biffa will take ownership of the first electric refuse vehicle for Manchester in May. It may also allow for the development of a battery storage scheme, the creation of a micro grid and to build up a consortium with relevant partners in the area.
- **Social housing and solar panels** – prior to the closure of the Government's Fit scheme, Northwards Housing had fitted around 1,400 solar PV panels to their housing stock in a £5m scheme which was concluded in 2015. Northwards Housing is currently investigating the development of a localised district heating network for its estate, including ground source heat pumps. Other social housing providers in Manchester are also scoping out similar district heating schemes.

3.2 At the GM level the launch of the 'GM Big Clean Switch' is also noteworthy. The 'GM Big Clean Switch' is a collaboration between the 10 Greater Manchester Councils and the organisation 'The Big Clean Switch', which is encouraging a greater take-up with energy companies developing renewable

gas and electricity solutions. This partnership with the GMCA is the first attempt in the UK to encourage such a large-scale switching to renewable energy companies. A September 2017 pilot scheme saw residents who took part saving £290 per year on their average energy utility bill. Apart from the 10 GM Councils, many other organisations and businesses are supporting the initiative, including Bolton Wanderers FC, the Greater Manchester Chamber of Commerce, the Greater Manchester NHS, 96.6 Bolton FM, Adactus Homes, the University of Salford and the Manchester Climate Change Agency, who are actively encouraging greater take-up of this pioneering scheme.

3.3 Also at a GM level, the Business Growth Hub provides tailored support and guidance to help small and medium sized enterprises reduce energy use and increase their knowledge of, and support for green energy education initiatives. In the most recent report from the Hub (2015/16), 137 Manchester businesses received resource efficiency support, helping to save £2.2m and 5,835 tonnes of carbon dioxide equivalent. 150 companies also received low carbon sector support, helping to win £6.8m in new sales and creating 24 jobs. At a school level, the Manchester Climate Change Agency has continued to support schools, 91% of which are now accredited as eco-schools. As such, CO2 emissions in all schools has reduced by 5% (2016 figures), with academies seeing an 11% emission cut.

4.0 The 2020 – 2050 energy challenge – developing a more comprehensive renewable energy model through a GM Energy Enterprise

4.1 While the schemes noted above are having a positive impact across Manchester / Greater Manchester, the challenge going beyond 2020 will be for even more comprehensive schemes to deliver both low carbon renewable energy and significant carbon reductions. The concept of an Energy Service Company or an Energy Enterprise model has been discussed in Manchester City Council, and in cooperation with GMCA, for some time. Feasibility work, carried out by GMCA in 2016 for the 10 Councils, considered a comprehensive model for a municipal GM energy company (like that developed by Nottingham City Council). This concluded that the level of upfront investment and the intense competition in the current marketplace was too high to justify this approach. Additionally, a more limited 'white label' Energy Company approach (where GMCA would cooperate with a third party energy company, like Nottingham's Robin Hood Energy Company, to build up a customer base for a more comprehensive energy company in the future) was thought to offer insufficient control to deliver required aspirations (e.g. around tackling fuel poverty) and therefore also carried some reputational risk.

4.2 An emerging process is currently being developed to look at different alternative models that can deliver an Energy Enterprise. This links in to providing a local response to the Government's recently published Clean Energy Growth Plan, which acknowledges that further deep decarbonisation will only occur through the acceleration of local energy efficiency and generation measures, linked to reducing costs/risks and encouraging strategies to promote local economic growth. The Government is currently attempting to facilitate the development of local energy projects through

capacity funding for the development of Regional Energy Hubs, which aim to provide coordinated support to a number of regional Local Enterprise Partnership areas, such as in Greater Manchester. Some of the schemes being considered could provide substantial funding to develop local renewable energy generation and energy efficiency schemes.

4.3 Consideration is currently being given for GMCA adopting a leadership role to ensure the local energy system can be decarbonised, digitized and decentralised. This also takes place at a time when future energy market reform mechanisms are being considered by Government that may open up opportunities between distribution network operators like Electricity Northwest and public authorities as energy asset owners. Officers in Oldham MBC have offered to lead on this initiative on behalf of the 10 GM Councils, in conjunction with the GMCA Low Carbon Hub Team. The March 21st GM Energy Summit will allow for further discussion of this emerging policy.

4.4 Such a careful approach is necessary given the crowded nature of the UK wholesale energy market (with over 50 companies at present) and the increase in operating costs for energy companies as the wider economy comes under inflationary pressures.

4.5 Discussions are also taking place between Manchester and GMCA officers and Siemens to consider and understand some of the local, renewable energy projects it is involved with around the UK, and discuss new ways to cooperate to deliver effective local schemes and lobby central government for supporting decentralised energy projects. A seminar is being organised shortly on this matter.

4.6 Members may also be interested in the wider national picture, where Councils are approaching the development of renewable and local decentralised energy projects in a number of different ways. APSE Energy, based in Trafford, is providing national guidance to local government on negotiating around the difficult and technical issues to deliver such projects. The Nuclear Free Local Authorities, based in Manchester City Council, is also undertaking regular updates of best practice in this area across the UK and Ireland. It is clear from an analysis of reports from both organisations that there is no ‘one size fits all’ answer in this presently difficult policy and economic environment. Such research is being fed directly into the Council and GMCA.

4.7 Current projects in Manchester and Greater Manchester are delivering low carbon energy generation, efficiency and storage solutions. However, a step change is required to deliver a more comprehensive approach beyond 2020, which requires the methodical and careful approach now being pursued.

5.0 Next steps

5.1 The report should be noted and the current schemes across Manchester and Greater Manchester are to be welcomed. It is also to be welcomed that these have contributed to Manchester being broadly on track to reach its 2020 carbon reduction target.

5.2 To deliver on the huge commitment to become a zero carbon city / region by 2050 (or earlier if the available science from the likes of the Tyndall Centre suggests it is necessary – a 2037 date has been suggested by them recently as critical, and is a core part of discussion at the GM Energy Summit) requires careful consideration at a time when national policy has made it more difficult to deliver decentralised energy projects. The consideration of a final model(s) to deliver much more comprehensive local renewable energy generation, efficiency and storage solutions is expected later in the year and an update to this report will be provided once the agreed way forward at a Greater Manchester level has been agreed upon.