

Cambridge District Heating Scheme

1. **Overview of project:** Cambridge City has limited options on how it can demonstrate low carbon leadership and stimulate significant reductions in carbon emissions. Recent studies have shown that the entering into a Joint Venture with Cambridge University and using the Local Authorities ability to prudentially borrow can create an economically viable combined heat and power (CHP) operation that will deliver return on investment producing an new income stream, reduce carbon emissions and protect large parts of the Cambridge community against significant future energy price increases. Over the last 18 months, in partnership with the Low Carbon Development Initiative (LCDI), and with support from EON, Aecom and Ernst & Young investigation have shown a low risk investment into a city centre based CHP operation for an outline capital investment of £25m could produce an Internal Rate of Return of up to 6.8%. Although not of interest to a commercial developer / investor, this would appear attractive to both the Council and Cambridge University and very worthy of continued investigation.
2. **What is a CHP:** We are looking at developing a low risk investment in a gas fired combined heat and power plant. Basically this uses a thermal process to produce electricity with the remaining heat then distributed through a heat pipe network to a paying customer base. This is a very efficient use of natural resources and as such saves a significant amount of CO₂. In the first year of operation it would save approximately 8000 Tonnes of CO₂.
3. **Why not use a renewable technology?** Gas is a fossil fuel and as such it has a carbon impact in utilisation, although given the efficiency through which its generates and distributes heat and electricity it does so in a very low carbon impact fashion. Renewable energy options could produce a greater carbon saving but, for example, using biomass to power the chp provides several technical, spatial and logistics challenges that ultimately make it a significantly higher investment risk. It is probably that future expansions of the network will utilise renewable options.
4. **Why a JV with Cambridge University:** A JV with Cambridge University provides several risk mitigation benefits:-
 - a. Shared risk in development phase
 - b. Access to greater customer base
 - c. Increased economies of scale
 - d. Similar outlook on non-commercial investment return and ability to secure debt at low interest rates
 - e. Shared ambitions to lead on low carbon activities and having greater and more effective working together.

5. **Why not bring in a Commercial JV Partner as well?:** The project as currently modelling produces a 6.8% IRR which is below the hurdle rate for commercial investors who would expect 10-12% for this type of investment. It is possible given the profile and future opportunities that a commercial investment partner could be secured but this would likely be at the expense of the ability to control the project, suffer a reduced IRR for Council and end up paying a higher price for the electricity and heat produced. However it should be noted that the final project will almost certainly be operated by a proven commercial operator of CHP.

James Beale
Senior Project Advisor
Low Carbon Development Initiative
2nd October 2012