

Community Energy Project

Brief to commission the undertaking of an options appraisal in Edinburgh North and Leith

Background

Community energy projects (CEP) are those in which individuals or groups from a community have a direct stake in energy generation or distribution. CEPs offer a variety of energy services that aim to benefit local communities or a communal goal. Such projects are well-known in other European countries, but are currently very limited in the UK.

In September 2006 the Edinburgh Community Energy Project Steering Group was formed and commissioned Changeworks to undertake a preliminary scoping report for a CEP in Edinburgh. The scoping report (attached Appendix I) identified the key aims and objectives of CEPs as follows

- To empower and retain wealth within communities
- To extend economic benefits to the local area such as local job creation
- To deliver local low carbon energy installations
- To meet the needs of marginalised groups, including reducing fuel poverty
- To raise awareness and make sustainable development understandable
- To promote cleaner and cheaper energy services
- To deliver an energy service

The community energy project may take on various forms of ownership/delivery structures and may comprise of various community types. The Edinburgh Community Energy Scoping Report broadly outlines the issues that need to be considered in developing a CEP in Edinburgh.

At about the same time, The City of Edinburgh Decentralised Energy (DE) Study – *Powering Edinburgh into the 21st Century* (2006) was published. This study, commissioned by the City of Edinburgh Council, concludes that:

- Only DE can meet the city's 2025 target for CO² emissions reductions
- Only establishing a DE pathway will allow Edinburgh to continue on to reach the 2050 target for CO² reductions.
- DE uses less primary energy to meet the heat and electricity demands of the city.
- Edinburgh's reliance on gas is reduced by following a DE pathway.
- A DE pathway is the only one capable of accommodating switching to new fuels and rapid incorporation of new technologies.
- Security of supply is enhanced when energy is generated by a decentralised system.
- DE would reduce the level of electricity imports into Edinburgh, with significant potential benefits to the National Grid.

In addition, the City of Edinburgh Council has approved a series of carbon targets:

- A 25% reduction in carbon by 2015 (for its own activities)
- A 35% reduction in carbon by 2025 (for its own activities)
- A carbon free Edinburgh by 2050

In light of growing concern on climate change issues and the targets set by the Council, the Steering Group decided that a study should be commissioned in a more localised area of Edinburgh to identify the 'best mix' of technologies..

Findings from this study will be put forward to the interested and affected community group. The community group will then decide as on how to proceed.

Consultancy Services Brief

Options appraisal for decentralised energy generation in Edinburgh North and Leith (ENL)

Consultants with experience in energy generation feasibility studies and scenario generation are invited to submit a tender to carry out an options appraisal that explores the (technical) opportunities for decentralised energy generation and distribution in Edinburgh North and Leith.

1. Aim of the Study

Consultants will evaluate the potential for ENL of four energy-generating technologies. Then, by developing and comparing energy/carbon reduction scenarios, the contractor will identify the most commercially and technologically viable “best-mix” scenario for Edinburgh North and Leith that will contribute to Edinburgh meeting its carbon targets.

The findings of the study will be used as the basis of a Community Energy Project (CEP). CEPs are energy projects in which the community has a direct stake in locally generated energy, and are described in detail in the attached Scoping Report (Appendix I).

2. Study outcomes

The following main outcomes should be derived from the study, and are addressed in more detail below:

- A Stage 1 report including maps detailing any relevant background information on energy studies in Edinburgh, taking into account national carbon target, and energy data for the ENL area looking at loads and demands.
- A Stage 2 report (including maps) detailing information on the potential decentralised energy technologies and renewable energy technologies possible for the ENL area.
- A Final report (including information from Stages 1 and 2) detailing the mix of technologies for ENL including detailed costings for each scenario. .

3. Geographical region

It is recommended that the study focus its attention in the geographical boundary of Edinburgh North and Leith, as indicated by the map attached (Appendix II). The study however should not be limited entirely to these boundaries if suitable opportunities are identified nearby. The boundaries are suggestive and are to be used only as a scoping mechanism if necessary.

North Edinburgh was chosen due to the amount of emerging development on brown-field sites, as well as containing significant existing built areas and regeneration areas. This development is likely to be both domestic, commercial and institutional. The development of this area brings an increased demand for energy and the potential for new energy production.

4. Study brief

At minimum, the following areas should be considered within the scope of work:

4.1 Stage 1: The background and demand

This element of the study will review background information looking at decentralised energy generation and heat distribution in Edinburgh and also consider national and city targets for carbon. Any other relevant information deemed appropriate by the Consultant can also be considered.

Forth Ports, who are represented on the Steering Group, have also commissioned an energy study and have indicated a willingness to make available results from this if timing allows. The proposal from this study should aim to be compatible with the Forth Ports Study. Consultants will be expected to liaise with the CEP Steering Group members as part of this review process.

The consultant will also as part of this first task conduct a geographic desktop study (using maps or other) to gather and summarise energy loads and demands of the ENL area, this may include but is not limited to:

- Data on buildings in the area
- Postcode data
- ScottishPower data

4.2 Stage 2: Assessment of technology potential

The successful contractor will need to evaluate the potential for the region of tried and tested energy-generation technologies.

The following energy schemes should be considered:

a. *Wind generation*

- An assessment of the wind resource (on and off shore) and best possible sites across ENL.
- An assessment of optimal size of wind farm, with respect to number and size of turbines.
- An assessment of issues for grid connection.

b. *Combined Heat and Power*

- An assessment of potential sites for CHP installations in ENL. The study can consider domestic, public and commercial buildings. These could include either proposed new development, refurbishment of existing buildings, or a combination of the above.
- An assessment of the optimum size of the installation and of the distribution network and fuel or fuel mix (including biomass, energy from waste, gas).
- An assessment of issues for grid connection.

c. *District Heating*

- An assessment of potential sites for district heating in ENL. The study can consider domestic, public and commercial buildings. These could include either proposed new development, refurbishment of existing buildings, or a combination of the above. The study should include either proposed new installations, or the extraction of heat from other existing facilities.

- An assessment of the optimum size of the installation and of the distribution network and fuel or fuel mix (including heat from waste, biomass and heat pumps).

d. Microgeneration

- An assessment of the potential sites for microgeneration technology installations (photovoltaics, solar thermal, micro wind) for community energy generation and/or in combination with potentially larger schemes as listed above.
- These could include either proposed new development, refurbishment of existing public buildings, or a combination of the two.
- An investigation of the planning process to identify issues that would support/prevent development.

From these findings, the successful contractor will produce a technology and/or resource map. The map will clearly indicate the various technology and resource potentials throughout the ENL area. It is intended that Individual sites on the map should be scored with respect to the opportunity for decentralised energy, as well as a demand score with respect to the energy and heat demand at the site.

The Consultants will be expected to produce a method statement for this stage including how they would score the potential technologies taking into account the key aim to reduce carbon emissions.

4.3 Stage 3: Final report : Scenario generation

Taking into account the findings from Stage 1 and 2, the consultants will produce a final report that details:

- a. The range of scenarios for the technology mixes in ENL that could contribute to Edinburgh meeting its carbon targets. Each scenario will include areas of opportunity, demand for energy generation and potential decentralised and renewable energies as identified in stages 1 and 2 . The scenarios will differ in terms of their technological mix, and they will be clearly defined. For example these could be:
 - i. Technology mix with a high wind component
 - ii. Technology mix with a good quality Combined Heat and Power component
 - iii. Technology mix with a high microgeneration component
 - iv. Technology mix with a high biomass component
 - v. Hybrid of the above
- b. The detailed costing for each scenario to provide an overall figure for the level of investment required. These costing figures should include likely payback periods and clearly state the assumptions used to calculate these figures. The following factors should be taken into consideration when producing the scenarios:
 - i. Capital cost of measures
 - ii. Rate of return
 - iii. Amortisation period
 - iv. Construction period
 - v. Potential or scale of measures
 - vi. Other costs
 - vii. Market risk
 - viii. Damage cost of carbon

- c. The carbon savings for each scenario clearly stating the assumptions, source and referencing of all data used in the calculation process.
- d. An analysis of the demand, load and opportunities of each technology used to generate each scenario to establish the most commercially viable scenario. This will include an investigation into the resource availability and developmental opportunity at specific sites.
- e. All scenarios are to be illustrated in a summary format and represented in graphical and tabular format for easy comparison, as well as accompanied by an explanation with all relevant assumptions.
- f. The identification and justification of the selection of the 'best mix' sample scenario to take forward as the main focus of the financial study to follow. This will include a list of specific potential sites and technologies to be explored.
- g. An assessment of potential delivery vehicle structures through which the preferred scenario could be financed and managed.

5. Deliverables

Unless a quote clearly indicates otherwise it is expected that the consultants will deliver the following:

- a. A Stage 1 report
- b. A Stage 2 report which includes a technology /resource map of sufficient depth and scope.
- c. A method statement for Stage 2 to be provided as part of the tender return
- d. A final report including details and findings from Stages 1 and 2 and specifically to detail Stage 3. The final report to include clear recommendations and all costings.
- e. Maps or other relevant pictorial representations of information
- f. All reports to be in hard copy as well as pdf's.
- g. A list of all key contacts and stakeholders consulted as part of the study.
- h. All calculations and assumptions used in the preparation of the scenarios, as well as sources and references for all data used
- i. A presentation of final report to either the steering group or another meeting as identified by the contract manager.

6. Timescales

The timescale for the entire study should be within a 5-6 month period. As part of the tender return, the Consultant should detail a programme of works covering the timescales for Stages 1,2 and 3. While not being prescriptive, indicative timescales might include:

	Stage 1	Stage 2	Stage 3
Start date	2-3 weeks	6-8 weeks	8-10 weeks

However the consultant must indicate clearly the expected timescales.

The tender will include a clear breakdown of the cost for each stage in the outlined approach. There will be a clear agreement as to proceeding with each stage and the Steering Group reserves the right to undertake all or part of the work. If part of the work is undertaken the Steering Group reserves the right to cease the contract.

Regular communication regarding progress should be made throughout the study with **XXXXXX XXXXXX**, (Project Manager of the Community Energy Project)-contact details below.

There will be an early inception meeting and thereafter meetings on a regular basis. At a minimum this should consist of weekly phone meetings and two weekly face to face meetings.

7. Expertise Required

The Consultant shall provide information to evidence that they have sufficient experience, knowledge and other skills to carry out this study and demonstrate that there will be sufficient resources to carry out the study within the timescale. The Consultant will be required to produce examples of similar work and references. in terms of size, scale and scope.

The tender should detail the project team, including names, relevant experience, day rates and time to be spent on the project. A lead manager for your team will be identified. CV's for all personnel to be employed on the project must be provided.

8. Payment and Budget

As stated previously, any tender will clearly detail the total project costs to complete this work. Payment will be made in two stages. The first on the completion and acceptance of the report for stage 2. The second and final payment on receipt of the final report including Stage 3 and completion of the final presentation.

9. Contract

The contract will be subject to the managing agent's terms and conditions- - a copy of which is attached (Appendix III).

10. Further Information

The lead contact will be (?Changeworks staff member or other)
Telephone,
Email, etc.

During this time, The CEP Steering Group will contribute to this study by sourcing and forwarding relevant documents, case studies, and arranging consultation, to the selected agency.