Michael King
Chairman
Aberdeen Heat & Power Co

District Heating and CHP
in
Aberdeen
Aberdeen City Council

- Feb 1999 adopts Affordable Warmth Strategy
  - Policy to target the least thermally efficient homes
  - Found to be multi storey flats
- Commissioned study of all 59 multi storey blocks
  - Structural survey
  - Ground conditions survey
  - Energy issues - affordable warmth, reduced CO$_2$ emissions, affordable to Council, speedy delivery

- To provide a strategy for future investment in these blocks
Stockethill cluster

Interim report focused on cluster of 4 multi storey blocks
- 19 storeys
- total of 288 flats
- electric storage heating
- precast panel, cavity construction

- Considered range of options – refurb elec heating, centralised HoB, CHP, overcladding

- Recommended CHP – gave 2nd best cost in use outcome for residents
# Report findings

<table>
<thead>
<tr>
<th>Option</th>
<th>Over-cladding</th>
<th>Cost/Flat</th>
<th>Heatcost/Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elect Htg</td>
<td>£4.3M</td>
<td>£20,000</td>
<td>£14.27</td>
</tr>
<tr>
<td>Central Blr</td>
<td>£5.4M</td>
<td>£23,000</td>
<td>£5.65</td>
</tr>
<tr>
<td>CHP Plant</td>
<td>£5.6M</td>
<td>£24,000</td>
<td>£3.18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>No Over-cladding</th>
<th>Cost/Flat</th>
<th>Heat cost/Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elect Htg</td>
<td>£0.4M</td>
<td>£1,691</td>
<td>£15.73</td>
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<tr>
<td>Central Blr</td>
<td>£1.0M</td>
<td>£4,464</td>
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<tr>
<td>CHP Plant</td>
<td>£1.2M</td>
<td>£5,000</td>
<td>£3.65</td>
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</tbody>
</table>
Aberdeen Heat & Power Co

- Arms length not-for-profit co limited by guarantee
- Membership structure instead of shareholders
- Voluntary board
- N-f-P structure enables alignment with socio/environmental objectives
- Provides focussed management
- Responsible for raising capital business plan, cash flow management
- Can accept lower NPV
- Contractual relationships with Council secures lower cost capital

- Responsible for fuel purchases, operation & management and sales

- Sales arrangements
- Consultation on resident preferences
  - Flat rate charge for heat
  - Tenants – heat with rent
  - Owner-occupiers – direct debit established
- Electricity sales – via consolidator
  - to local residents and customers

- Development of further projects
Stockethill Cluster

- Total project cost - £1.6 million
- Community Energy Programme
  - £730,000 grant for capital costs
    - CHP plant
    - Distribution system
    - Internals
- Bank financing of up to £1 million based on income from Council of £215,000 pa
- Energy Efficiency Commitment (EEC) money to offset costs of heating systems within leaseholder flats.
- Surpluses re-cycled for further projects
- Saves 12,000 tonnes over 35 years
Development at Hazlehead

- Hazlehead completed
- Community Energy Prog grant
- 4 blocks with 180 flats
- 50 sheltered units
- School with swimming pool
- Extension to Hazlehead sports facility completed
- Plant room located in school
- 320 kW CHP with backup boilers
- Private electricity supply to school
- 14,500 tonnes saved over 25 years
Development at Seaton

- Seaton Phase 1 (6 blocks - 500 flats) completed
- Community Energy Prog grant
- Plant room designed to blend with links
- Incorporates sports changing room and shower facilities
- 1 MW gas-fired CHP with back-up boiler
- Space allowed for future plant additions
- Link to regional sports facility completed
- Beachfront complex (ballroom, ice rink, leisure centre) completed
- 24,300 tonnes saved over 25 years
Under development

Mastrick Land

- 52 flats
- Currently electric ‘wet’ systems
- Being developed as a stand alone ‘heat only’
- 4 in line gas boilers
- Will retro-connect to heat network as it develops
- Straight design/build contract with City Council
Under development
Ashgrove Court

- 40 flats
- Currently electric storage heaters
- Being developed as a stand alone ‘heat only’
- 4 in line gas boilers
- Will retro-connect to heat network as it develops
- Straight design/build contract with City Council
Future Development

- Aberdeen Sports Village (private development) connection in place
- Seaton Phase 2 - planned, remaining six blocks plus school
- Commenced work on blocks at Ashgrove Court & Mastrick Land
- Denburn Court under investigation
- Extend into Tillydrone regen area
- Planning permission lodged for extension to Seaton plant room to accommodate biomass CHP
- Discussions with NHS Grampian
- Planned city centre network linking blocks and public buildings
- Interest from 2 data centres
Biomass at Seaton

Drivers
• Reduced volatility
• Reduced costs for customers
• Carbon reductions
• Local economic stimulus

Problems
• Larger landtake & transport access
• Air quality issues (+ 500 kW DECC)
• For CHP need to extend network to build load to + 1.5 MW first
• This phase will be gas-based
• ROC’s & RHI do not recognise infrastructure cost
Overview

- Strategic city wide approach
- Focus on fuel poverty
- Identify and develop heat islands as anchor loads
- Public sector customer base reduces development risk
- Connect loads together to form network
- Diversify customer base – residential, institutional, commercial
- Multiple heat sources
- Diversify fuel types
- Provides robust system, security of supply and reduces volatility
- Eventual development of ring main with multiple embedded CHP stations with a variety of fuels
- Future proofs city – easy to retrofit emerging technologies
- Generates electricity locally – avoids transmission/distribution losses
- Saves carbon – currently 2,000 tonnes per annum
- Community Energy Programme grant crucial for start up
What people want
Affordable, reliable, controllable heat
Contact

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