INTRODUCTION

West Highland Housing Association has over 700 properties throughout the Oban and Lorn area. The majority of the area is “off the gas grid” with only certain parts of Oban having the ability to benefit from town gas.

In 2004 with the assistance of the Scottish Government and in partnership with Vital Energy West Highland committed itself to the first phase of a biomass district heating system based in the Glenshellach area of Oban. This second and final phase was complete in 2006 and since then 89 properties have been fed heat of this district heating system.

Our experience and learning from this work has encouraged the Association to consider further developments of this nature but there are a number of challenges for this organisation in making its commitment to renewable become a reality.

THE TARGETS AND COSTS

The broad Scottish Government targets are the reduction of carbon emissions by 42% by 2020 and 80% by 2050, based on 2009 levels. Doing very simple calculations we would expect to be able to demonstrate a carbon reduction of 42% if we had 300 properties heated by renewable energy.

At present in respect of renewable technology the Association has:

- 89 properties fed from a biomass;
- 24 properties fed from a ground source heat pump;
- 110 properties benefiting from solar power that heats hot water.

Around 16% of our existing properties are being heated from renewable energy. The other 84% or 600 are mainly heated by a mixture of electric systems – storage, electric wet/dry all of which we know are costly to run and result in higher levels of carbon emissions.

If our plans for renewable heating systems were all met within 3 years we could just about double this to 220 properties stock or just over 30% of our stock.

For West Highland, like other Housing Associations, we are required to meet the Scottish Housing Quality Standard by 2015 and this states that we should meet a SAP rating of 60 or an NHER rating of 5 along with a full central heating system and loft insulation of 250mm
2.4 The Association has a small number of failures in respect of SAP but these are expected to be dealt with in the coming years. In relation to fuel poverty then our approach is about trying to ensure that as many properties have good insulation and we are presently increasing our insulation to 300mm in the loft space [50mm above the present standard].

2.5 Within our existing 30 year business plan then there is approximately £3m attributed to new heating systems [an average of an £4,000 per property]. If we were to cost renewable at the present time and use costs for either Ground Source Heat Pumps or Biomass then we would be looking at additional costs of at a minimum of £4000 this is mainly costs relating to a district heating network.

2.6 For other organisations there might be the opportunity to reduce carbon initially by switching from electricity to oil or gas as this does make a saving plus would meet the SAP rating. For us this is not feasible.

3. WHAT TYPE OF RENEWABLE SYSTEMS

3.1 At present the renewable technologies are as follows:

- Air to air [blown air]
- Air to water [radiator system]
- Exhaust air systems
- Ground Source Heat Pumps
- Biomass

3.2 Our experience is primarily in biomass and ground source heat pumps although in certain areas ie smaller housing developments there is a place for other renewable technologies.

3.3 Due to our experience and age, situation of stock we see Oban, which has our highest stock number, as a key place to assist us on delivering the Governments targets.

Where possible we would prefer to utilise district heating networks for the provision of heat. These networks are easy for the users without any concerns of sourcing fuel. The other option would be to fit individual systems but in the case of Ground Source Heat Pumps this would be very expensive and in the case of biomass then the tenant would have to source their own fuel supplier.

There are two types of district heating network that we could consider:

- Ground source heat pumps
- Biomass.

3.4 In both cases our experience of developing business cases demonstrate that for these types of schemes to work there is a need for
around 20 properties to be connected. Theoretically the Renewable Heat Incentive should assist with payback of capital but this is dependent on amount of heat used and size of boiler.

3.5 We also see opportunities for small community type enterprises to develop capacity in producing biomass but this is in the medium to long term. However, our decision to go forward with biomass was also in part about working with individuals and community groups to secure small suppliers. We know for this to happen there needs to be a secure demand and our intention is to develop biomass so that there is credible demand for local supply.

4. **EXISTING SCHEMES - EXPERIENCE**

Glenshellach
4.1 The biomass heat source is supplied through waste wood derived as a byproduct of tree felling and saw milling in Argyll. At present biomass is delivered from Tignabruich but previously biomass was bought from Mull and certainly the Association would prefer to purchase from a supplier closer to Oban.

4.2 The scheme incorporates a state of the art 650kW biomass district heating system designed, installed and operated and maintained by Vital Energi. The energy centre is located on the Glenshellach estate but is neatly landscaped and blends in with the housing development.

4.3 It is a district heating network that should last upwards of 50 years. At the time of the build the network was one of the largest in Scotland. The design of the system enables the heat to be delivered and transferred to each residence by means of, which deliver instant and continuous heat and domestic hot water to the dwelling. A heat meter incorporated into the HIU meters the amount of heat taken from the common heating distribution system by each individual dwelling.

Vital Energi operates a pre-payment system that enables residents to purchase heat credits using swipe card technology. The EasiPay -Card is topped up with heat credits over the counter at the local point of sale.

4.4 West Highland Association has negotiated a unique operation, administration and maintenance contract with Vital Energi, to ensure that the system operates efficiently. This includes the administration, operation and maintenance of the Energy Centre including wood chip fuelled boiler, the oil fired back up boiler, with all associated equipment inside the boilerhouse, the common heating distribution pipe network and the dwelling internal installation including the HIU, Heat Meter and the EasiPay system.

Vital Energi also maintain surveillance over the whole operation 24 hours a day leaving residents feeling secure and with piece of mind.
that their heating supply would be swiftly restored in the event of a breakdown.

**JURA AND ISLAY – GROUND SOURCE HEAT PUMPS**

4.5 In 2007/08 new properties at Port Charlotte, Islay and Craighouse, Jura were built with 24 properties fed from ground source heat pumps.

4.6 This system is very low maintenance in terms of the Association. We had teething problems in respect of the properties but we have addressed these and the system is working as expected.

4.7 Our experience with both biomass and ground source heat pumps is building from new which is substantially easier than retro-fitting and this is our next challenge.

5. **FUTURE SCHEMES**

5.1 The Association has received money from the Scottish District Heating Scheme for 3 projects:

- Mull Progressive Care [new build] 15 properties and health facility served from biomass.
- Dalintart – 60 properties based in Oban. Retrofitting of a district heating biomass scheme.
- Combie Court – 24 flatted properties based in Oban. Retrofitting either a biomass district heating scheme or a centralised ground source heat pump.

5.2 Of the 3 projects, 1 – the Mull Progressive Care – is moving forward according to our timescale. The other two projects have significant challenges. We have received costs for the work that are significantly above our budgeted. For both schemes we were looking at payback of between 15 – 20 years on the district heating network we are now above 30 years. The costs certainly appear to be about the actual distribution network.

5.3 We are still working to try and ensure these schemes are developed and are workable.

6. **HOW DOES THIS IMPACT ON GOVERNMENT TARGETS**

6.1 Delivery of these type of schemes are important to move towards a low carbon economy. These projects are small but will be key in terms of project exemplars.

6.2 For us to meet the Government targets, and these will be similar for many smaller, community type organisations, we would say that the following issues are divided into Financing, Scale, Impact of Policy and Environment. These are dealt with in turn below:
Financing

- At a minimum, costs for the types of schemes we are developing are double the cost of simply fitting/retro-fitting a gas or oil boiler. Both of which you would receive a carbon saving for. The capital cost is key to this. At present the Scottish District Heating Loan Money is for 10 years. We think if the money could be increased to 20 years then this would significantly improve the financial profile of these schemes;

- Without this money it would be extremely difficult to attract lenders to provide finance for these schemes at the moment due to the longer pay back even with the Renewable Heat Incentive;

- Even with the Loan Scheme organisations like ourselves who are charities have to do these schemes through their subsidiary company [due to the sale of heat]. This then requires lenders permission and this carries the risk of lenders looking to change existing loan agreements;

- The costs have to be paid by someone and in our case it will be tenants that will have to pay higher rents.

- Grant funding from CESP can make a significant difference to the viability of schemes but CESP can only be given in specific locations – if CESP was made more widely available then this would help.

- Grant funding is complicated and difficult for people to understand.

Scale of Schemes

- Where there are public buildings like hospitals, schools, swimming pools then it does make sense for these buildings, if near housing, to be linked to district heating network. Generally this assists the business cases because the heat load is significantly higher;

- Bringing more on a network has to be balanced by the size of a network – the larger the network then the potential for greater heat loss.

Impact of Policy

- The Scottish Housing Quality Standard is one of the key documents for Housing Associations. This is based around SAP and NHER not about carbon reduction. There is a need for greater clarity and understanding – a SAP of 60 can be delivered by an oil boiler and indeed there can be a carbon saving from moving from electricity to oil but is that what is wanted.
• The Renewable Heat Incentive provides a revenue stream based on amount of energy supplied by renewable technologies. For biomass a boiler of 199kw boiler receives 1314 hours of annual operation at 7.9p per Kw/hr whereas a larger boiler of 500kw receives 4.5p per Kw/hr. Ours and Vitals experience at Glenshellach suggests that boiler sizing is critical and these differences in revenue income could mean that a less efficient boiler is fitted.

• As the RHI is based on heat used/sold then it does not encourage houses to be well insulated. Business Plans are basing their revenue projections on something that is better for them if more heat is sold.

• New properties being built by Housing Association’s are being built for less grant this means that it is more difficult at the present time to develop with a district heating network as the capital costs are substantial. Without additional grant or a specific loan over a long period of time the capital costs make it very difficult for new housing to “stack up”.

Social/Environmental

• There is still a feeling that some renewable technologies are untested and/or unproven. For example, we are still the largest housing development in Argyll and Bute that is fed by biomass despite this being implemented in 2006.

• Carbon Reduction/renewable development should be a key area within community planning as it is important that budgets are aligned where joint schemes could be developed. Also, resourcing the work by partnership and also sharing costs could assist the financing of schemes;

• For smaller district heating schemes there is potential to create networks of small local enterprises providing local fuel security.

West Highland Housing Association
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