Feasibility Study for the Establishment of a Centre Of Excellence for Installers

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1 Introduction

This report provides a summary of the research carried out by ***Quantum Strategy & Technology*** (Quantum) for the north West Development Agency (NWDA). It presents a feasibility study for establishing a centre of excellence for installers of micro CHP systems and small-scale renewable energy technologies in the domestic sector. In conducting this research Quantum have consulted with local and national stakeholders including, equipment manufacturers, installers, training providers and Governmental Support Organisations. This research has been correlated with the many detailed national studies currently available

1.1 The Current Situation

The objective of the feasibility study was to assess the requirement for and the potential funding of a Centre of Excellence in the NW for installers of small-scale renewable energy technologies. The technologies reviewed are micro CHP, solar water heating, photovoltaics (PV), ground source heat pumps and small wind turbines. All of these technologies are now being applied in the domestic sector and to other single buildings but, in general, the take-up has been slow. There are currently less than 100,000 installations in the UK with the majority of these being old (pre 2000) solar water heating systems. None of the technologies available are currently cost effective, except in niche applications where no electrical connection is available. Some of the heating technologies have comparable costs to LPG. Because of the poor current economic performance of these technologies the number of installations performed in any one year is extremely closely correlated with the level and number of grants available.

Technology	Installations to date in UK
Solar Water	78470
PV	1301
Micro CHP	990
Wind	650
Ground Source Heat Pumps	546
Biomass Boilers[1]	150
Hydro	90
Fuel Cells	5

Source – EST "Potential for Microgeneration" 14/11/2005

Each of the technologies is reviewed below:

[1] Excludes wood burning stoves

1.1.1 Solar Hot Water

Solar hot water dominates the current installed base of microgeneration technologies. The market for trained solar domestic hot water installers is growing. The growth in the market is being encouraged through the current government grant scheme, Clear Skies[2] (www.clear-skies.org). This provides £400 for domestic installations and up to 50% on large scale community installations. However, only registered installers may access these funds. The Northwest is serviced by installers from across the country but there are only 11 registered installers based in the region. According to SECON solar there were around 10,000 installations last year. The number of installations in 2006 and beyond will depend almost entirely on the level of grant funding available. Solar hot water heating is not cost effective compared to mains natural gas water heating. Systems cost between £3,000 - £6,000 installed and the payback period depends on the quantity of hot water used, but is frequently more than 30 years. Systems are sold on their green credentials rather than costs savings.

The BPEC Domestic Solar Hot Water Heating qualification is currently the only available training course that will enable installers to qualify to register with the grant scheme. The BPEC SDHW course has been developed in conjunction with the Solar Trade Association (STA) the UK trade association for solar water heating systems and Filsol Ltd a manufacturer of solar water heating collectors. The course developed is aimed at already qualified or experienced domestic heating engineers and plumbers. The course length is 3-4 days including theory, practical and assessment. The course provides qualified or experienced domestic heating installers/plumbers with the knowledge on how to install a SDHW system. The course targets aspects which are particular to solar domestic hot water systems giving students the confidence to select, install and maintain systems. The course is not intended for those without any experience of heating or plumbing installation experience. The course aims to take into consideration the majority of systems installed in the UK investigating the different system configurations, components and operating characteristics. However, one major manufacturer has strongly criticised the course for not covering their technology, and thus discriminating against their product.

These courses are in Machynlleth, Bedford and Inverness. These courses cost between £300-£400. There are no training courses available in the North West, but a training manual is being developed by BPEC which will cost around £70. However the systems are easy to install and any trained plumber should have little difficulty installing them. Installation should take around a day.

1.1.2 PV

Solar PV converts solar radiation into electricity. PV systems can be installed on any south-facing roof with a pitch of less than 40º which is not over-shadowed. Two types of system are appropriate for domestic installations; bolt-on panels and roof-integrated panels or tiles. Roof-integrated systems are more expensive then bolt-on, but if installed as part of a new build or roof replacement, this will be offset by the savings on standard roof tiles. A typical system would be rated at 1.5kW – 2kW (peak generation) and cost between £4,000 - £9,000 per kW installed or £6,000 - £18,000 in total depending on the size and type of system. The average output is 750 kWh/year per kW installed. Annual savings are in the region of £110-150, giving a simple payback period of around 50 years (excluding grant funding).

[2] At time of writing the future of clear skies funding remained uncertain.

Domestic solar PV systems can be stand-alone or grid-connected. Stand-alone systems require some form of energy storage (usually battery). Grid connected systems require the installation of two-way meter and an agreement to sell surplus electricity to the electricity supplier.

The PV market has been supported since 2002 by the DTI's PV Major Demonstration Scheme. This runs until March 2006 and has to date funded around 1200 domestic and 180 commercial installations. Small-scale installations are eligible for a grant of up to 50% of the installed cost. The scheme will be replaced by the Low Carbon Buildings Programme in April 2006.

1.1.3 Micro CHP

A number of manufactures are currently developing small scale combined heat and power (chp) systems potentially suitable for the domestic sector. These systems tend to be based on one of three competing technologies:

- Stirling Engines
- Conventional Boiler plus air rankin cycle unit to produce power from heat
- Fuel Cells (mcfc, sofc or pem)

Of these technologies, the Stirling engine units are the closest to market with both British Gas and Eon (formerly PowerGen) funding major field trials of units. Costs of these units are difficult to ascertain. The PowerGen unit is available for purchase by Housing Associations at an installed cost of £3,000 and North Trafford College have recently purchased a unit for £1,500. There is a suspicion that Eon are subsidising these costs since the design is based on a unit offered to the luxury yacht market at a purchase price of around £15,000.

Dependent on power purchase agreement for exported electricity one of these units can save around £150 per annum in fuel bills and thus cost effectiveness is highly dependent oh having installation and maintenance costs within a £1,000 of a conventional gas boiler. In addition, unit lifetimes must be comparable. These are questions that remain to be answered. Commercial introduction is not expected until at least 2010, whilst fuel cells are not expected on the market til 2015.

Baxi also offer their DACHS unit based on a small internal combustion engine. This unit generates around 5,5 kW and is aimed at providing heat and power to multiple residences. It is not really suitable for a single house and is thus outside the scope of this study.

Both BG and Eon are currently retaining control of training for installation and maintenance of their units. Until recently Eon were funding EA Technology in Chester to provide training but the unit manufacturer Whispertec have now established their own training centre in Coventry.

1.1.4 Wind

Unlike many of the technologies on offer, windpower is not suitable for all domestic locations. Clearly wind speed is a critical factor in the success of the installation of this technology. Wind speed increases with height and absence of wind breaks so it is best to have the turbine high on a mast or tower in an exposed location. Knowledge of the local wind is critical to designing a wind energy system and predicting output. For domestic installations a good source of information on local wind speeds is the NOABL database which can be accessed from the British Wind Energy Association. You can also collect primary information by setting up your own monitoring mast to record wind speed[3]. Planning issues such as visual impact, noise and conservation issues also have to be considered. System installation normally requires permission from the local authority, although the manufacturers of very small systems are trying to get these included in the planning exemptions covering satellite dishes. The L.A Building Control are likely to ask for a structural engineers report if you intend to site the turbine on a roof and this will add an extra £400 to the cost.

Windsave have developed a 1kW system which is retailing for around £1,000, plus installation costs of around £500, making it currently the most cost-effective renewable energy system, with a payback period of around 5 years. This system is designed to provide only the base-load electricity requirement for an average house (e.g. fridge-freezer and equipment on standby) and therefore do not require a two-way meter or an agreement to sell the surplus electricity. However, the company has some supply problems at present and are concentrating on sales to local authorities. Windsave have also an agreement with Centrica to supply systems under their EEC commitment.

Renewable Devices have developed the Swift Rooftop Wind Energy System, rated at 1.5kW, with an expected annual output of 4500 kWh. These are being sold and installed through Scottish and Southern Energy plc, at a total cost of around £6,000.

Turbines can have a life of up to 20 years but require service checks every few years to ensure they work efficiently. Grants are available of £1000 per kWe installed up to a maximum of £5000, for a minimum installation of 0.5 kWe. Installations larger than 5 kWe are allowable but capacity above that level will not incur a grant. The grant will be based on the turbine rating at a windspeed of 12 m/s.

1.1.5 GSHP

Ground source heat pumps (GSHP) transfer heat from the ground into a building to provide space heating and, in some cases, to pre-heat domestic hot water. For every unit of electricity used to pump the heat, 3-4 units of heat are produced. As well as ground source heat pumps, air source and water source heat pumps are also available.

There are three important elements to a GSHP, the Ground Loop which is a length of pipe buried in the ground, and is filled with a mixture of water and antifreeze, which is pumped round the pipe absorbing heat from the ground. The Heat Pump (just like in a fridge or air conditioning circuit) and a Heat distribution system, consisting of under floor heating or radiators for space heating and in some cases water storage for hot water supply.

A typical 8kW system costs around £10,000. Based on current fuel prices, a GSHP can be a cheaper form of space heating than oil, LPG and electric storage heaters. It is however more expensive than mains gas. It also cannot be classed as a renewable heat supply system unless the electricity required is generated from renewable sources. The emissions related to grid electricity used roughly equal those saved from a standard gas heating system.

[3] Available for around £120

1.1.6 Biomass Stoves

There are two main ways of using biomass, stand-alone stoves providing space heating for a room, usually fuelled by logs or pellets, or boilers connected to central heating and hot water systems. These are suitable for pellets, logs or chips, and are generally larger than 15 kW.

Stoves can be 80% efficient. They're normally used for background heating. They also add aesthetic value in the living area of the house itself. A typical 20kW (average size required for a three-bedroom semi-detached house) pellet boiler would cost around £5000 installed, including the cost of the flue and commissioning. A manual log feed system of the same size would be slightly cheaper. Fuel costs generally depend on the distance from your supplier. As a general rule the running costs will be more favourable if you live in an area that doesn't have a gas supply or that has a plentiful supply of cheap or free wood.

Most stoves are sold for their aesthetic values and used as single room heaters rather than as the main household heating source. A considerable disadvantage of wood burning stoves is the effort required to feed and clean them, together with a need for space to store the fuel and means of disposing of ash.

1.1.7 Micro Hydro

Micro hydro power represents a potentially large opportunity for the region. Lancaster University in a recent mapping study has identified thousands of sites that are potentially suitable for installation of micro hydro. However the technology is still in its infancy and only a few “garage shed” manufacturers currently exist. These include Valley Hydro (Cornwall), Hydro Generation (Devon) and Derwent Hydro electric (Derbyshire). These inits will usually produce several kWs of power and are hence dependent on negotiating a good purchase agreement to ensure their economic viability.

An interesting development in the NW is the Beck Mickle company outside Kendal. They have a design for a low cost low head hydro system but it is still in the eraly stages of research.

1.1.8 Summary Table

The table below gives a summary of the current technologies based on domestic gas and electric prices of 2.1 p/kWh (gas) and 7.6p/kWh[4]

	System Cost £k	Payback Period years
Solar Hot Water	3-6	> 30
PV	6-18	50
Micro CHP	1.5 - 3	5 plus
Wind	1.5 - 6	5 plus
GSHP	10	None
Biomass	5	None
Micro hydro	?	?

[4] British Gas and Scottish Power North West tariffs correct at 15/1/06

2 Manufacturers

We interviewed a range of micro-generation equipment manufacturers and installers to determine their skills needs and views on whether lack of skills is a barrier to meeting the market demand.

2.1 Wind

The installation of mains-connected micro-wind systems needs a competent, qualified electrician for the connection to the grid, although the Windsave unit plugs into a standard power socket. The main skills requirement is for the construction/attachment of the turbine support. Windsave turbines are designed to be attached to the wall of the building. Swift supply both wall-mounted and free-standing turbines.

Micro-wind turbines are very new to the market and a lack of installation skills is not expected to be an issue either now or in the future. The main barriers to expansion are manufacturing capacity and the development of an effective distribution and installation network. Both manufacturers have contracts with major utility companies to assist with the distribution and installation of the units.

2.2 Solar Thermal

The installation of solar panels needs conventional plumbing skills and experience in roof-work. Any suitably qualified plumber should be able to install the systems and some are offered for sale as DIY kits.

The market for solar panels is very healthy at present, almost entirely due to the Clear Skies programme. Most suppliers train their own staff or their installers on the installation of their technologies. None of the suppliers interviewed thought that a lack of specialist solar installation skills was a barrier to expansion, although a lack of qualified plumbers is. All thought that an accredited training course would be an asset, though not essential to their businesses.

2.3 Solar PV

The main growth area for solar PV is the commercial market, with relatively few domestic installations, although there is potential for growth in new housing developments. The major barrier seen by the manufacturers and installers is a perception of a high level of risk associated with PV, among developers and building contractors.

The skills needed for PV installation are basic roof-work and electrical training. Currently this is supplemented by technology-specific training provided by the equipment suppliers. The suppliers would welcome a Centre of Excellence if it could raise the level of acceptance of the technology, through inclusion in standard construction and building services courses, as well as providing a specific training course in PV installation.

2.4 Micro CHP

The development of micro CHP systems is dominated by two groups, boiler manufacturers, and energy supply companies. Of the two groups, boiler manufacturers have an uneasy relationship with this technology as they see it as both an opportunity if they can develop a successful system, but also as a major threat to their current volume market. In this context the boiler manufacturers tend to be more secretive as to their development plans. The market size in 2003 was around 1.4 million boilers and thus there is a lot at stake here. The three major UK suppliers, Baxi, Caradon Ideal and Worcester Bosch are all known to be developing small scale CHP systems but only Baxi have highlighted any information in the public domain.

Baxi have a training centre in Germany to train their installers and in addition have one trainer in the UK. They comment that the need for trained installers is still small and there are no capacity problems at present.

Energy supply companies are much more open in terms of their developments. Both BG and Eon are very keen to retain close control of the quality of staff used to install and maintain their equipment. They are both nervous that the reputation of the technology could be affected by poor quality installation or maintenance. They feel that this had a lasting effect on the market for condensing boilers and are keen to avoid a repeat of this experience.

In fact, the installation of these units is surprisingly straight-forward. EA Technology have been doing the training of installers for around 3 years and have developed a 1.5 day training course which they have run around 10 times to date. Their experience is that the plumbing is entirely straight-forward and that the electrical installation is also simple as long as the electrician is up to date with the requirements of code G83, which as competent electricians they should be.

In summary, any competent electrician and plumber should have the skills required to install these technologies and in fact the skill requirements and shortages are effectively the same as those for the general domestic plumbing and electrical markets.

2.5 Heat Pumps

The UK Heat Pump Network (http://www.heatpumpnet.org.uk/) lists 22 manufacturers of heat pumps in the UK. None of these are based in the North West and this is not a strength of the region. There are four consultants in the region with experience of installation and design of heat pumps. These are John Cantor, EA Technology, Enviros and Linhoff March.

The manufacturers and system designers interviewed noted that heat pumps are a niche product and are likely to remain so. Unless the gas price increases substantially they are less economic to run than gas heating systems and the installation of a heat pump unit (especially a ground source heat pump) entails a lot of upheaval. Cold winter temperatures make air source heat pumps uneconomic.

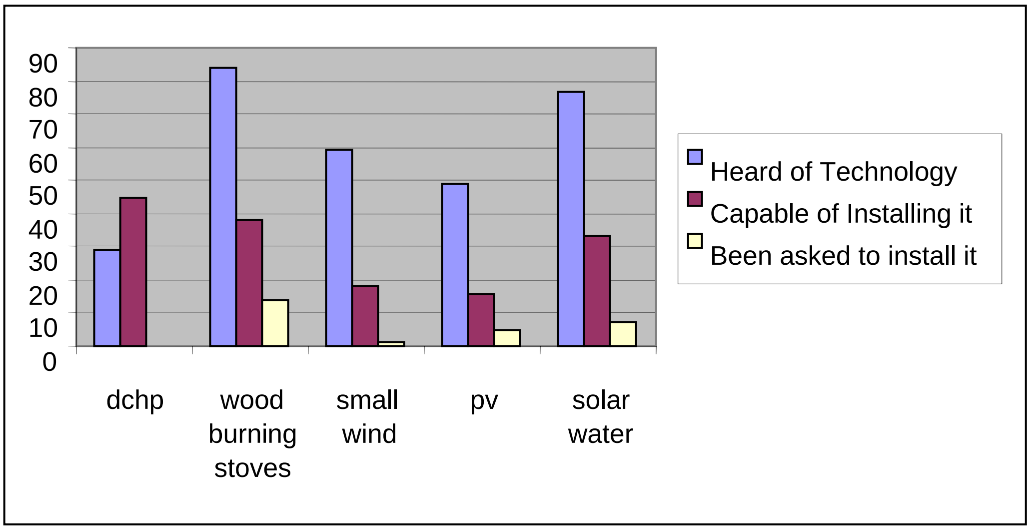
Ground source heat pumps are popular amongst the self build market, especially where mains gas is not available. They are more economic than liquid gas systems and are well suited to underfloor heating applications. The ground source heat exchanger requires a large area for heat exchange and a large garden is then required. The manufacturers note that installation is not difficult but that extra care must be taken since any leak in a system that is buried will be expensive to repair. Maintenance is straight forward.

3 Installers

We interviewed 100 installers in the gas and electrical installers in the North West to gauge their current level of knowledge and capability in the area of microgeneration. The following is a summary of the results:

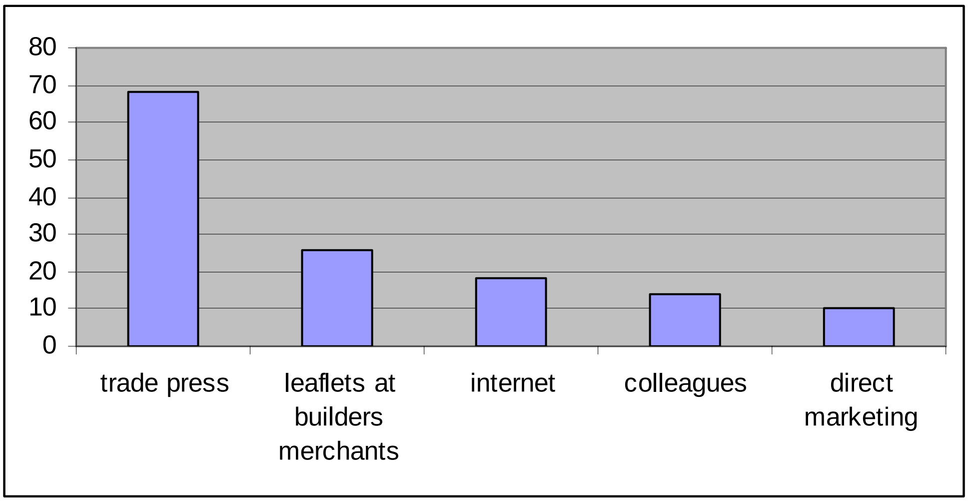
Firstly the installers were asked about their knowledge of microgeneration technologies.

Knowledge of Microgeneration Technologies



As can be seen above, a surprisingly high number of companies believe they already have sufficient skills to install microgeneration technologies. Of those that felt they did not have enough skills at present, 28 companies said they would look for a local partner to help, whilst 10 said that they would look for training. In terms of preference for a location for training there was a very large preference for a training centre to be local and independent. 66% felt that training should be delivered by a local college compared to only 7% who favoured a regional centre. 27% would be happy for the centre to be based at a manufacturers premises.

Sources of information for New Technologies



A very large number of respondents (70%) were interested in being kept informed as to future training developments in the field of microgeneration. These are listed in Appendix B. Aside from direct marketing, the installers listed the following as their most common routes for keeping abreast with new developments. The most widely read trade press is CORGI magazine, which is read by virtually all plumbers.

The most widely quoted barrier to uptake of microgeneration technologies was the absence of any suitable marketing material. 45% of respondents quoted this, noting that they have no incentives and no marketing material available to persuade customers to consider options such as PV and solar water heating. The provision of good quality marketing material and incentives to plumbers (just as they receive from boiler manufacturers) would help stimulate this market.

3.1 Skills Requirements

The installation of embedded generation heat and power devices requires some or all of the following three core skills:

- Electrical Wiring
- Plumbing (including both gas and water circuits)
- Connecting to the domestic electricity meter

All of these areas are now covered with basic regulatory requirements and these are briefly reviewed below.

3.1.1 Electrical Wiring

Part P is a new addition to the building regulations. It came into force on the 1st January 2005. The requirement is that all significant electrical work carried out in ‘Dwellings’, whether it is a new installation, any additions or alterations must be carried out by a competent person. This regulation will cover all the installations discussed in this report. A competent person in this case is a person who is registered with one of the bodies approved by the Office of the Deputy Prime Minister to administer these registers. These organisations include NIC/EIC, BRE, BSI, ELECSA, NAPIT and to a limited extent CORGI.

If you are not registered as ‘Part P Approved’ you must notify your local building control officer, who will inspect your work, or appoint an agent to inspect your work. Any individual who wishes to become a Qualified Supervisor under Part P must process a qualification that referenced in detail the edition of the IEE Wiring Regulation current at the time the course was undertaken and demonstrate awareness and understanding of the Building Regulations applicable to the type of work the individual undertakes. A competent person is responsible for ensuring the work carried out complies with all the applicable parts of the Building Regulations not just Part P.

In discussion with Paul Gibson at British Gas (head electrical engineer) it was stated that “in fact these microgeneration technologies are very easy to fit and I would not be worried by an average competence electrician installing these units”.

3.1.2 Plumbing

The Gas Safety (Installation and Use) Regulations 1998 place specific duties on gas users, installers, suppliers and landlords. Specifically:

- Anyone carrying out work on gas appliances or fittings as part of their business must be competent and registered with CORGI.
- Only a competent person can carry out work on gas appliances or fittings. Do-it-yourself work on gas appliances or fittings is generally illegal.

Around 47,000 gas installation businesses employing approximately 98,000 gas fitting operatives are currently registered. These organisations include commercial buildings specialists, local and central Government organisations and other specialist businesses as well as those focussing specifically on domestic heating installation.

3.1.3 Meter Replacement

A significant electrical element in any dchp or PV installation is replacement of the electricity meter. The distribution network operator must measure the amount of electricity the household takes from the public supply and the amount the installation exports, but most electricity meters only operate in one direction to prevent fraud. At present, only meter operators or their representatives can change a meter.

3.2 Current Skills

There are currently a relatively small number of installers specifically trained to install microgeneration technologies.

Technology	No of installers in UK	Course available in NW	Ease of installation
Wind	29	No	Simple – but problems with choosing poor sites
Hydro	12	No	Simple
GSHP	28	No	Multi-skilled
Biomass	30	No	Simple
Solar water	120	No	Simple
PV	56	Blackburn College	Simple
Micro chp	50 (estimate)	Capenhurst	Multi-skilled

Source – EST Microgeneration report plus our research

Thus there are of the order of 350 trained installers of microgeneration technologies in the UK at present. It is worth noting that there are a much larger number of jobs in the research of these technologies and this reflects the infancy of this market.

The busiest sector is the solar water panel market. Here there are 120 installers and around 10,000 installations annually. This suggests 80 installations each per annum, or less than 2 per week. Given that a well trained plumber can install one of these units in a day this does not suggest that training is currently the major barrier to market uptake.

Looking forward over the short and medium term does not suggest that there will be a massive growth in demand for installers. The EST Microgeneration report suggests that technologies will not take off in a large way for at least 10 years:

- Commercial Introduction of Stirling Micro CHP in 2010
- Commercial Introduction of Fuel Cell Micro CHP in 2015
- Small Wind not cost effective before 2015
- PV not cost effective before 2030
- Biomass, solar water and GSHP not cost effective versus mains gas

In fact, they do not see significant levels of uptake before 2010, but with significant acceleration beyond that date. Some of the data in the EST report appears quite subjective, but it is the most comprehensive study available:

Technology	Installed Units Per annum		Installers Jobs Per annum	
	2010	2020	2010	2020
PV[1]	500	2800	5	28
Wind[1]	200	5000	2	50
Micro Hydro[2]	60	20	2	1
GSHP[2]	200	10000	4	200
Biomass[1]	500	6000	5	120
Solar Hot Water[1]	10,000	0	100	0
Micro CHP[2]	100	3500	2	70
Fuel cell CHP[2]	20	1000	1	20
Total	**11,580**	**28,320**	**121**	**489**

1. Assume trained installer can fit 100 per year
2. Assume trained installer can fit 50 per year

These numbers need to be compared to the current rate of installation of say gas boilers, which currently stands at 2 million units per annum. In comparison the microgeneration sector will still be in its infancy in 2020.

Clearly the actual number of installers required will be larger than that shown in the table since the installers are unlikely to spend all their time installing renewable technologies. They will still be busy installing gas boilers and there will also be some maintenance work. It does however look unlikely that there will be a need for many more than 1,000 accredited installers in 2020 (compare this to the 90,000 plumbers). The need therefore is much more to lay the foundations for a successful micro generation course rather than to prepare for a large upswell in demand.

3.3 Training Needs

A major report "Towards an occupational and functional map of the Renewable energy Sector" has just been concluded by EcoTec (funded by EU Skills and others). This study was an in depth examination of the current training needs of the sector. In summary the report concluded that:

- ***There are no major skill shortages in the renewable energy sectors***.
- However, a number of core occupations will need future consideration as the market (slowly) grows.
  - Plumbers
  - Electricians
  - Plumbers/electricians with installation and design skills capability
  - Civil engineers

In detail the report identified the main areas where skills gaps will exist in the future. The highlights of these were:

- More multi-skilling, and multidisciplinary working practices
- More diagnostic and fault finding skills
- Greater integration of installation and design skills
- More leadership/project management skills for those at NVQs Levels 2 and 3
- Greater environmental and legal knowledge/contracting skills
- More attention to building in generic skills particularly team building, communication, product knowledge

3.4 Training Supply

There are effectively only two organisations in the North West currently providing specific microgeneration training at present. Blackburn College provides a NVQ2 course on PV installation and EA Technology provides training on installation of domestic CHP.

Blackburn College's 3 day course in PV installation is offered as a commercial course to installers and costs around £400 for 3 days. There is a strong demand for this course and it attracts students from all over the country. The College also offers a related CoVE-funded course in fibre optics, and there are waiting lists for both courses.

Blackburn College are about to offer a 2-year NVQ Level 3 course in Alternative Energy Technologies, with an electrical engineering base, covering wind, PV, solar, hydro and bio-fuels. They expect to attract around 150-200 students per year, mainly from the Northwest and Yorkshire. They expect to develop short commercial courses for individual technologies as a spin-off from this qualification course, and are looking for sponsorship from the manufacturers to install demonstration models of the various technologies.

Blackburn are very keen to become a CoVE for renewable technologies, based on the work they have done to date. They see an important role for the CoVE in raising awareness of the technologies as well as providing weighted funding to support the start-up of new courses.

There are also a number of Centres of Vocational Excellence (CoVEs) who provide excellent training across the North West. These include:

- Blackpool, Accrington and Leeds (out of region), who have formed an alliance known as “The Northern Way” and are a CoVE for Building Services
- Liverpool and St Helens are a CoVE for plumbing and gas
- North Trafford are a CoVE for gas
- Tameside are a CoVE for Electrical Engineering
- Mancat are a CoVE for construction

Of these colleges, North Trafford are particularly keen to work with the sector skills alliances to become a CoVE for renewable technologies. Two Sector skills councils are involved, SummitSkills is the Sector Skills Council for the building services engineering sector and EU Skills is the Sector Skills Council representing the electricity, gas, waste management and water industries. Broadly speaking Summitskills covers all activities downstream of the meter and EUSkills covers activities upstream of the meter. Thus they would both have a role to play in the development of a microgeneration CoVE for the region although Summitskills would probably lead.

In developing the CoVE we recommend that a visit be paid to the Life IC centre in Sheffield. Life IC have developed their own microgeneration course funded by Yorkshire Forward and it should be possible for NWDA to access this learning.[5]

An important role for the microgeneration CoVE would be to lobby for the inclusion of training in microgeneration technologies to be incorporated within national qualifications related to the construction industry, including plumbing, electrician and building services as well as design and planning.

3.5 Creating the Demand

We have seen from the sections above, that the major challenge for small scale renewables is not in providing skilled installers but in creating the demand for the products. Only when the market has been stimulated to grow, will the demand for training in this sector become great.

Any action taken by the NWDA and others at this stage must therefore be clearly focussed on increasing consumer demand for these products. This is not an easy challenge. As we have seen, these technologies are in their infancy and are not economically attractive

[5] contact Phil Johnson 0780 2204789

where mains gas and electrical connections exist. However there are a number of reasons why this market will become more attractive in the future. These include:

- The opportunity to reduce CO_2 emissions
- The need to move away from a reliance on natural gas as a heating fuel as imports come to dominate the national supply
- The increase in requirements from planning authorities for on-site energy generation in new developments
- The opportunity to identify new market opportunities leading to job and wealth creation

A number of opportunities exist in the North West for increasing demand. These include:

- Consumer awareness – Warrington Wolves
- Work with national bodies – lobbying
- Work with regional organisations – training, UU re taking the power

4 Summary and Conclusions

During this study we have consulted with over 150 organisations including installers of microgeneration technologies, manufacturers, training organisations and Government bodies tasked with encouraging the growth of microgeneration in the UK. The conclusions of this research are as follows:

- The market for domestic microgeneration technologies is small and is likely to remain small until beyond 2010
- The main barriers to growth of these technologies are economics and consumer awareness
- Installers of current heating technologies are already well qualified to install most microgeneration technologies and only a few days training would be required to upskill them in this area
- Installers have a very high awareness of the new technologies being developed and are keen to learn more
- There is unlikely to be any major skills shortages in this sector over the next few years and the main challenge is to stimulate demand for these technologies
- There are however, a number of reasons why NWDA should seek to support the development of the microgeneration sector. These are:
    - The NW is a technology leader in domestic chp and first entry to this market place could lead to the creation of many more jobs for the region in the long term
    - The development of microgeneration will provide benefits to the region both in terms of improving security of energy supply and reducing CO2 emissions
- The report has highlighted a number of actions NWDA could consider to encourage increased demand for microgeneration technologies. These include:
    - Developing a microgeneration training programme in collaboration with partners such as EU Skills, SummitSkills, Life IC, Blackburn College or North Trafford College
    - Doing more to promote awareness of microgeneration technologies.

Appendix 1 – NW Equipment Manufacturers and Clear Skies Listed Installers

Solar water heating systems

Border Plumbing and Heating
Station House
Kirkandrews on Eden
Carlisle
CA5 6DJ
Tel 01228 576546

Grisedale Solar
Mr Steve Grisedale
Managing Director
The Old Saw Mill
Back River Street
Congleton
Cheshire
CW12 1HJ
eMail : grisedale@solar31.fsnet.co.uk
Telephone : 01260 278644
Fax : 01260 299869

Home Insulation Services
St Georges Park
Kirkham
PR4 2EG
Tel 01772 687600

MultiServ
47 Shellfield Road
Southport
PR9 9US
Tel 01704 211708

The Solar Design Company
Mr Chris Laughton
57 Wood Lane
Greasby
Wirral
Merseyside
CH49 2PU
eMail : chris@solardesign.co.uk
Telephone : 0151 606 0207
Fax : 08700 526977

Sol Heat Solar Heating Solutions
Mr Andy Brown
70 Mostyn Road
Hazel Grove
Stockport

Greater Manchester
SK7 5HT
eMail : andy@solheat.co.uk
Telephone : 0161 612 9491
Fax : 0871 990 6329

SolartTwin Ltd.
Mr Barry Johnston
Managing Director
2nd Floor
50 Watergate
Chester
Cheshire
CH1 2LA
Telephone : 01244 403407
Fax : 01244 403654
Email : barry@solartwin.com
www: http://www.solartwin.com

Very Efficent Heating Co
57 Wood Lane
Greasby
CH49 2PU
Tel 0151 6060207

Small Wind Turbines

Genasys Power Systems
Simon Jarvis
Managing Director
Orwelco Buildings
Park Road Industrial Estate
Park Road
Barrow-in-Furness
Cumbria
LA14 4EQ
Mobile : 07980 647 130
Telephone : (+44) 01229 838000
Fax : (+44) 08700 515364
eMail : simon@genasys.demon.co.uk
http://www.genasyspowersystems.co.uk

Turbine Services
Mr Miles Postlethwaite
Managing Director
Armaside Farm
Lorton
Cockermouth
Cumbria
CA13 9TL
Telephone : 01900 85616
eMail : info@turbineservices.co.uk

Telephone : 01900 85616
http://www.turbineservices.co.uk

Mr Errol Kerrone
Managing Director
2 Bankside Barn
Crook Road
Staveley
Cumbria
LA8 9NH

Telephone : 01539 822686
Fax : 01539 822686
eMail : help@12voltz.com
www.12voltz.com

Photovoltaics

Energy and Environment Ltd.
Mr Tom Kennedy
Managing Director
91 Claude Road
Chorlton
Greater Manchester
M21 8DE
eMail : mail@energyenv.co.uk
Telephone : 0161 881 1383
Mobile : 07790 498572
www.energyenv.co.uk

Solartech (UK) Ltd.
Mr David Lindenberg
Managing Director
Alexander House
197 Market Street
Totington
Bury
Greater Manchester
BL8 3HF
eMail : solartech@onetel.net
Telephone : 01204 881402
Mobile : 07862 293 963
Fax : 0161 792 9775
www.solartechuk.co.uk

Sundog Energy Ltd.
Mr Martin Cottrell
Managing Director
Matterdale End

Penrith
Cumbria
CA11 0LF
Telephone : 01768 482282
Fax : 01768 482600
martin@sundog-energy.co.uk
www.sundog-energy.co.uk

12 Voltz
Mr Errol Kerrone
Managing Director
2 Bankside Barn
Crook Road
Staveley
Cumbria
LA8 9NH
Telephone : 01539 822686
Fax : 01539 822686
eMail : help@12voltz.com
www.12voltz.com

Ground Source Heat Pumps

MultiServ
47 Shellfield Road
Southport
pR9 9US
Tel 01704 211708

Geoenergy Ltd.
Mr Rune Helgesen
Director
Unit 6
The Greenheys Centre
Pencroft Way
Manchester Science Park
Manchester
Greater Manchester
M15 6JJ
eMail : rh@geoenergi.no
Telephone : +47 23 40 00 52
Mobile : +47 97 72 93 93
Fax : +47 23 40 00 66
www.geoenergy.co.uk

WOODFUEL BOILERS

Very Efficent Heating Co
57 Wood lane
Greasby
CH49 2PU
Tel 0151 6060207

Vital Energi
Burnden Road
Bolton
BL3 2RB

Appendix B

Plumbers and electricians who expressed a preference to be on a mailing list informing them of any training developments in the field of microgeneration

Respondent Name	Company	Telephone Number	Postcode
Lee Arthingston	LA Heating Services	01613660510	SK14 5AW
Mark Bally	MBM Plumbing & Heating	01612833812	M33 3DL
Rod Hunt	HDR Plumbing	07736856762	CW2 8JR
Geoffrey Cottman	Total Customer Care	01768 892198	CA11 8BJ
JJ Noake	Noake Builders Ltd	01946 810062	CA26 3QR
Alan Kell	Kell Alan Plumbing & Heating Engineers	01229 473681	LA14 3QE
alan Varty	AW Varty Ltd	01900 824446	CA13 0HT
David Irwin	David Irwin	01228 543135	CA1 3ER
Grayham Conner	G Conner Plumbing	01697343800	CA7 0NN
L Scott	L Scott	01228 523123	CA2 4RF
Derek Ratcliffe	Ratcliffe Derek	01229 716001	LA20 6HX
Barrie Nichol	Barrie Nichol Electrical Contractors	07050023232	CA14 5RL
Keith Barber	Keith Barber	01539 723677	LA9 7AT
W Johnson	BS Electrical	01516321993	CH47 2DA
D Crossling	Crossling & Son	01619734942	M33 2LA
Philip Johnson	P & H Services	01514236202	WA8 7XB
S Buckley	Northern Gas Services Ltd	01612851156	M34 6JJ
T Lunt	APT Plumbing & Heating	01519331846	L20 6BR
Andrew Pepper	S&J Kirkland	01768772349	CA12 5PB
Ian Fisher	Ian Fisher Electrical	01228577405	CA6 5QJ
John Little	Bainbridge Electrical Ltd	01539727040	LA9 6BW
Paul Goddard	Anderson & Goddard	07966278014	M44 5DU
David Hughes	Hughes Heat Wisely	01706623596	OL10 3DA
Richard Holdship	JJL Plumbing & Heating	07960439005	M22 4AP
Anthony Mills	Cheshire Heating Ltd	01625872994	SK12 1LG
Patrick McManus	McManus Services Ltd	01614285674	SK7 3JS
Simon Holme	Olympic Contracts Ltd	07837623885	WA3 3EZ
Ray Pattison	Approved Electrical Inspection	01704229533	PR9 7JD
Steve Lomax	Lomax Electrical	01516320032	CH47 3AJ
John Hope	JDS Heating Services	01925290773	WA5 4ER
Dave Merritt	Dave Merritt	01619732152	WA14 5AY
A Tatlock	A Tatlock	01744603871	WA10 6UY
John Wright	Southport Natural Gas Heating	01704533400	PR8 1JH
Norman Jones	Norman Jones	01516305576	CH45 6TS
David Parr	DMS Heating & Plumbing Services	01744734717	WA10 3LR
Peter Clee	Clee PJ	01744851692	WA9 3TN
B Rimmer	BR Heating & Property Services	01704211137	PR9 7JY
Nike Axon	Axon M	01513361965	CH64 9QG
Gary Graves	Keswick Plumbing & Heating Services	01768774564	CA12 5RN
Andrew Colquhoun	C&L Services (Kendal) Ltd	01539730721	LA9 5JX
Noel Raison	Noel Raison	01512910315	L24 3XF
Mike Platt	MP Services	01744812738	WA9 4SG
Glynn Dockry	GD Gas Services	01619738510	M33 4HZ
Barry Chadd	Benchmark PLG 8 Services	01616330209	OL2 6DD
David Ashworth	David Ashworth	01617987103	M25 1PZ

Dougal Bryne	Dougal Bryne Heating & Gas Services	01253590002	FY2 6SU
John Pomfret	Addergas	01282615518	BB2 4ND
G Rowley	Rowley G & Son	01625572092	SK10 5DX
John Selkirk	Can Do Plumbing	01772496228	PR1 9RB
Karl Bridson	CB Plumbing	01233827636	FY5 3QN
Tony Wilde	JDS Services	01617616488	BL9 9JU
Mr Rowntree	Rowntree Electrical	01697742661	CA8 1EX
Peter Porter	Elite Electrical & Security Services	01519287036	L21 9JD
John Tickle	John Tickle	01928716876	WA7 3AQ
Tony Dwerryhouse	APD Plumbing & Heating Services	01514802805	L36 4QJ
Martin Barker	Barker L Ltd	01539721599	LA9 6NZ
Mr Jervis	JEL Electrical	01516500480	CH41 9EW
Mr Devlin	Bolton Plumbing & Heating Ltd	01204432211	BL4 7NS
Ian Highmore	Caldew Plumbing & Heating Contractors	01228513866	CA2 4NE
Steve Skelton	Steve skelton Electrical Contracting Lts	01900815324	CA15 8NF
Gary McGuiness	G & S Services	07952233460	CA3 0DD
P Morrison	P & M Heating & Plumbing	01619988443	M23 1PF
Andrew Wood	Bore Electrical Services	01515474447	L33 7SG
John Burgess	Burgess Electrical	01514808154	L36 6BE
David Passingham	Passingham Robbie	01513348189	CH63 4JB
Nigel Gregson	AK Heating Services	07958575007	M33 3FW
Adrian Dawson	Adgas	07984018474	SK8 1QY
Peter Bates	Peter Bates	07885057827	LA3 2DH
Nathan McKie	Martle Heating	07843951719	M32 8DQ