

The Regional Energy Infrastructure Strategy



The Regional Energy Forum thanks consultants, Sgurrenergy and CWAP for their work in developing this strategy.

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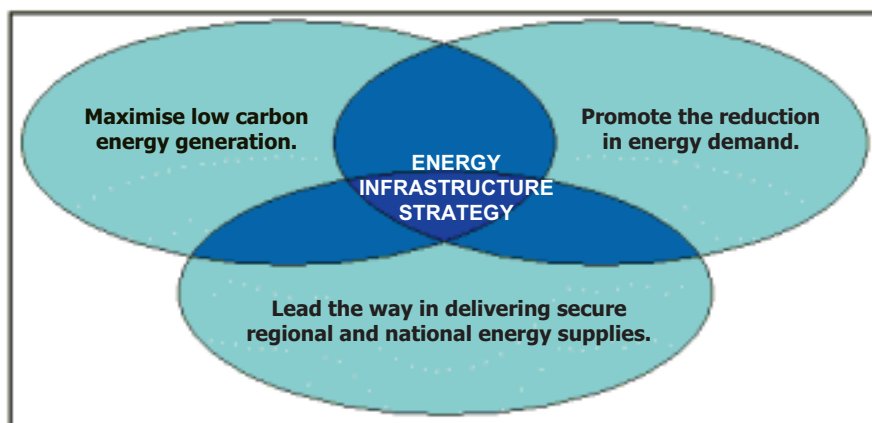
1 EXECUTIVE SUMMARY

Yorkshire and Humber presently contributes 17-18% of the UK's electricity production while consuming 7-8%. As a net exporter the region is an integral whilst also attaining the stringent national and regional emission reduction and energy targets. To achieve these goals and build upon our pivotal role within the UK energy sector, our vision is:

"Yorkshire and Humber will continue to be a primary energy provider for the UK while achieving low carbon energy targets". So our actions will:

- **benefit our economy;**
- **support our communities; and**
- **protect and enhance our environment.**

Three key objectives support the attainment of this vision:



The Action Plan to 2010 is focused on putting the region on the road to achieving these objectives. As such, the actions are cross-cutting and will seek to deliver all three objectives. This is the reason for placing the 'Energy Infrastructure Strategy' at the centre of the key objectives.

The actions are designed to:

- support the aims of the Energy White Paper, the 2006 Energy Review and subsequent revisions;
- realise existing regional energy and greenhouse gas emission targets; and
- take account of the changing business and policy environment for the energy sector.

The key actions to 2010 that support the key objectives are as follows:

- **Objective 1: Lead the way in delivering secure regional and national energy supplies.**
 - *Key Action 1.1: Deliver the development of a diverse energy portfolio for the region.*
 - *Key Action 1.2: Reinforce the energy supply chain and grid infrastructure to enable both centralised and distributed generation.*
 - *Key Action 1.3: Facilitate skills growth in the energy sector and energy technology areas.*
- **Objective 2: Promote the reduction in energy demand through efficiency in supply and transmission.**
 - *Key Action 2.1: Identify opportunities for increased energy efficiency in generation and transmission.*
 - *Key Action 2.2: Identify opportunities for capturing waste heat and for new combined heat and power schemes.*
- **Objective 3: Maximise low carbon energy generation.**
 - *Key Action 3.1: Reduce greenhouse gas emissions.*
 - *Key Action 3.2: Progress the region's targets for energy generated from renewable sources and promote microgeneration.*
 - *Key Action 3.3: Facilitate the development of bioenergy production in the region.*

By taking these actions, the primary developments the Regional Energy Forum is promoting are:

- clean coal power stations through the adoption of carbon capture and storage technology and the delivery of advanced gasification and supercritical boiler systems;
- an extensive regional bioenergy infrastructure that includes the widespread production and use of biomass and biofuels;
- prevalence of combined heat and power (CHP) and community energy schemes in urban and rural renewal programmes;
- microgeneration of electricity and heat, mainstreamed throughout our communities and built environment; and
- residual energy recovery from waste integrated as part of new business opportunities in recycling and resource recovery.

The effective implementation of this Action Plan is a critical step in delivering the long-term vision for the region.

2 INTRODUCTION

In 2005 the Regional Energy Forum (REF) endorsed a regional position statement recognising the main aims of reducing carbon emissions for the energy sector while maintaining secure and affordable supplies of energy. The REF recognises that in order to influence better regional policy and decision-making and to secure additional investment, the ideas adopted in the regional energy position statement must be developed into an accessible strategy and action plan that will act as a focus for investment over the next five years.

The REF represents many of the regional stakeholders across both private and public sectors but has limited the scope of this strategy to regionally specific issues and actions where REF members have the capacity to deliver. The strategy therefore has a particular focus on the development of physical infrastructure. It is not intended to replicate national initiatives such as those of the Carbon Trust and Energy Saving Trust (EST) that are delivered at regional or local level, but work with them where appropriate to add value.

The Strategy and Action Plan has been developed through a process of consultation with regional stakeholders and builds on the priorities recognised for energy in the Regional Economic, Spatial and Housing Strategies.

The Action Plan is limited in timeframe to 2010 and it is the intention of the REF to update the plan on a regular basis thereafter.

3 VISION TO 2020

In 2003 the government's Energy White Paper (EWP), 'Our energy future – creating a low carbon economy', was developed against a backdrop of climate change, fossil fuel supply and market volatility, and increasing questions of security of supply. It identified four main long-term policy goals:

- to put ourselves on a path to cut the UK's carbon dioxide emissions - the main contributor to global warming - by some 60% by about 2050 with real progress by 2020;
- to maintain the reliability of energy supplies;
- to promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and
- to ensure that every home is adequately and affordably heated.

The Energy Review of 2006 reiterated the commitment of the government to these goals and recognised two long-term challenges:

- tackling climate change, as emissions from human activity continue to grow; and

- delivering secure, clean energy at affordable prices, as we become increasingly dependant on imports.

Yorkshire and Humber is key to the UK's energy supply infrastructure. The region presently contributes 17-18% of the UK's electricity production while consuming 7-8% (1); handles an increasing proportion of the UK's gas landings; and has 27% of the national oil refining capacity.

To align with the government's goals and build upon the region's important role within the UK energy sector, our vision is:

"Yorkshire and Humber will continue to be a primary energy provider for the UK while achieving low carbon energy targets".

Our actions will:

- **benefit our economy;**
- **support our communities; and**
- **protect and enhance our environment.**

To deliver this vision, three principles form the core of our strategy and support the goals of the EWP (Figure 1):

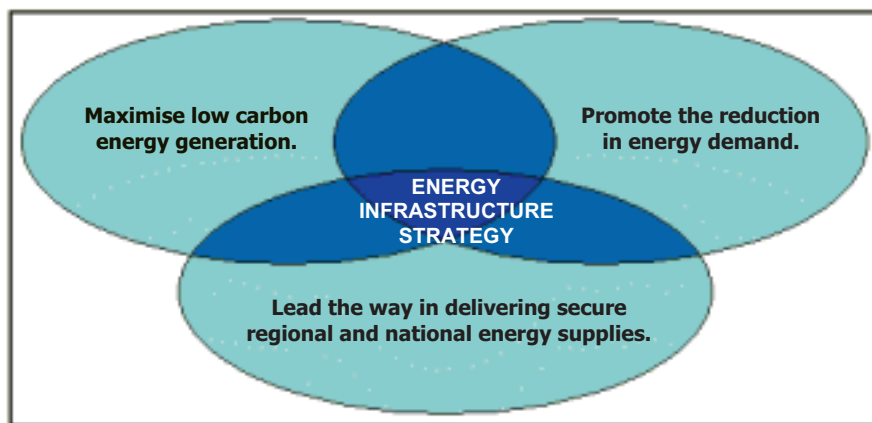


Figure 1. Key objectives that make up the Energy Strategy.

Implementation of the strategy is required today in order to deliver the vision for 2020. To maximise the impact of the Action Plan to 2010, the actions developed here are focused at delivering all three key objectives in concert. This is represented in Figure 1 by the placement of the 'Energy Infrastructure Strategy' at the centre of the principles. To meet these objectives, the primary developments the region would like to achieve are:

- clean coal power stations through the installation of supercritical boiler systems, the adoption of carbon capture and storage technology and the introduction of advanced gasification processes;
- an extensive regional bioenergy infrastructure that includes the widespread production and use of biomass and biofuels;
- prevalence of combined heat and power (CHP) and community energy schemes in urban and rural renewal programmes;
- microgeneration of electricity and heat, mainstreamed throughout our communities and built environment; and
- residual energy recovery from waste integrated as part of new business opportunities in recycling and resource recovery.

4 ENERGY POLICY, TARGETS AND GAP ANALYSIS

4.1 Current context for energy

Increasing energy demand is a commonly reported theme - the International Energy Agency predicts a 1.7% p.a. increase in global energy demand to 2030 (2). Both the UK and the region fit this profile of increasing demand. The Energy Forum Foundation Study Update for the region shows increases of 2.9% in domestic consumption and 1.3% in commercial consumption in the period 1999-2003 (3). The recent Energy Review highlights the increased reliance on fuel imports and recent events have spotlighted issues of energy security and market volatility. This has led to significant increases in fuel prices. Against this backdrop, the four goals of the existing EWP were reiterated by the 2006 Energy Review. What the Review proposes are new methods of policy delivery, to be confirmed in a revised Energy White Paper in 2007.

Figure 2 is a prediction of the fuel mix for electrical generation in the UK to 2050 (4). This projection is based on a GDP increase of 2.25% per year and no new nuclear build; and is aimed at reducing CO₂ emissions by 60% by 2050. It is anticipated that a major aspect of the new Energy White Paper will be the nuclear production issue. Given the region's existing 17-18% contribution to UK electricity production, principally through the three major coal-fired sites – Drax, Eggborough and Ferrybridge – this will have no significant effect on regional production or the energy mix. Other points of note to 2020 are that electricity production from CHP, renewables and gas are forecast to increase significantly.

In the same time frame, coal use initially reduces before increasing beyond the Large Combustion Plant Directive (LCPD) target date of 2007, with the introduction of Carbon Capture and Storage (CCS) technology from 2020 onwards. Utilising the same arguments presented earlier this year in the REF's Vision for Coal (4), there is likely to be a national 'generation gap' due to coal plant opting out of the LCPD and the reduction in nuclear capacity. This gap needs to be filled by fossil fuels and renewable sources. As such, this presents an opportunity. Regionally, the change in coal-fired energy production is

expected to be less volatile as the region pursues a positive coal vision. This will allow the region to benefit from opportunities presented by a national commitment to CCS technology and the region’s proximity to potential carbon storage sites in the North Sea.

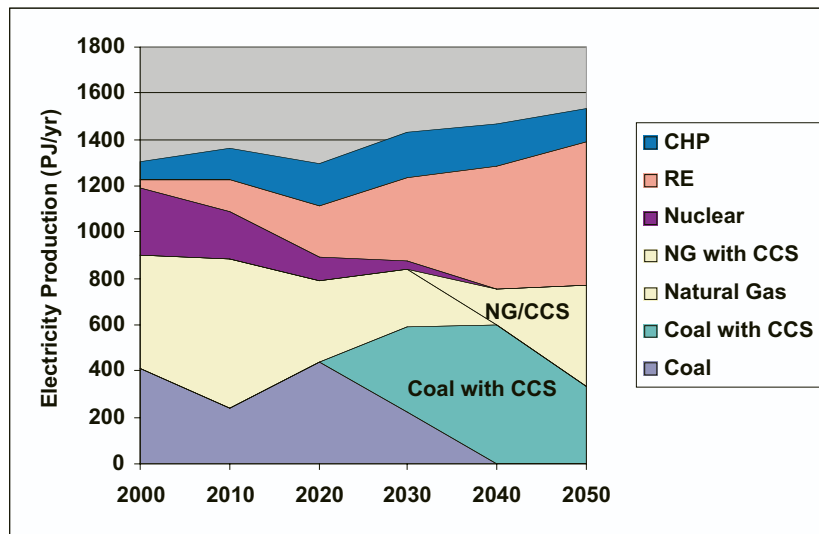


Figure 2. A UK Projection of Fuel Mix for Electricity Generation to 2050.

From the perspective of security of supply and in order to deliver the UK's energy needs beyond 2020, a robust mix of technologies is required.

As shown in the Regional Energy Flow Chart at Annex A and supported by Figure 3 a) and b), the most significant energy production/import in the region is from oil (64%) with 73% of this being exported from the region. Coal also plays a prime role in the energy future of the region and represents 18% of the region’s energy production and imports; 92% of this coal is used for electrical production with the region contributing 26% of the UK’s coal-fired power in 2002.

Natural gas contributes 16% to the regional energy mix, most being used within the boundaries of the region. The region currently receives 5% of UK gas landings, but this is likely to increase. It is not anticipated that the increased role of natural gas in the UK’s energy mix will be reflected in the region; however, the significant role that gas plays must be recognised.

Finally, the small contribution (1-1.5%) of embedded generation, which includes renewable energy sources and CHP, reflects the status of renewable energy consumption and supply relative to the targets as shown in Figure 4. Also of note is the high level of conversion losses during energy transformation. This represents an opportunity for increased energy efficiency during the generation and transmission of energy by shortening supply chains. The role of the action plan is to ensure the development of the energy portfolio within the region and to work towards existing targets.

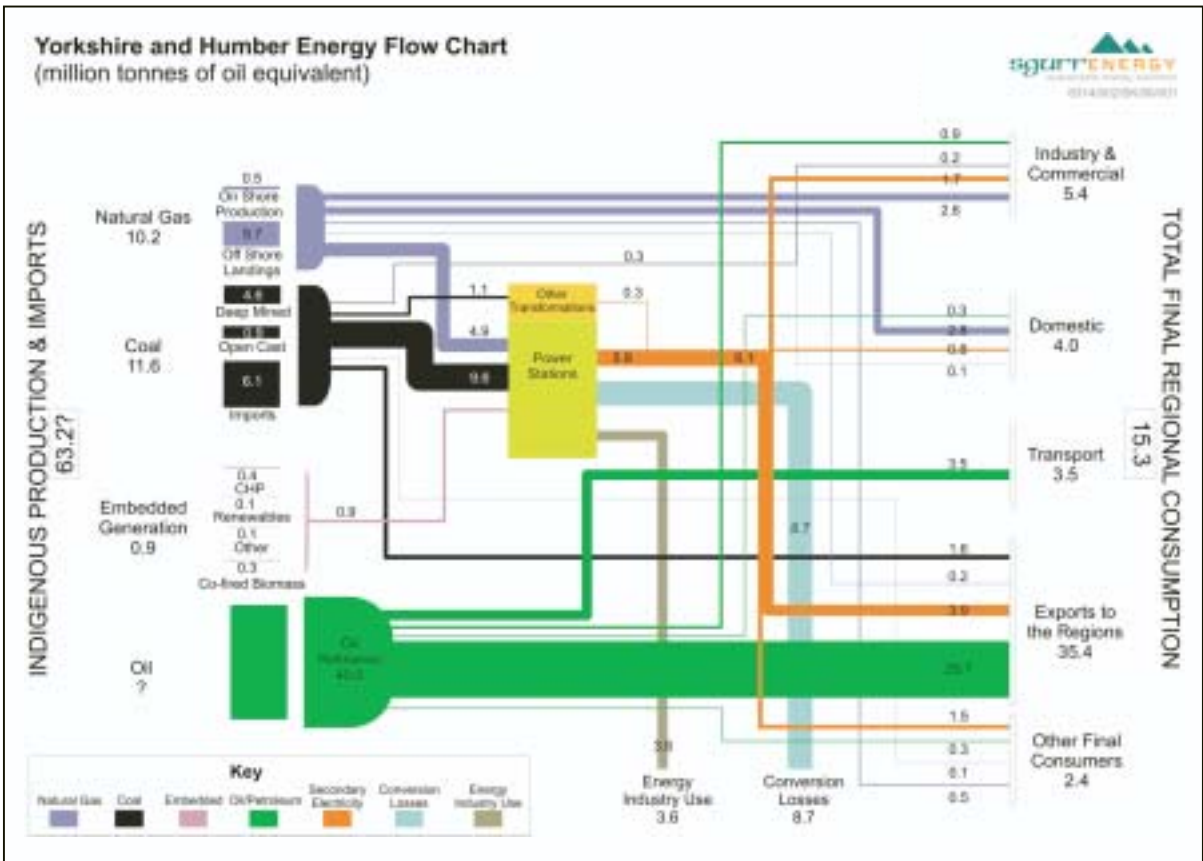


Figure 3. a) Energy Flow Chart for the Yorkshire and Humber Region (repeated in Annex A in A3 size).

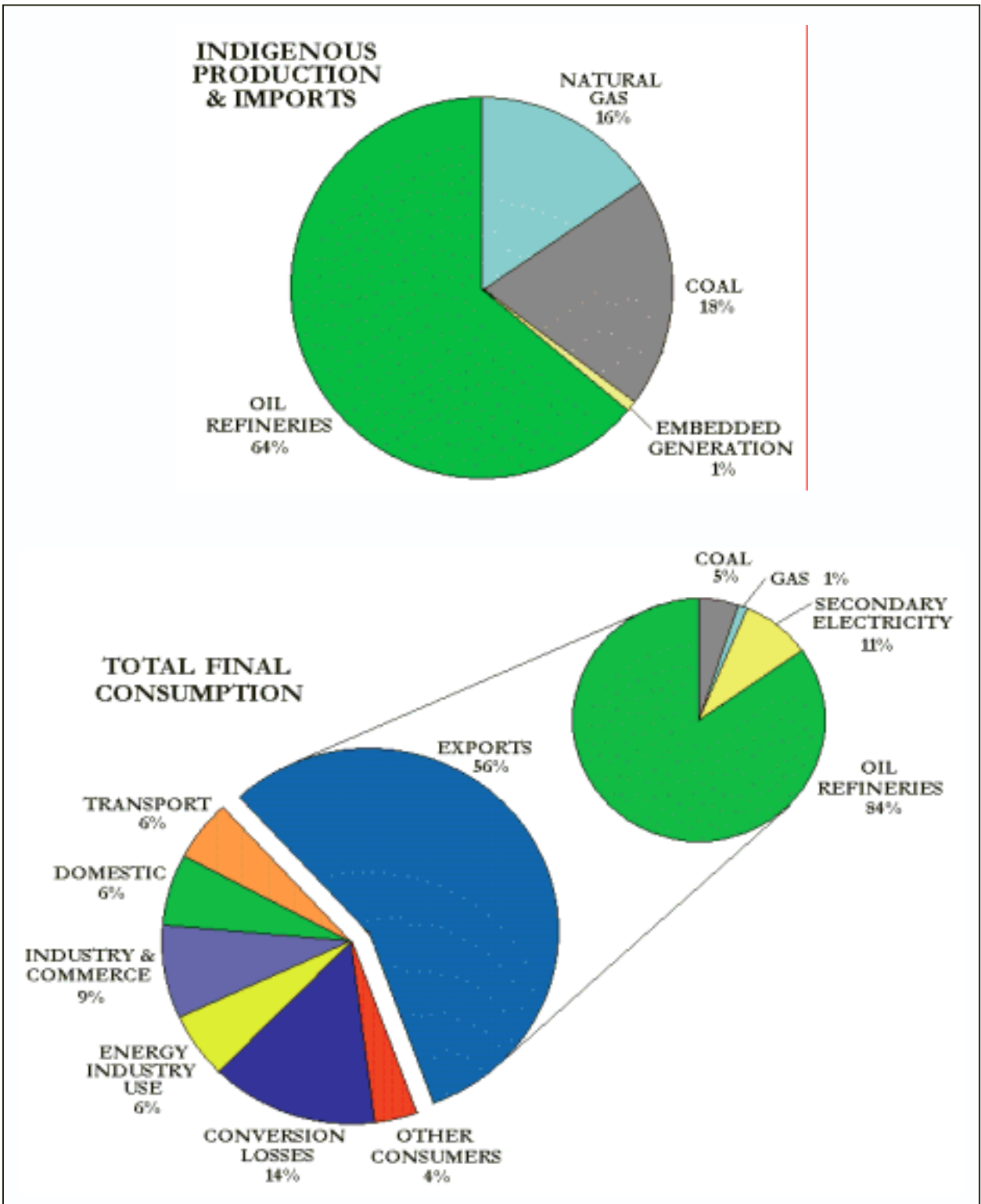


Figure 3. b) Indigenous Energy Production and Imports, and Total Final Energy Consumption for the Yorkshire and Humber Region.

4.2 Targets and status

The principal statutory driver for energy policy in the UK, and therefore the region, is the 2003 EWP and its subsequent review. The region has responded to the goals and targets laid out by this and other Government documents, such as the UK Fuel Poverty Strategy and the Renewables Obligation (RO), to develop a suite of targets that relate directly to energy in the region. These targets are communicated in a number of statutory documents such as the Regional Spatial Strategy (RSS) and the Regional Economic Strategy (RES). An overview of existing targets and the region's status relative to these targets is shown in Figure 4.

There are other targets that are not presented in Figure 4:

- Regional Economic Strategy – by 2016, reduce greenhouse gas (GHG) emissions by 20-25% from a 1990 baseline;
- Draft Regional Spatial Strategy – 10% of energy required for sizeable new developments must come from on-site renewable energy sources (the North Yorkshire Renewable Energy study recommends a minimum threshold of 10 or more dwellings or 1,000 m² for commercial developments);
- Regional Housing Strategy - refurbishment work energy efficiency standards in the public and private sectors should be either Building Regulations thermal efficiency levels or SAP, 65 whichever is the higher;
- Affordable Warmth Action Plan - ensure fuel poverty is eliminated by 2016;
- UK Fuel Poverty Strategy - seek an end to fuel poverty for vulnerable households by 2010;
- breakdown of Local Authority Renewable energy targets for 2010/2021 Totals 708MW/1862MW (Humber 124MW/350MW, North Yorkshire 209MW/350MW, South Yorkshire 47MW/160MW, West Yorkshire 88MW/270MW, Other 240MW/690MW); and
- Vision for Coal – reduce greenhouse gas emissions from coal-fired power stations in the region by 50% by 2020 compared to current levels.

There are a number of key conclusions that can be drawn from Figure 4.

The reduction of emissions of both GHG and CO₂ are not presently on target to be met by 2010. Current predictions show CO₂ levels increasing due to emissions from transport and increased electricity demand (1). However, as 50-60% of electricity generated in the region is exported, regional emission levels are seriously impacted by demand from other regions. This result strongly correlates with the relatively low uptake of renewable energy in the region, despite the political environment for renewable energy of various

sources from micro to large scale being favourable, for example the Renewables Obligation and the Low Carbon Buildings Programme.

The region's contribution to the national target for CHP has been exceeded based upon a single site – ConocoPhillips plant at Immingham. In line with Objective 5 for the RES, the region should seek to develop more CHP sites leveraging this success in moving the region forward to reduce primary energy demand from large developments. A particular focus should be the development of community energy schemes in dense urban areas, where the Carbon Trust and EST have demonstrated reductions in primary energy demand of up to 35%.

Although there are national and EU targets for biofuels, and despite progress being made on the development of biofuel plants in Humberside, these targets have not been reflected regionally. As the region contains 27% of national oil refining capacity, there is a significant opportunity to develop a national, leading biofuels industry in parallel to petroleum fuels.

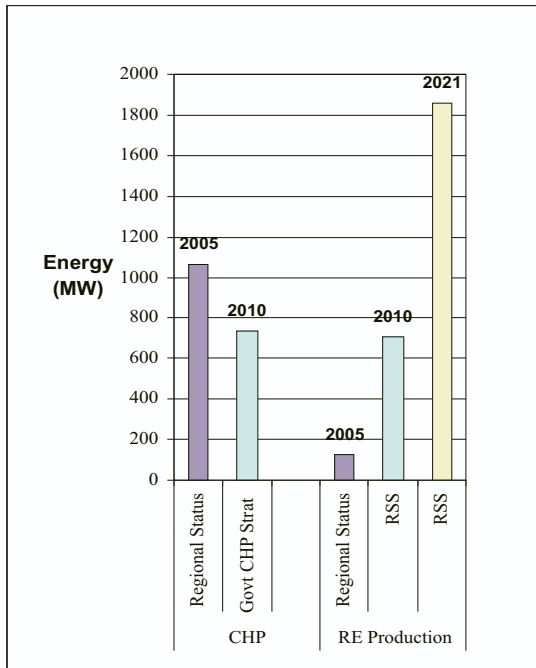
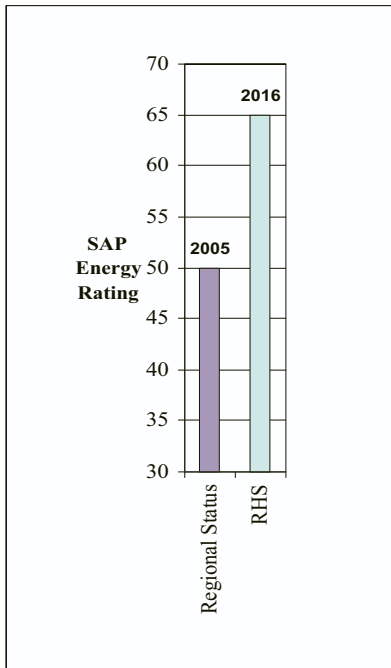
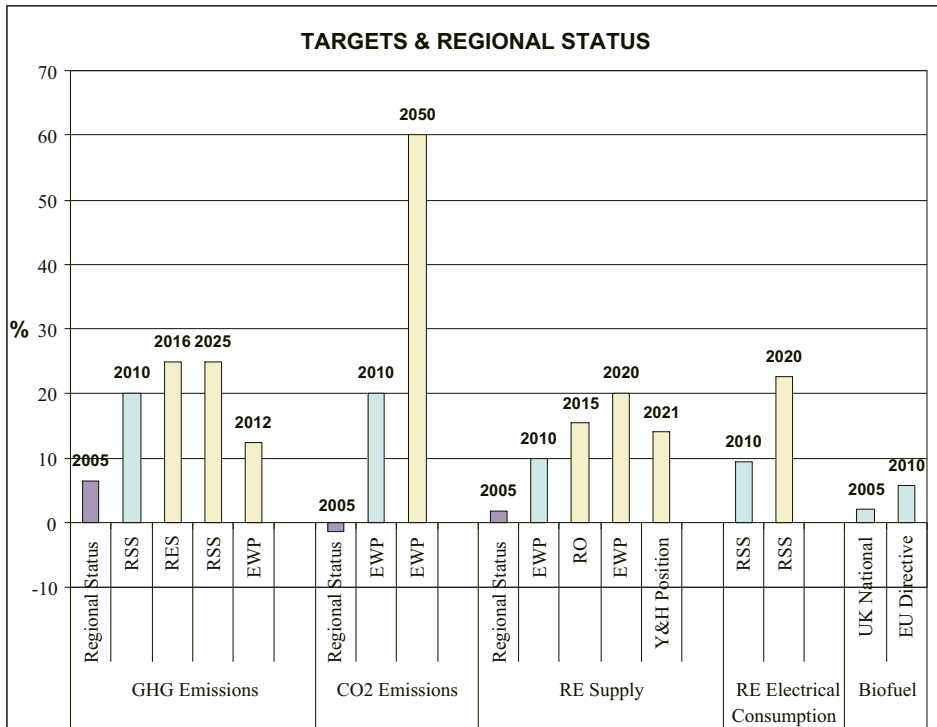


Figure 4: Regional and national targets for energy and the region's known status against these targets.

4.3 Gap analysis

The region's current status demonstrates the following gaps to be addressed through the Action Plan.

Emission Reductions

The present regional status for emissions, as shown in Figure 4, is significantly short of the regional targets. As power generation contributes approximately 55% of the region's GHG emissions (5), and is by far the largest contributor, this sector represents the most significant opportunity for emissions' reductions and the attainment of the targets. Presently, 50-60% of the energy demand placed on the region is from other regions. This creates an imbalance between target setting and the ability to achieve the targets. However, the region is taking action. By achieving the Vision for Coal aim of a 50% reduction in emissions from coal-fired generation by 2020, power generation contribution to emissions will be reduced by ca. 16Mt (CO₂). This represents a reduction in emissions of 25-30%, which exceeds existing regional targets.

The Regional Economic Strategy, Climate Change Action Plan and Vision for Coal both target the development of new technology and an increased role for biomass as the prime movers for reducing emissions and achieving regional targets. From a new technology perspective, CCS offers the most significant medium and long-term opportunity to reduce emissions. This technology is still in development for coal and gas fired plants and is not anticipated to reach maturity until beyond 2015. Therefore, action is required today to support its inclusion in the region's coal-fired sites. Uncertainty surrounding key legislation and incentive mechanisms – LCPD, RO and EU ETS – for long-term planning for coal, technology and infrastructure developments presents significant barriers to the advancement of CCS. However, the retrofitting of advanced supercritical boilers, as discussed in the Vision for Coal, provides an opportunity to extend the life of the region's major coal-fired sites while reducing CO₂ emissions by approximately 20%. This will also allow new technologies to be integrated to achieve future energy demand and emission reductions. If widespread inclusion of CCS technology in coal-fired generation can be achieved by 2020, CO₂ emissions can be reduced by as much as 90%, thereby reducing regional emissions by 45-50%. However, further reductions can be achieved by applying the technology in other large industrial GHG producers once the technology is proven.

The scenario for biomass is considered under 'Renewable energy market development'.

The role of renewable energy to enhance our security of supply and reduce emissions is widely recognised in the RES and RSS. To date, the regional uptake of renewables has been limited primarily due to constraints of planning, financial feasibility, public understanding and availability of proven technology. Were the regional targets for renewable energy to be met for 2010, this would constitute a 3-4% reduction in emissions. To increase the

renewable energy footprint in the region and work towards regional targets is a significant challenge that requires development of the renewable energy market.

Renewable energy market development

A 'technology blind' approach invariably leads to certain technologies taking the lead. Solar thermal and photovoltaic (PV) systems presently dominate the microgeneration market due to their ease of installation, costs and available grant support. Similarly, onshore wind energy dominates the large-scale renewable energy market, principally due to the recognition of the resource availability and maturity of the existing technology. However, the present market status for wind farm developments is currently constrained. This can be attributed to issues of grid connection, planning consent, public acceptance and the time-lag associated with dealing with these issues. These factors represent a considerable problem for the achievement of regional targets for renewable energy through wind. Consultants' work supporting the regional renewable energy targets suggested that on shore wind could contribute some 354MW out of the 708MW total. At the moment, there is 26MW installed and operating and only a further 11MW currently consented. A greater mix of renewable energy sources is required and can be delivered through a more integrated approach to the development of the renewable energy market.

The biomass market is starting to develop for boilers >45kW (microgeneration is classed as <45kW thermal [6]) primarily due to fossil fuel prices increasing, which is demonstrating that biomass heating is environmentally and economically viable. A cluster of projects in South Yorkshire having historically had a large coal demand are now utilising 4MW of biomass heat. In addition to this, trials are being progressed to demonstrate that wood pellet fuel is viable in existing coal boilers. The demand for biomass is being supported through the work the coal-fired power generators are doing in embracing co-firing. Requirements for the biomass co-firing market have stimulated the development of the biomass supply chain with the provision of wood chip and pellets. However, at this stage the majority is from imports. A greater biomass resource is also required to meet the role envisioned for biomass in the RES, Vision for Coal and Climate Change Action Plan. The co-firing target of 15-20% biomass expressed in the Vision for Coal for 2020 represents a demand of 10,000 tonnes of biomass per day at the Drax power station alone. This is an opportunity for the region to develop our rural economy and supply chain infrastructure to ensure more indigenous feedstock is available. Significant steps would be through a regional plan for biomass that includes the development of a significant sized wood pellet mill within the region and greater wood chipping, storage and handling facilities.

While the region has to nurture the full energy mix, it is recognised that resources to support renewable energy development are limited. Considering large-scale development, analysis of the sector by Future Energy Yorkshire suggests this is likely to be in developments of both on and off shore wind,

but could also be in marine energy sources and innovative new technologies such as solar collector technology, biomass heat and CHP systems. For small-scale renewable energy, the focus will be on technologies that can easily be installed in high numbers and support the requirements of other regional strategies, e.g. economic growth, reduction in fuel poverty and meeting EWP and emission reduction targets. The region is supporting the development of small-scale systems through a number of existing programmes including the Community Renewables Initiative, North York Moors Community Renewable Energy Programme and Community Energy Solutions (CES). The CES project is providing £10m towards alleviating fuel poverty in 20 deprived communities in the region that are not connected to the gas network over the next two years (7). It is anticipated that ten of these communities will be supplied from renewable energy sources.

To support the development of the microgeneration market within the region, there is a requirement to recognise and support the accessing of funds for good quality developments from the recently announced £80m Low Carbon Building Programme. Where the uptake from the market means funding for the region's projects is reduced (due to a high demand), there should be regional funding to support high quality projects.

The EWP recognises that the grid infrastructure is ageing and needs to be upgraded, and options for investment are discussed in the 2006 Energy Review. In the region investment is required, especially if wind projects are to gain momentum. For the number of large scale projects to increase and to ensure security of supply within the existing mix of energy production there will be a requirement to both upgrade the grid and supply infrastructure and provide more localised energy production that limits, if not eliminates, the demands on the grid. This is consistent with Objective 5 or the RES and RSS policy ENV5 on energy.

Skill requirements and development

The UK's first renewable energy study was carried out for Electricity and Utility Skills in 2003 (8). A subsequent report commissioned by the DTI in 2003/4 (9) focused on electrical generation for renewable sources. The Yorkshire and Humber Assembly has recently commissioned some work to estimate what the demand for microgeneration installers will be if the microgeneration targets in RSS come into force. There is a potential problem as very few people in the region have the necessary skills to install and service microgenerators. This problem is further exacerbated by the skills required being the same as those for plumbing, heating engineers and electricians who are already in short supply throughout the UK. This is not the only test for the renewable energy sector. For the industry to develop and prosper other aspects such as business skills for those already in the industry, supply chain issues, quality, design and manufacturing also need to be addressed. An energy skills group should be established to understand and develop a roadmap to ensure the sector does not falter due to a lack of skills.

More emphasis on eliminating and reducing the energy demand

There are several government programmes that the region is supporting, such as the Energy Efficiency Advice Centres (EEAC), UK Fuel Poverty Strategy, Energy Efficiency – Government Action Plan; however, more is required to eliminate the need for energy in the first place. Planning and design have a large part to play in how buildings and people use energy (e.g. Building Regulations - Part L Conservation of Fuel and Power, orientation of the buildings, etc). There are not enough zero emissions developments coming forward in the region. The RES targets BREEAM 'Excellent' standard for developments supported by the RDA, and the RHS requires EcoHomes 'Very Good' standard. As the RES and RSS look to develop sustainable communities, there also needs to be more emphasis on providing energy to these communities from a zero emissions perspective.

Good quality CHP and community energy schemes have gained a poor image in the UK over the last 40 years due to the use of outdated technologies and without the understanding of the benefits from a Whole Life Costing perspective. Therefore a cultural shift needs to be made to bring forward more systems of this kind to demonstrate to end-users that CHP is a reliable and cost effective option. Barnsley Metropolitan Borough Council's Sheffield Road flats biomass heating scheme is a good case study and exemplar project.

Transportation and alternative fuels

As highlighted in the Climate Change Action Plan, transport is the second highest contributor to emissions in the region, yet the region has little influence on the growth in transport on a national basis. With the Government's recent announcement of a Renewable Transport Fuels Obligation (RTFO) and the EU Biomass Action Plan focusing on biofuels and the need to reduce emissions from transport, the region should take a leading role in all aspects of developing the biofuels sector in the UK. The region presently refines approximately 27% of the UK's petroleum fuels. To maintain this strong association with transport fuels, there is an opportunity for the region to link this expertise with the production of biofuels. Additionally, a high concentration of producers are located in South Humber; this represents an opportunity to create a bio-refining hub that connects the skills, technology and research and development facilities in close proximity to existing oil refineries.

While this strategy does not cover transport infrastructure, the development of a decentralised energy infrastructure, as envisaged by the Government, is reliant upon an effective supply chain. Regionally, this is dependent upon a robust transport infrastructure across the North of England. The Northern Way and Advancing Together strategies are looking at the transport infrastructure and how the region can benefit from improvements.

Residual energy recovery from waste

The Regional Waste Strategy (RWS) puts the development of energy recovery from biodegradable waste at an effective standstill; however, it is due for review in 2006/7. The RWS is supported by the RSS's view of the waste hierarchy, based on the 1975 Waste Framework Directive. With new landfill directives, a new European Waste Directive and a requirement to utilise our resources more efficiently, energy recovery from waste within the region needs to be reviewed. A clear vision for the future of energy recovery from waste needs to be developed while maintaining the importance of the waste hierarchy. In enhancing the position of residual energy recovery from waste without undermining the regional planning policies on waste, it is estimated that approximately 2% of the region's total energy requirement could come from the bio-fraction of waste. This equates to a 25% reduction of the bio-fraction from waste going to landfill. Technological advances in thermal transfer, such as gasification and pyrolysis, should make this option less risky and more publicly acceptable, especially if it is combined with heat recovery for commercial and domestic use.

It should also be noted that energy recovery from waste is viewed as a renewable source of energy by Government, and qualifies for Renewables Obligation Certificates when undertaken by advanced technologies such as anaerobic digestion, gasification or pyrolysis, or as part of a good quality CHP scheme.

Natural gas

Natural gas is the third most significant contributor to the region's energy balance, as shown in Annex A and Figure 3. Despite having an awareness of general production, imports and consumption, relatively little is known regarding the infrastructure today and the plans for the future. Given the importance of gas in the provision of our energy needs, this shortcoming has to be addressed in order to position the future of gas both regionally and nationally.

5 ACTION PLAN

5.1 Overview

This Action Plan is defined as the next steps in delivering the Vision to 2020 outlined in Section 2, but with a shorter time horizon to 2010. The actions are designed to:

- support the aims of the EWP, the 2006 Energy Review and subsequent revisions;
- realise existing regional energy and emission targets; and
- take account of the changing business and policy environment for the energy sector.

This is achieved by developing actions that address the gaps recognised in Section 3. The objectives, and therefore the Vision, are unlikely to be attained through actions taken in isolation. As such, the key actions and underlying activities have many cross-cutting attributes. Although not highlighted in the action plan table, this characteristic of the actions must be recognised. The effective implementation of this Action Plan is a critical step in delivering the long-term vision.

The key actions to 2010 in support of the key objectives are as follows:

- **Objective 1: Lead the way in delivering secure regional and national energy supplies.**
 - ***Key Action 1.1: Deliver the development of a diverse energy portfolio for the region.***
 - ***Key Action 1.2: Reinforce the energy supply chain and grid infrastructure to enable both centralised and distributed generation.***
 - ***Key Action 1.3: Facilitate skills growth in the energy sector and energy technology areas.***
- **Objective 2: Promote the reduction in energy demand through efficiency in supply and transmission.**
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 - ***Key Action 2.2: Identify opportunities for capturing waste heat and for new combined heat and power schemes.***
- **Objective 3: Maximise low carbon energy generation.**
 - ***Key Action 3.1: Reduce greenhouse gas emissions.***
 - ***Key Action 3.2: Progress the region's targets for energy generated from renewable sources and promote microgeneration.***

- **Key Action 3.3: Facilitate the development of bioenergy production in the region.**

Key elements of the Action Plan are given in the tables in Section 4.2. By implementing these and achieving the targets set out in the strategy, the balance in the region between production and consumption will evolve to achieve a greater security of supply. Figure 5 and Annex B show the forecast changes in regional energy flow based upon the assumption that 2020 targets for energy and emissions are achieved. The most significant point of note is the increase in renewable energy in the energy balance, particularly biomass and biofuels.

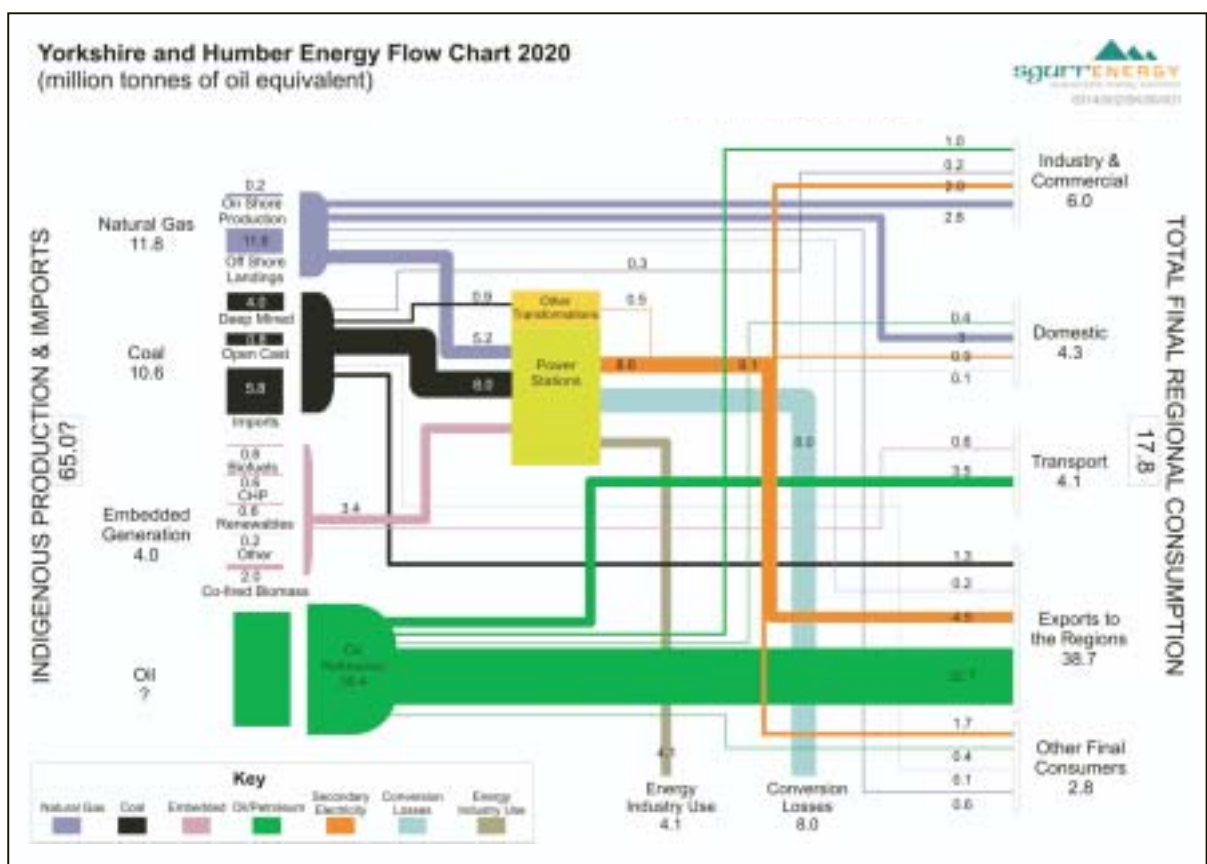


Figure 5. Forecast Energy Flow Chart for the Yorkshire and Humber Region for 2020 assuming energy related targets are achieved (repeated in Annex B in A3 size)

5.2 Action plan

| OBJECTIVE 1: Lead the way in delivering secure regional and national energy supplies. | | | | | |
|--|--|--------------------------------|--|---|--|
| Key Action: 1.1 Deliver the development of a diverse energy portfolio for the region | | | | | |
| Proposed activities to support key action | Responsibility | Timing | Indicative costs | Outcomes | |
| <p>1.1.1 Support the actions outlined in the Vision for Coal (2005)</p> <ul style="list-style-type: none"> Facilitate the region's first advanced supercritical retrofit Expansion of the region's capacity to deliver biomass fuel as a co-firing source Facilitate a Low Carbon Centre of Excellence Establish international links Communication and dissemination activities Identify opportunities for Carbon Capture and Storage, including technology status, storage opportunities, funding mechanisms for delivery, opportunity for delivery | Yorkshire Forward and Future Energy Yorkshire | 2006 onwards | As per Vision for Coal | <p>Ensuring coal-fired electricity generation plays a major part in the regional and national energy mix while reducing the CO₂ emissions by 2020 by 50% in comparison to 2005 levels.</p> <p>Facilitating the expansion of biomass fuel as a co-firing source.</p> <p>Consultation process. Provision of a pathway to achieve emission reduction targets through CCS. Allows definitive action and economic generation in the region to service this area of the energy industry.</p> | |
| <p>1.1.2 Facilitate renewable energy developments to deliver on 2010 targets:</p> <ul style="list-style-type: none"> Support the delivery of the Regional Spatial Strategy by providing advice and guidance on how microgeneration target can be included in Local Development Frameworks Celebrate and dissemination good practice on microgeneration through the annual microgeneration conference and awards Disseminate news on changing regulations, funding opportunities and good practice | Yorkshire and Humber Assembly Yorkshire | 2006-8 2007 2006 | Up to £5k pa £10K pa £2K | <p>Will assist the delivery of emission reduction targets. Will encourage the development of the building integrated renewable energy sector.</p> <p>Market development through economies of scale.</p> | |

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|---|--|--|---|--|
| <ul style="list-style-type: none"> • Host Carbon Trust/Environmentwise/BREW/EST initiatives to introduce businesses and domestic users to renewable energy options to reduce their energy bills and emissions' footprint • Support microgeneration projects by assisting local authorities and installers with technical and planning issues through the use of the regional renewable energy toolkit • Develop a Vision for Biomass that engages partners to agree what the region's goal for biomass should be with a clear plan to achieve it | <p>Forward</p> <p>Yorkshire Forward</p> <p>Regional Energy Forum</p> | <p>onwards</p> <p>2006-7</p> <p>2006 onwards</p> | <p>T.B.A.</p> <p>DTI funding of £10K and £10K from Yorkshire Forward</p> <p>DTI funding of £25K</p> | <p>Biomass can range from co-firing to domestic use. An integrated approach will inform and assist the delivery of a balanced strategy for the biomass sector.</p> <p>Will ensure an effective way forward for the biomass sector that supports, and is supported by, all other regional strategies. Will enhance the bioenergy sector in the region and offer opportunities to export market leading skills and technologies.</p> |
| <p>1.1.3 Support the growth of the wind energy market within the region by leveraging existing regional engineering skills to attract small and large scale turbine manufacturers to the region</p> | <p>Yorkshire Forward</p> | <p>2006 onwards</p> | | <p>Successful introduction of turbine manufacturers to the region will reduce the supply chain timeline for new turbines (particularly large scale), benefit the regional economy, grow the renewable energy skill base and enhance public and private knowledge of renewable energy. Development in this manner would have an international footprint.</p> |
| <p>1.1.4 Facilitate the inclusion of residual energy recovery from waste within the review of the Regional Waste Strategy to ensure the development of Energy from Waste that integrates with recycling, reuse and</p> | <p>Yorkshire and Humber Assembly, WRAG</p> | <p>2006-8</p> | <p>Circa £15-25k</p> | <p>Will ensure that EfW is integrated as a key component of delivering the regional waste strategy and allow the region to work towards landfill</p> |

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| remanufacture. This could be covered in the Vision for Biomass | | | | | objectives. |
| OBJECTIVE 1: Lead the way in delivering secure regional and national energy supplies. | | | | | |
| Key Action: 1.2. Reinforce energy supply chain and grid infrastructure to enable both centralised and distributed generation | | | | | |
| Proposed activities to support key action | | Responsibility | Timing | Indicative costs | Outcomes |
| 1.2.1 Facilitate the development of partnerships with gas and electricity transmission sectors to foster an inclusive approach for the future regional energy balance. Invite stakeholders to become members of the REF | | Regional energy Forum | 2006 onwards | - | Will deliver a greater understanding of the sector now and in the future. Will allow regional bodies to respond effectively to the energy challenges of the future as the major energy partner members are represented. |
| 1.2.2 Collate and build upon existing data and information, commission the development of a GIS based multi-layer mapping system of grid infrastructure/energy resource/demand/energy generation to inform infrastructure and supply chain decision making (spatial and delivery) to assist the development of a secure energy infrastructure | | Future Energy Yorkshire | 2006 onwards then updated on a regular basis | Circa £20-30k then £5k pa for upgrades | Although the initial aims are to support effective decision-making for the development of a balanced energy portfolio, this application has cross-cutting attributes with the RSS, RHS, RES and RWS, among others. An integrated approach to GIS data gathering and display can directly support economic, community and environmental development. Cost saving potential exists by working with other government departments. |
| OBJECTIVE 1: Lead the way in delivering secure regional and national energy supplies. | | | | | |
| Key Action: 1.3 Facilitate skills growth in the energy sector and energy technology areas | | | | | |
| Proposed activities to support key action | | Responsibility | Timing | Indicative costs | Outcomes |
| 1.3.1 Form a Skills Task Group to identify and address regional energy needs and skills shortages and involve the Sector Skills Council and training providers | | Yorkshire and Humber Assembly | 2006 onwards | - | Greater understanding of the energy skills shortfall in the region. Increasing economic and community development through skills |

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| | | | | | development and employment opportunities. Increased growth of the energy sector with an enhanced international presence, including renewable energy - contributing directly to renewable energy and emission reduction targets. |
| OBJECTIVE 2: Promote the reduction in energy demand through efficiency in supply and transmission. | | | | | |
| Key Action: 2.1 Identify opportunities for increased energy efficiency in generation and transmission | | | | | |
| Proposed activities to support key action | Responsibility | Timing | Indicative costs | Outcomes | |
| 2.1.1 Encourage and support projects through the Renaissance Programmes that cost-effectively shorten the energy supply chain, such as, CHP and district heating systems, utilising urban and rural redevelopment projects and liaison with schools, hospitals and academic institutions to increase educational and public awareness | Yorkshire Forward, Yorkshire and Humber Assembly | 2006 onwards | | Higher degree of consideration and uptake of CHP. Greater uptake of efficient and effective systems will reduce primary energy demand and emissions. | |
| 2.1.3 Monitor progress of the Community Energy Solutions project with a view to mainstreaming if successful | Yorkshire Forward | 2006-8 | | Initiative could leverage £10m+ to address fuel poverty in 20 off-gas communities. Potential development of commercial model for addressing fuel poverty. | |
| OBJECTIVE 2: Promote the reduction in energy demand through efficiency in supply and transmission. | | | | | |
| Key Action: 2.2 Identify opportunities for capturing waste heat and for new combined heat and power schemes | | | | | |
| Proposed activities to support key action | Responsibility | Timing | Indicative costs | Outcomes | |
| 2.1.2 Investigate the available sources of waste heat across the region and to identify technologies that could make use of this resource | Future Energy Yorkshire | 2006 | £20K | | |

| OBJECTIVE 3: Maximise low carbon energy generations. | | | | | |
|--|--|---------------|-------------------------|---|--|
| Key Action: 3.1 Reduce greenhouse gas emissions | | | | | |
| Proposed activities to support key action | Responsibility | Timing | Indicative costs | Outcomes | |
| 3.1.1 Consider the opportunities around carbon trading with a specific remit of encouraging the regions heavy energy users to carbon trade and lobby government for robust trading mechanisms that will assist the development of the energy market in the region and reduce costs for businesses through, for example, aggregated business sector trading | Regional Energy Forum, Future Energy Yorkshire | 2006 onwards | - | Ensures the needs of regional energy users are considered for inclusion in the ETS and can encourage energy users to register for trading status. Underlying outcome is that energy demand and emission reduction for major energy users are stimulated while being supported by fiscal mechanisms. | |
| OBJECTIVE 3: Maximise low carbon energy generation. | | | | | |
| Key Action: 3.2 Progress the region's targets for energy generated from renewable sources and promote microgeneration | | | | | |
| Proposed activities to support key action | Responsibility | Timing | Indicative costs | Outcomes | |
| 3.2.1. Monitor progress towards the achievement of the renewable targets included in RSS and produce an annual report that reports on progress, promotes successes and examines issues that restrict progress | Yorkshire and Humber Assembly | 2007 | £5K | Increased awareness amongst local authorities and the general public of progress and issues around the development of renewable energy projects | |
| OBJECTIVE 3: Maximise low carbon energy generation | | | | | |
| Key Action: 3.3 Facilitate the development of bioenergy production in the region | | | | | |
| Proposed activities to support key action | Responsibility | Timing | Indicative costs | Outcomes | |
| 3.3.1. Identify the potential for developing the bioenergy industry in the region, including processing imported fuel stocks and producing supplies within the region | Regional Energy Forum | 2006/7 | £7K | | |

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| <p>3.3.2 Informed by the above study, establish links between the REF and the Regional Transport Board to develop common policies and targets relating to alternative fuels for transport - for example, biofuels, hydrogen fuel cells - and the transport infrastructure in support of energy supplies</p> | <p>Yorkshire and Humber Assembly</p> | <p>2007 onwards</p> | <p>Will allow the region to set achievable alternative fuel targets in line with national policies. Ensures the transport infrastructure for the energy supply chain is a key component of the region's transport strategy, especially as the region moves towards a more decentralised energy production position.</p> |
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APPENDIX 1: GLOSSARY OF TERMS

| | |
|-----------------|---|
| Biofuel | Gas or liquid fuel made from plant material (biomass). |
| Biomass | Material of biological origin excluding material embedded in geological formations and transformed to fossil, such as wood that can be used for the production of electricity and/or heat. |
| BREEAM | Building Research Establishment Environmental Assessment Method: a structured method of assessing the environmental performance of buildings. |
| CCS | Carbon (Dioxide) Capture and Storage: generic title for technologies that will enable carbon dioxide emissions from combustion to be captured and then stored. |
| CHP | Combined Heat and Power: a plant that produces both heat and electricity from a single heat source. |
| CO ₂ | Carbon dioxide. |
| Co-firing | Combustion of a secondary fuel (usually biomass or waste) with a primary fuel (usually coal). |
| DTI | Department of Trade and Industry |
| EcoHomes | An environmental performance assessment method for homes – in essence, BREEAM for homes. |
| EEAC | Energy Efficiency Advice Centre |
| EfW | Energy from Waste: conversion of waste products into heat and/or electricity. |
| EST | Energy Saving Trust |
| EU | European Union. |
| EU ETS | EU Emissions Trading Scheme: scheme that enables trading of carbon credits to enable compliance with emission allocation. Currently under review to include other GHG. |
| FEY | Future Energy Yorkshire |
| Fuel Poverty | Where a combination of poor housing conditions and low income mean that the household cannot afford sufficient warmth for health and comfort. The widely accepted definition of fuel poverty is where a household needs to spend 10% or more of income to meet fuel costs. |
| GHG | Greenhouse gas(es). |
| GIS | Geographic Information System: analysis that combines relational databases with spatial interpretation and outputs often in form of maps. A more elaborate definition is that of computer programmes for capturing, storing, checking, integrating, analysing and displaying data about the earth that is spatially |

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| | referenced. |
| Global Warming | Warming of global atmospheric temperature attributed to the insulating effect of greenhouse gas emissions. |
| GOYH | Government Office for Yorkshire and the Humber. |
| LA(s) | Local Authority/Authorities. |
| LCPD | Large Combustion Plant Directive: EU legislation that requires controls on emissions for all large combustion plants. |
| LDF | Local Development Fund |
| LNG | Liquified Natural Gas. |
| PV | Photovoltaic: a semi-conductor diode that converts solar light into direct current electricity. |
| REF | Regional Energy Forum. |
| Renewable Energy (RE) | Energy obtained from sources that are essentially inexhaustible, unlike, for example, the fossil fuels, of which there is a finite supply. Renewable sources of energy include wood, waste, geothermal, wind, photovoltaic, and solar thermal energy. |
| RO | Renewables Obligation: UK Government's approach to encourage renewable energy electrical production. |
| ROCs | RO Certificates: tradable certificates used as evidence of Renewable energy generation within the RO. |
| RES | Regional Economic Strategy |
| RHS | Regional Housing Strategy |
| RSS | Regional Spatial Strategy |
| RWS | Regional Waste Strategy |
| SAP | Standard Assessment Procedure: energy efficiency rating for buildings |
| Solar Thermal | A device that converts solar radiation into heat energy. |
| Supercritical | Refers to boiler steam conditions – steam plant that utilises steam pressures up to approximately 275Bar and temperatures up to approximately 600°C. |
| YF | Yorkshire Forward. |
| YHA | Yorkshire and Humber Assembly. |
| WRAG | Waste and Recycling Action Group |

APPENDIX 2: OUTLINE OF WORK, WORK PLAN AND DOCUMENT STRUCTURE.

A1.1 Outline brief for this work

The brief for the development of the Regional Energy Strategy is outlined below.

In mid 2005 the Regional Energy Forum (REF) endorsed a regional position statement and submitted a business plan to the DTI outlining a draft of the energy related activities planned for the region over the subsequent three years. The REF recognises that in order to influence better regional policy and decision-making and secure additional investment, the ideas developed in the regional energy position statement must be developed into an accessible strategy and action plan.

The aim of this consultation is to produce a robust and succinct energy strategy and action plan covering the period 2006–2010 with a regional energy vision to 2020. It must clearly set out the main issues and options for action facing the region to make progress towards a low carbon economy while maintaining affordable, secure energy supplies for businesses and residents. In addition, the strategy and action plan should provide a focus for investment from the private and public sectors in our energy infrastructure and, in particular, assist in the development of the business plan submitted to DTI.

A1.2 Methodology and work plan

This work combines a review of national and regional strategies and policies, energy market drivers and consultation with internal and external stakeholders.

The key areas covered are:

1. A review of existing national and regional strategies, policies and targets as they relate to energy and, in particular, their context with respect to the four goals of the Energy White Paper, 2003.
2. A review of the main drivers over which the region has no control and will influence future energy issues for Y&H.
3. A consultation of Y&H energy stakeholders that is informed by and will inform 1 and 2 above. This includes one-to-one discussions with key regional parties, written submissions to develop the action plan and vision, and stakeholder workshops to debate and evolve the emerging action plan and vision.
4. Development of a SMART action plan and vision to 2020 that draws upon the outcomes from the above to develop a coherent vision combined with practical detail on key actions, activities and the role of key players across the region.

Throughout the development of this strategy and action plan it is imperative to remain cognisant of the UK Government's statutory Energy White Paper (EWP), 'Our energy future - creating a low carbon economy', as it is against this backdrop that the region develops its energy future.

APPENDIX 3: STAKEHOLDER CONSULTATION

THE CONSULTATION PROCESS

Background

Due to the time constraints for developing this strategy, broad consultation has been restricted to the issuing of the draft document. However, to inform the development process, a group of stakeholders have been interviewed to ensure the regional perspective was understood and the whole energy profile was engaged.

The stakeholders were specifically selected to ensure the issues covered all aspects of energy, from fuel suppliers to energy suppliers and the infrastructure that supports it. Within this mix, consideration was given to energy production (electric/heat and large scale to micro-generation), grid supply, other supply chains issues, research and development and consumer energy efficiency.

Stakeholders

| | |
|-------------------|---------------------|
| Academia | Councils |
| Developers | Fuel suppliers |
| Energy efficiency | Grid infrastructure |
| Micro-generation | Power producers |

Socio-economic and political – GOYH, YHA, YF and REF

The interviews were carried out in person or over the telephone where this was more practical.

Due to the diverse nature of the energy market, the stakeholders, while agreeing the importance of having an energy strategy, came at it from very different perspectives.

KEY ISSUES FROM DISCUSSIONS

Skills

There is likely to be a huge skills shortfall within the energy sector and in particular the renewable energy sector. This shortage has been identified as an issue across the whole of the UK. Considering the technology skill requirements are those that are already in demand from the likes of the plumbing, electrical and heating engineering sectors, the impact of demanding renewable energy through the RSS and LDFs will be a big problem unless action is taken quickly.

In terms of the wider energy industry, there is a lack of engineers coming through the region's universities at present and entering the environmental sector.

For the SME micro-generation sector, there is a requirement for skills development in general business best practice, for instance in customer focus,

growing the business, finance, etc. There is also a requirement for training and education within local public sector bodies to ensure energy is utilised to its best effect and renewable energy is incorporated into as many schemes as possible.

In addition to these general requirements, the 2012 Olympic Games in London is a major factor in skill absorption. It is recommended that London's approach to tackling the skills shortage for London be examined. A recent ENDS survey on salaries and careers in the environmental sector highlights the growing demand for skilled practitioners in the environmental sector and how projects were not being addressed due to the lack of skills (www.endsreport.com/index.cfm?action=bulletin.issue).

The energy mix requirements

While all the interviewees agreed there needed to be a diverse mix of energy and energy saving within the region, it was clear from the interviews, that the approach required within the strategy was very different from the various stakeholders.

Energy efficiency

There was some feeling from some of the interviewees that the energy efficiency agenda, in terms of the strategy and action plan, should be minimised as there were national programmes dealing with energy efficiency (EEAC, UK Fuel Poverty, etc.) and therefore the focus should be on energy production and transmission.

Micro-generation

There is much anticipation as to what the Low Carbon Buildings Programme (anticipated to replace Clear Skies in April 2006) will offer the micro-generation sector. In some ways this programme could be a catalyst for there being a 'full steam ahead' approach to micro-generation or a stifling of the industry, dependant on the grants being provided.

One of the prime drivers at present is the rising gas and oil prices and while these are increasing, or perceived to be steeply increasing, the market will be stimulated.

The incorporation of a minimum 10% on energy being produced on site for 'sizable developments' (RSS and potentially LDFs - usually thought to be 1000m²) is accepted as a very positive step for the industry. It is understood that approximately 75% of the region's local authorities would be prepared to promote this approach within their LDFs.

However, there will need to be a lot of work with the industry for it to provide the services and technology to meet the demand.

The hope is that Large Scale PV arrays will be developed in the region, with the benefits of economies of scale and supporting the market development. Recently, CIS in Manchester have made a bold statement by installing a 7000

panel array (approx 180,000KWh_e/annum). This type of system could potentially be replicated in the region's large cities, which are developing high-rise apartment and mixed residence blocks.

Energy from coal combustion

There was little concern by the coal industry that the reduction in coal fired power stations, due to the Large Combustion Plant Directive (LCPD), would have a large impact on their industry, as the demand for coal was such that the power stations had to import coal anyway.

There was also no real concern about the reduction in domestic and light commercial/public sector use of coal from the region as it now accounted for a small part of the business. Clean coal technology is seen by some as not commercial at present, and carbon abatement a more philosophical approach. However, carbon capture and clean coal technologies will all be influenced by gas prices.

The coal-powered generators highlighted that incremental technologies, such as carbon abatement, could well lead to efficiencies equivalent to those of gas-fired power stations.

Co-firing was still seen as a very important aspect of reducing the CO₂ impact from the coal fired power stations, with a potential to co-fire up to 10-20%. However, this was totally dependant on ROCs at present as burning biomass was 2-3 times more expensive than using coal. This will be tested over the coming months as the certificates for co-firing ROCs are to be reduced from 25% (fully allocated already) down to 10% in April 2006. The fear of a crash, often referred to as the 'cliff-edge', in the event that eligible generation exceeds the Renewables Obligation, or one of the caps on co-firing or banking, is considerable and could have a dramatic effect on the emerging biomass supply chain within the region.

(www.dti.gov.uk/energy/consultations/pdfs/draxpowerltdres.pdf)

Biomass

Biomass is seen as a very important fuel for the region. Co-firing in the region is developing rapidly as we have three large coal fired power stations. These power stations are developing the biomass sector for energy crops, virgin biomass and some 'clean' waste streams for both indigenous and imported material.

The other part of the biomass equation developing in the region is for biomass heating systems, which are now becoming economic alternatives to fossil fuels. To support this there is a belief that a regionally produced source of Wood Pellet Fuel would be highly advantageous, to complement a wood chip industry.

This demand is developing an infrastructure that will need to be supported during its establishment

Energy from Waste (EfW)

Energy from Waste was a topic that many saw as something the Regional Waste Strategy would take care of. However, within that document, EfW is at present looked to be at status quo, as recycling in the region has a long way to go. Others saw this as a short-term approach and EfW could not be ignored within the energy mix.

There was a concern that EfW and the technologies supporting it were not properly understood and therefore EfW was being pushed to the back of the energy technology queue.

Of those that saw EfW as an issue, there were two suggested approaches to developing the EfW infrastructure. The first was to have large-scale plant that would achieve economies of scale. On the other hand, others believed the EfW plant would have to be incorporated as an extension to localised energy and resource recovery parks (ERRPs). The latter may not provide economies of scale in the same way.

EfW for co-firing at present is not seen as a viable option for the coal fired power stations, as the whole station would have to become WID compliant. However, if the rules changed and the EfW plant could be on the power station site and seen as a discrete WID compliant unit, then there would be more interest in EfW co-firing used for pre-heating. Government would have to have a policy change for this to be acceptable. It may be appropriate that the REF could review the potential of this in the region and lobby government.

Gas

Very little is really understood about the dynamics of the gas industry on the region at present: however, there are a number of opportunities for gas storage facilities with the region.

Transportation

Transportation in general, is fundamentally thought of as part of other strategies, such as the Northern Way and Advancing Together, as there is little expectation that the Regional Energy Strategy could influence the transportation infrastructure.

However, there is a growing appetite for the region to develop a robust and leading role within the biofuel refining industry.

The rail network needs to be developed to support the reduction in road movements in the region. This supports the use of public transport by commuters and reducing the volume of goods vehicles on an already grid locked road infrastructure.

The region sees a need to reduce the electrical distribution network for increased efficiencies in grid distribution, which inevitably means energy production closer to towns and cities. For the supply chain to develop for the

likes of biomass and biofuels, there is a heavy dependency on road and rail networks (power stations) at present.

If this sector is to expand to the volumes anticipated, the region will require a robust and diversified mix for the distribution network, which would include road, rail and waterways (especially where it could be brought into city centres). The use of waterways for the transportation of coal and biomass around the region has already been considered.

Wind

Large scale wind projects are not developing as anticipated for many reasons, including planning rejections, costs involved in the consultation process and the availability of equipment in the UK. However, the Knabs Ridge project outside Harrogate has demonstrated that local authorities are going to have to look carefully at their renewable energy targets before rejecting schemes.

It would also appear that failing a local authority's targets, while not being statutory, could in effect be exactly what the authority needs; this would mean they would not be putting up wind turbines within the authority's jurisdiction – 'the winning game'.

With much of the 2010 renewable energy targets for the region being placed on wind, there are those who feel that some local authorities who have low targets will not push further than the target requirements, even though there is a capacity for far greater achievements in their area.

Good Quality Combined Heat and Power (GQCHP)

The region has already met its targets for GQCHP with the ConocoPhillips plant in Immingham. However, there is a strong drive to capitalise on this and look for other sites that can also gain from GQCHP. Despite this, there is increased need for developments in urban areas such as Leeds, Wakefield and Bradford.

Wave and tidal

Three companies in the region are currently working up schemes for 10MW_e and a further 4-5 have gained DTI funding for R & D projects. These projects are seen as longer term, i.e. ten years off being commercially viable.

Grid infrastructure

The grid infrastructure was believed to be a major obstacle to developing larger scale renewable energy technologies in the region, as the 33kVA grid was a weak point that added large costs to many schemes.

When discussing the grid infrastructure with power generators, the grid is seen as 'someone else's problem' even though electricity cannot be transported in any other way.

Achievable measurable goals

It was agreed by all those involved in the consultation, that achievable measurable goals should be set and reviewed by the REF to ensure the region is on target.

The old adage "If you don't measure it, you can't manage it", was highlighted. Therefore, measurable goals should be included in the strategy and reviewed by the REF's membership.

Lobbying

Where direct actions could not be taken by the REF, due to external influences, the REF are seen as the body that should lobby Government departments and politicians, to ensure the region's requirements are fully understood and taken into consideration.

The REF chair suggested this could be achieved through, in the first instance, a presentation of the regional energy strategy to the region's MPs.

Building energy requirements information

It was highlighted that many LAs are likely to use the new EU Energy Performance of Buildings Directive (Labelling of Buildings) as a driver to improve the authorities' building stock and as a way of supporting their Gershon savings. This is a visible way of demonstrating to the community, energy improvements and cost savings.

For the domestic housing stock, the building of new homes to higher EcoHomes ratings, along with the new "sellers pack" to be required in 2007, will encourage people to select higher efficiency homes and therefore instill a requirement for upgrading the existing poorer stock and those that are not building to the higher standards.

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