



**GUIDANCE ON BACKGROUND
INFORMATION TO ACCOMPANY
NOTIFICATIONS UNDER SECTION 14(1)
OF THE ENERGY ACT 1976 AND
APPLICATIONS UNDER SECTION 36 OF
THE ELECTRICITY ACT 1989**

DECEMBER 2006

**Guidance on background
information to accompany
Notifications under Section 14(1)
of the Energy Act 1976 and
Applications under Section 36 of
the Electricity Act 1989**

December 2006

Preface

Energy is a vital part of every aspect of modern life in Britain and to our continued economic prosperity. The Government has four long-term goals for energy policy:

- to put the UK on the path to reducing carbon dioxide emissions by 60% by 2050;
- to maintain reliable energy supplies;
- to promote competitive markets in the UK and beyond; and
- to ensure that every home is adequately and affordably heated.

Earlier this year we undertook a major review of the country's progress toward achieving these goals and what further action may be required in light of the major long term challenges of climate change and delivering secure, clean, affordable energy as we move towards increasing reliance on imported energy. The Government's response to the review, *The Energy Challenge*, was published in July¹.

CHP – an update to the Guidance for large power station developers

In *The Energy Challenge* we promised to publish new Guidance in England and Wales on Combined Heat and Power (CHP) for power station notifications under section 14(1) of the Energy Act 1976 and applications under s36 Electricity Act². The new Guidance is aimed at providing more information on how power station developers should give full consideration of opportunities to develop Combined Heat and Power (CHP). Among other revisions, the new version is intended to clarify and simplify the guidance; it will contain new heat maps indicating potential local customers for heat from power stations.

¹ <http://www.dti.gov.uk/energy/review/page31995.html>

² Guidance on Background Information to Accompany Notifications under Section 14(1) of the Energy Act 1976 to use natural gas and hydrocarbons as the fuel in generating stations over 10MWe and Applications under Section 36 of the Electricity Act 1989 for powers station generating over 50 MWe

The Government is committed to increasing the use of CHP, enabling heat to be shared productively with industry and commerce, public services and community heating systems.

The increased use of Good Quality CHP contributes to major long-term challenges in UK energy policy, it:

- reduces fuel costs;
- reduces emissions of carbon dioxide;
- provides a secure source of heat and power to industry;
- increases security of supply; and
- in community heating, provides affordable warmth and contributes to combating fuel poverty.

Contents

	Page
Preface	i
GUIDANCE ON BACKGROUND INFORMATION TO ACCOMPANY NOTIFICATIONS UNDER SECTION 14(1) OF THE ENERGY ACT 1976 AND APPLICATIONS UNDER SECTION 36 OF THE ELECTRICITY ACT 1989	1
Information required from developers	3
Exploring opportunities from local uses of heat	5
Consideration of economic feasibility	8
Assessment of proposals	8
Commercial confidentiality	9
ANNEX A: Heat Mapping Study Results	10
ANNEX B: Contact details of organizations mentioned in the Guidance	12
ANNEX C: The Economic Case for CHP: Case Studies	17

GUIDANCE ON BACKGROUND INFORMATION TO ACCOMPANY NOTIFICATIONS UNDER SECTION 14(1) OF THE ENERGY ACT 1976 AND APPLICATIONS UNDER SECTION 36 OF THE ELECTRICITY ACT 1989

This document contains Guidance for developers bringing forward proposals for new power stations. It is available in English and Welsh language versions.

This Guidance is available on the DTI web site at:
www.dti.gov.uk/energy/markets/consents.

Copies are available to order and download from:
www.dti.gov.uk/publications/

Hard copies can also be ordered from:

DTI Publications Orderline
ADMAIL 528
London SW1W 8YT
Tel: 0845 015 0010
Fax: 0845 015 0020
Minicom: 0845 015 0030

Any notification under section 14 of the Energy Act 1976 and/or any application for consent under section 36 of the Energy Act 1989 submitted before the date of issue of this Guidance shall be considered under the Government's previous policy as set out in "The Government's Strategy for Combined Heat and Power to 2010" (Defra, April 2004) and the previous draft of this Guidance (DTI, March 2001).

The Secretary of State for Trade and Industry may grant generating station development approval for onshore generating stations of >50 MWe output under section 36 of the Electricity Act 1989. This guidance will apply in England and Wales to such applications.

So far as Scotland is concerned the granting of development approvals under section 36 of the 1989 Act in Scotland has been devolved to the control of the Scottish Ministers.

In Northern Ireland, electricity generation development is the responsibility of the Northern Ireland Department of Enterprise, Trade and Investment.

Notifications under section 14(1) of the Energy Act 1976 however are still required to be made to the Secretary of State for Trade and Industry as that function remains a reserved matter. The guidance will therefore also apply to section 14 notifications.

Guidance for developers: Exploration of the opportunities to develop Combined Heat and Power (CHP), including community heating schemes

What is this Guidance?

1. This document contains Guidance for developers bringing forward proposals for new power stations for decision by the Secretary of State for Trade and Industry under section 14(1) of the Energy Act 1976 and/or section 36 of the Electricity Act 1989. Specifically it sets out the information that developers must submit to show that they have fully considered the opportunities to use CHP when developing their proposals. The main informational requirements are highlighted in text boxes for simplicity.

2. The revision of this Guidance was a commitment in the Energy Review³. It therefore supports the Government's key energy policy objectives and the potential role that CHP can have in deliver these goals. The goals are set out in the 2003 Energy White Paper, in particular, to:

- put the UK on the path to reducing carbon dioxide emissions by 60% by 2050;
- maintain reliable energy supplies;
- promote competitive markets in the UK and beyond; and
- ensure that every home is adequately and affordably heated.

What is CHP?

3. CHP is a highly fuel-efficient energy technology, which puts to use the waste heat produced as a by-product of the electricity generation process. The amount of heat supplied can vary widely but any utilisation of waste heat that displaces conventional heat generation from fossil fuel sources is to be encouraged.

4. Due to its high fuel efficiency CHP provides environmental benefits from the reduction in carbon dioxide emissions. The Government is therefore committed to increasing the use of CHP, enabling heat to be utilised in industry and commerce, public services and community heating systems. The Government has

³ <http://www.dti.gov.uk/energy/review/page31995.html>

committed to promoting CHP wherever economic and has set a target to achieve at least 10 GWe of installed Good Quality CHP capacity by 2010.

5. Good Quality CHP, as assessed and certified under the Government's CHP Quality Assurance (CHPQA) programme, is supported through a range of Government policies, including exemption from the Climate Change Levy, beneficial carbon allowance allocation under the EU Emission Trading Scheme (ETS) and Enhanced Capital Allowances.

6. For any CHP scheme there is a relationship between fuel inputs and heat and power outputs. Under the Government's CHPQA programme, Good Quality CHP can be defined by reference to power efficiency and a quality index. A scheme that qualifies as Good Quality CHP is one where the power efficiency and quality index threshold criteria are met or exceeded.⁴

7. The increased use of Good Quality CHP:

- reduces fuel costs, reduces business costs and improves UK competitiveness;
- can reduce losses in the electricity transmission and distribution systems when embedded, leading to primary energy savings by improving the efficiency of electricity and heat production;
- reduces emissions of carbon dioxide; and
- in community heating, provides affordable warmth and contributes to combating fuel poverty.

Information required from developers

8. Government believes it is highly preferable, from a climate change and fuel efficiency perspective, for the waste heat from large power stations to be put to beneficial use where possible. It expects developers to explore opportunities to use CHP fully, including community heating, when developing proposals for new power stations (see paragraphs 23 to 25). However, it does recognise that in some cases CHP will not always be an economic option.

⁴ For more details on the CHPQA programme and standard, see:

9. In line with these broader objectives, the Department expects developers to submit information in support of notifications under section 14(1) of the Energy Act 1976 and applications under section 36 of the Electricity Act 1989, which demonstrates that they have seriously explored opportunities for CHP, including community heating, in developing their proposals and where feasibility is confirmed Good Quality CHP to be developed accordingly.

10. This is consistent with:

- The Integrated Pollution Prevention and Control (IPPC) Directive 1996⁵ (implemented in England and Wales in August 2000) which requires installations to be operated in such a way that energy is used efficiently.
- The Large Combustion Plants Directive 2001 (implemented in November 2002)⁶, which requires the technical and economic feasibility of providing for combined heat and power to be examined. This Directive also requires that, where feasibility is confirmed, installations shall be developed accordingly, bearing in mind the market and distribution situation.

⁵ <http://www.defra.gov.uk/environment/ppc/ippc.htm>

⁶ <http://www.defra.gov.uk/environment/airquality/eu-int/eu-directives/lcpd/index.htm>

11. Developers should therefore provide evidence to show the steps that they had taken to assess the viability of CHP opportunities within the vicinity of their proposed location for the plant. Their application or notification should contain:

- an explanation of their choice of location, including the potential viability of the site for CHP;
- a report on the exploration carried out to identify and consider the economic feasibility of local heat opportunities and how to maximise the benefits from CHP;
- the results of that exploration; and
- a list of organisations contacted.

12. And, if the proposal is for generation without CHP:

- the basis for the developer's conclusion that it is not economically feasible to exploit existing regional heat markets;
- a description of potential future heat requirements in the area; and
- the provisions in the proposed scheme for exploiting any potential heat demand in the future.

Exploring opportunities from local uses of heat

13. Developers shall show they have explored fully any opportunities for existing and likely local business or community uses of heat. Technical considerations, such as the distance of the potential heat customer from the development and the type of heat load that the proposed site can feasibly produce, will dictate the extent of "local" and the Government's assessment of whether such local opportunities have been properly taken into account will be based on the documentary evidence provided, such as feasibility study reports. DTI electricity developments consents team can assist developers in giving advice about the types of documentary evidence that it is routine to submit with an application or notification set out under paragraphs 11 and 12. It is advisable that developers should contact the DTI early in the process.

14. Industry, commerce and public services are all prospective users of CHP. The largest, most economic opportunities are usually to be found in the industrial sectors where there are often large requirements for process heat. However, there are a growing number of opportunities in commerce (e.g. hotels, leisure centres, large corporate buildings) and public services (e.g. hospitals, universities, prisons, defence installations, administrative offices and ancillary college or hospital accommodation). Regional and local planning strategies will increasingly consider the relationship between planned development and the potential of CHP from existing and envisaged sources. It is important therefore where practicable for developers of large power stations to engage with the planning process so as to explore market opportunities for CHP in planned development.

15. Additional opportunities may arise where heat can be used in absorption chilling to deliver cooling in industry, commerce and the public sector. Furthermore, these markets do not have to be regarded as mutually exclusive. The possibility of linking heat users together, perhaps including community heating schemes to link up residential users, can provide additional opportunities for the commercial exploitation of CHP. Community heating schemes are unlikely to generate over 10MWe and therefore their consideration will not be material for the purposes of this Guidance, although developers may wish to note the opportunities presented by them.

16. In exploring local heat opportunities, developers should, in their application or notification:

- Demonstrate that they have properly consulted the results of the UK heat mapping exercise Future Energy Solutions for Defra. This identifies opportunities across the UK (see Annex A for a link to the site and a description of how it should be used).
- Demonstrate that they have worked with regional planning bodies and local planning authorities to identify whether opportunities presented by emerging spatial planning strategies can support CHP in planned development and that they have contributed where possible, given timing and commercial confidentiality constraints, to such strategies.
- Demonstrate that they have explored a number of potential heat markets, either singly or in combination.
- Demonstrate that they have contacted the following organisations that can assist developers in identifying potential CHP customers:
 - Defra and the CHPQA Programme administrator at the preliminary stages of identifying the site location and infrastructure investigations, to explore any potential heat customers in the vicinity of the proposed power station site; and
 - Regional Development Agencies (RDAs) and the Welsh Assembly Government: these organisations have a wealth of knowledge about regional industry and therefore potential heat customers and also about forthcoming inward investment that may require heat.

17. In addition, the following bodies have indicated a willingness to provide general information on CHP:

- Combined Heat and Power Association;
- The Energy Saving Trust; and
- The Carbon Trust.

18. Contact details for the organisations listed in this section are attached at Annex B.

Consideration of economic feasibility

19. Where heat opportunities have been identified, developers should carry out detailed studies on the economic feasibility of these opportunities and show how they have used the results in shaping their proposals.

20. Future market conditions outside the developer's control may result in variations to actual heat demand. Heat customers, identified during the development of project proposals, may take more or less heat than anticipated and new customers may emerge. However these variations do not mean that CHP should not be considered carefully where there are potential local heat customers or that a mechanism for the heat to be used in the future is not built into the power station design.

21. Developers should seek early advice from Defra, and/or its consultants on these benefits, and how they might apply to them. When considering the economic feasibility of CHP, developers should demonstrate that they have considered the potential economic benefits that may arise from the following:

- Climate Change Levy Exemption on fuel inputs and electricity exports;
- Enhanced Capital Allowances;
- Beneficial carbon allowance allocation under EU ETS; and
- Support available for infrastructure work such as community heating under the Single Regeneration Budget and EU Structural Funds.

22. Two case studies demonstrating the economic benefits of CHP can be found at Annex C.

Assessment of proposals

23. DTI will consider each application and notification on its merits, in consultation with Defra.

24. The Government recognises that decisions on major new power station investments, including the location and anticipated load duty of the station (e.g. base load, mid-merit, peak-opping, support to local industry, etc), will primarily be driven by the market, taking into account fiscal and other incentives now on offer for CHP. Where the developer has identified a number of heat customers locally, the DTI would wish to see clear evidence that the power station developer had discussed CHP with the owner of that heat load and reasons why CHP was not being progressed further, e.g. the heat load was already being met by another low carbon source; the owner was contracted to another source long-term; or the customer was considered not to be commercially viable on a long-term basis.

25. Whilst a growing number of projects are developed as CHP from the outset, the Government recognises that it is not always feasible to identify and take advantage of local heat markets.

Commercial confidentiality

26. Developers wishing to protect the commercial confidentiality of any information submitted in response to this Guidance should specifically identify the information in order that the Department may seek to restrict public examination. It should however be noted that any information coming into the possession or control of the Department will be subject to the requirements of the Freedom of Information Act 2000. Any requests for disclosure of information by 3rd parties of information over which confidentiality is asserted would have to be judged upon their merits, applying appropriate public interest tests and statutory exemptions. The Department cannot guarantee non-disclosure of such information in all cases.

ANNEX A: Heat Mapping Study Results

The Industrial Heat Map Web Site

<http://www.industrialheatmap.com>

These Heat Maps will enable developers to identify suitable heat loads in the vicinity of where they are considering building their power plant (i.e. before a decision is made to submit an application for power station consent). Visitors to the site will be able to browse the site, selecting a region and then click on the hot spots on the map for that region. Selecting a hot spot returns a list of sites and including their Post Code, Grid Reference, Sector, National Allocation Plan (NAP) ID and the potential heat load. Alternatively, visitors can select the "Post Code Search" and search the database by entering postcodes. Data on sites will be returned as a list for the postcode selected.

The heat maps will be updated regularly and the Government will continue to monitor the usability of the heat maps.

The Heat Maps were derived from a database of 790 industrial sites. Of these, approximately 230 were identified as already having CHP and whilst retained, it was assumed that all the heat was provided by existing CHP. This approach allowed the sites to be located, but assumed that the site either has the optimum CHP scheme already, or that any improvement in the CHP scheme would be considered as part of a site-specific project.

In estimating the heat load for each industrial site, the annual CO₂ emissions (taken from EU ETS data) were converted into the annual fuel use in the boiler, and then to heat load. For some sites, the fuel use was known, and the fuel carbon factor could be used directly. Where this was not the case, an industry-specific average fuel consumption mix was used. Sites using fuel produced on-site were removed from the map – on the basis that conversion to distributed heat from an external source would create a disposal/use problem for the displaced fuel.

Clearly the heat load of an industrial site changes over time as the result of production changes, changes in process technology and even energy efficiency measures. Therefore, the most recent data (the NAP II) was used in refreshing the current version of the map.

Specifically the maps show:

- the location of identified industrial sites;
- heat load sites within each 10 x 10 km square – converted to average demand (based on an assumed 8,000 hours operation per annum) and aggregated to give a total demand for that square. Therefore, squares with the same level of heat demand may have one large site, or a number of smaller sites; and
- squares with highest heat demand are highlighted.

The heat maps are based on:

- The Pollution Inventory (PI)-2002 data. The PI is an annual record of pollution in England and Wales from activities regulated by the Environment Agency. It covers all processes or installations under Part A of Schedule 1 to the PPC regulations. This includes prescribed/listed combustion activities (e.g. combustion appliances with a rated thermal input of 50MW or more), and combustion activities regulated as a consequence of their inherent association with other listed activities. As a result, this dataset should cover all combustion plant over 50 MW and a partial set of combustion plant below 50 MW.
- The Scottish Environmental Protection Agency (SEPA) pollution 2002 data submission to the European Pollutant Emission Register (EPER).
- National Atmospheric Emission Inventory (NAEI)-2002 data. The NAEI reports greenhouse gas emissions for the UK. Emissions from sources such as power stations, industrial plant and transport are largely based on the PI and SEPA EPER data, but additional information on fuel mix is available.
- National Allocation Plan (NAP) for the EU Emissions Trading Scheme (EU-ETS)- 2003 (refreshed following NAPII allocation. To meet the requirements of the EU-ETS, the NAP details the carbon dioxide emission allocations for industrial sites with combustion installations rated above 20 MW thermal input, or within specific energy-intensive sectors.
- CHP Statistics (CHP statistics incorporating CHPQA data).

ANNEX B: Contact details of organizations mentioned in the Guidance

Recommended:

- **DTI**

Electricity Development Consents Team
Department of Trade and Industry
1 Victoria Street
London
SW1H 0ET
Tel: 020 7215 5000
www.dti.gov.uk/energy/markets/consents/

- **Defra**

Climate and Energy: Household and Markets
CHP Team
Defra
Zone 3G20
Ashdown House
123 Victoria Street
London SW1E 6DE
Tel: 020 7082 8970
www.defra.gov.uk/environment/energy/chp/index.htm

CHPQA Administrator
AEA Energy and Environment
The Gemini Building
Fermi Avenue
Harwell International Business Centre
Didcot
Oxfordshire OX11 0QR
Tel: 0870 190 6196
www.chpqa.com

- **Government Office Regional Planning Bodies**

Regional Planning bodies can be identified and contacted through their website at: www.gos.gov.uk or via the regional co-ordination unit:

Regional co-ordination Unit
Riverwalk House
157–161 Millbank
London SW1P 4RR
Tel: 020 7217 3595

- **RDAs**

West Midlands:
Ralph Hepworth
Business Development Manager
Environmental Technologies Cluster
Advantage West Midlands
3 Priestley Wharf
Holt Street
Aston Science Park
Birmingham
B7 4BN
Tel: 0121 380 3500 (switchboard)
E-mail: ralphhepworth@advantagewm.co.uk

East:
Paul Hinds
Environment Manager
East of England Development Agency
The Business Centre
Station Road
Histon
Cambridge
CB4 9LQ
Tel: 01223 200865
E-mail: paulhinds@eeda.org.uk

Yorkshire and the Humber:
Michael Smith
Head of Sustainable Development
Yorkshire Forward
Victoria House
2 Victoria Place Leeds
West Yorkshire
LS11 5AE
Tel : 0113 394 9731
E-mail michael.smith@yorkshire-forward.com

North East:
Wendy Hetherington
Statutory Planning Specialist Advisor
One NorthEast
Stella House
Goldcrest Way
Newburn Riverside
Newcastle upon Tyne
NE15 8NY
Tel : 0191 2296200
E-mail: Wendy.Hetherington@onenortheast.co.uk

North West:
Jo Flanagan
Sector Leader – Energy and Environmental Technologies
Renaissance House
Centre Park
Warrington
Cheshire
WA1 1XB
Tel: 01925 400 332
E-mail: joe.flanagan@nwda.co.uk

South West:
Claire Gibson
Director of Planning, Transport & Environment
South West of England Regional Development Agency
Corporate Headquarters
Sterling House
Dix's Field, EXETER
Devon
EX1 1QA
Tel: 01392 229518
Email: claire.gibson@southwestrda.org.uk

East Midlands:
Anthony Payne
Land and Development Director
East Midlands Development Agency
Apex Court
City Link
Nottingham
NG2 4LA
Tel: 0115 988 8300
E-mail: anthony.payne@emd.org.uk

London:
Allan Jones MBE
Chief Executive Officer
London Climate Change Agency Ltd
Palestra
197 Blackfriars Road
London SE1 8AA
Tel: 020 7593 8122
Email: allan.jones@lcca.co.uk

South East:
Graham Tubb
Chief Sustainability Advisor
South East England Development Agency
Cross Lanes
Guildford
GU1 1YA
England
Tel: 01483500709
E-mail: GrahamTubb@seeda.co.uk

- **Wales**

Dr Ron Loveland F.Inst. P
Director: Energy Wales
Welsh Assembly Government
Cathays Park
Cardiff
Wales
CF10 3NQ
Tel: 02920 82 5499
ron.loveland@wales.gsi.gov.uk

Optional:

- **Combined Heat and Power Association**

Combined Heat and Power Association
35 Grovesnor Gardens
London
SW1W 0BS
Tel: 020 7828 4077
www.chpa.co.uk
info@chpa.co.uk

- **The Energy Saving Trust**

The Energy Saving Trust
21 Dartmouth St
London
SW1H 9BP
Tel: 0207 654 2422
www.est.org.uk

- **The Carbon Trust**

The Carbon Trust
8th Floor
3 Clement's Inn
London
WC2A 2AZ
Tel: 0800 085 2005
www.carbontrust.co.uk
customercentre@carbontrust.co.uk

ANNEX C: The Economic Case for CHP: Case Studies

Case Study 1: Development of Immingham CHP

The largest CHP constructed in Europe, a 730 megawatt (MW) advanced CHP plant at South Killingholme, North Lincolnshire, came on-stream early in 2004. The £350m plant was built by ConocoPhillips European Power next to its Humber refinery, to which it supplies both electricity and steam. It also supplies steam to another neighbouring refinery – the Lindsey refinery operated by TotalFinaElf – and exports electricity to the National Grid. These two refineries account for 25% of the UK's refining capacity. It also has the capacity to supply heat and power to other companies on the South Humber Bank. Consent was given on 1 August 2006 to increase the capacity of this CHP to about 1,230MW.

ConocoPhillips's decision to construct the Immingham CHP plant was driven by the need to upgrade its Humber refinery's power and heat supply to meet future growth, and to produce the cleanest possible fuels for the benefit of the environment. But further evaluation showed that the location and energy needs of the Humber refinery – and of the neighbouring Lindsey refinery – presented an opportunity to construct a world-class CHP plant in the UK. CHP located adjacent to a refinery also makes use of some by-products of the refining process. It also helps reduce gas flaring and conserves water by using existing wastewater for cooling.

Case Study 2: E.ON's Isle of Grain Power Station

A further example of a power station developer considering the benefits of CHP is E.ON. During the consideration of E.ON's section 36 application for a 1,200 MW Combined Cycle Gas Turbine (CCGT) station at Grain they took the opportunity to investigate the possibility of providing a neighbouring industry with heat. As a result of this investigation E.ON is in negotiation with neighbouring industry about entering into an agreement that would result in a large proportion of the proposed new CCGT capacity qualifying as Good Quality CHP. The station would also enjoy some of the fiscal benefits that are available for Good Quality CHP, such as Enhanced Capital Allowance (ECA) and CCL exemption on qualifying electricity output.

