



CHP Outreach Workshops

Programme: Reducing Energy Costs with Combined Heat & Power

Birmingham 16th June 2015



Department
of Energy &
Climate Change



CHP Tools and Support for Developers

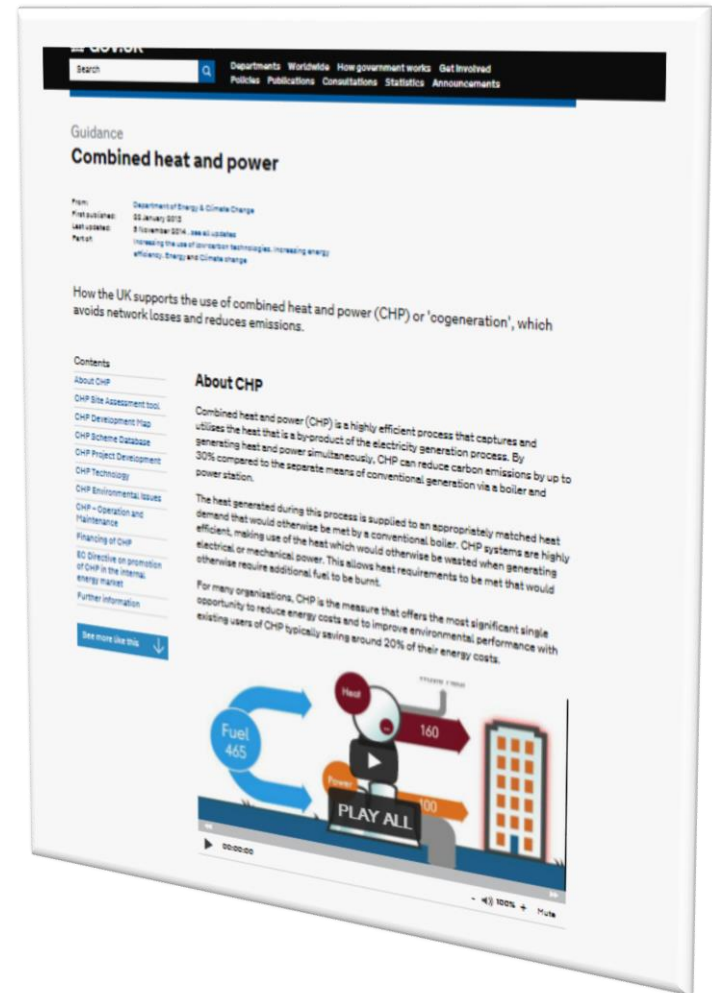
Faisal Qayium
CHP Focus Programme Manager



CHP Focus Website

➤ <https://www.gov.uk/combined-heat-and-power>

- Includes sections on:
 - Technologies
 - Finance
 - Project development
 - Operation and Maintenance
 - Environment





Collection

Combined Heat and Power (CHP) Developers Guides

From: Department of Energy & Climate Change
First published: 1 August 2008

A collection of guides to support the development of combined heat and power (CHP) installations.

Contents

- [CHP development guides](#)

Guides for CHP developers:

- Part 1: Project Development
- Part 2: CHP technologies
- Part 3: CHP Environmental
- Part 4: CHP Operation and Maintenance
- Part 5: CHP Finance

CHP development guides

Combined Heat and Power (CHP) Project Development

1 August 2008 Guidance

Combined Heat and Power (CHP) Technology

1 August 2008 Guidance

Combined Heat and Power (CHP) Environmental Aspect

1 August 2008 Guidance

Combined Heat and Power (CHP) – Operation and Maintenance

1 August 2008 Guidance

Combined Heat and Power (CHP) Finance

1 August 2008 Guidance



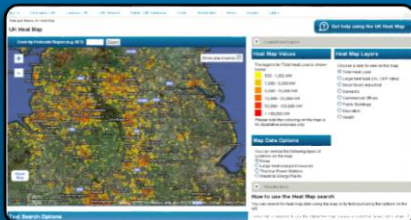


CHP Focus Website Tools



CHP Site Assessment Tool

- Simple web base tool
- Can model packaged CHP systems



CHP Development Map

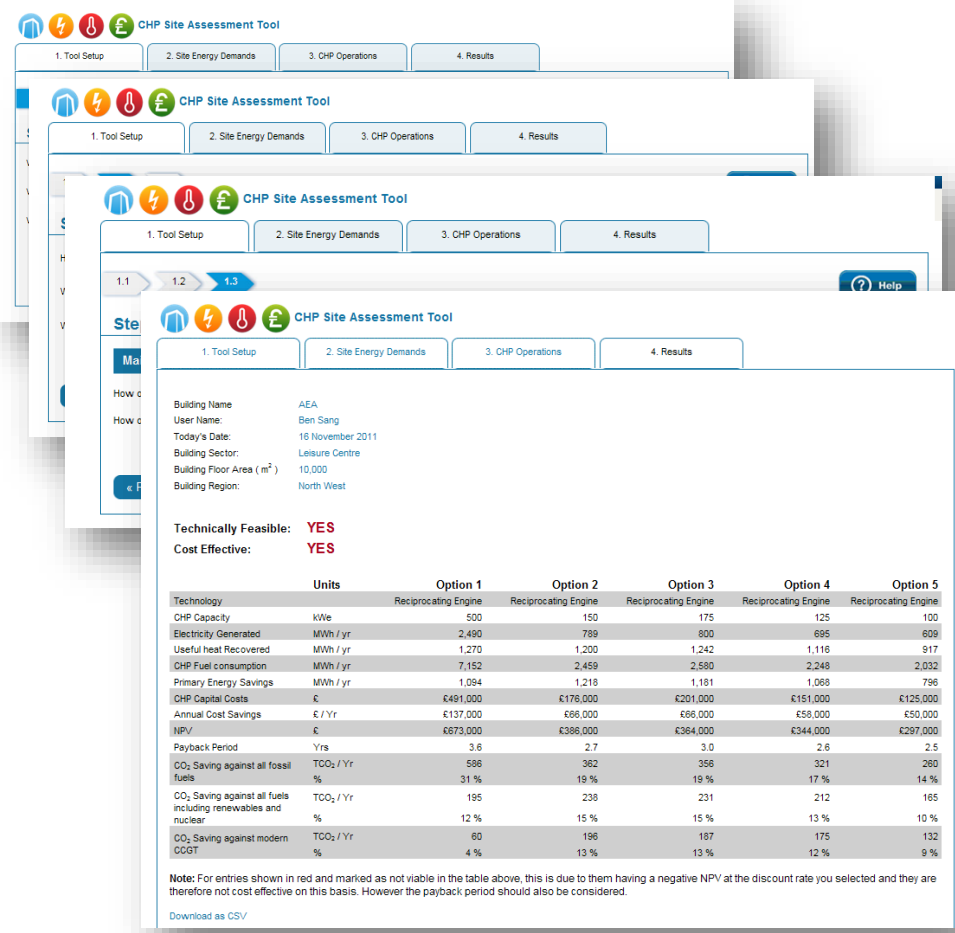
- Interactive, dynamic CHP Development Map

**Public CHP
Database**

- Database of operational CHP
- Search by Region, CHP type, Sector



CHP Site Assessment Tool



The screenshot shows the 'Results' tab of the CHP Site Assessment Tool. It displays a table with 5 options for CHP capacity, comparing various metrics such as electricity generated, useful heat recovered, fuel consumption, and payback period. The table also indicates that the tool is technically feasible and cost effective for the given site.

	Units	Option 1	Option 2	Option 3	Option 4	Option 5
Technology		Reciprocating Engine	Reciprocating Engine	Reciprocating Engine	Reciprocating Engine	Reciprocating Engine
CHP Capacity	kWe	500	150	175	125	100
Electricity Generated	MWh / yr	2,490	789	800	695	609
Useful heat Recovered	MWh / yr	1,270	1,200	1,242	1,116	917
CHP Fuel consumption	MWh / yr	7,152	2,459	2,580	2,248	2,032
Primary Energy Savings	MWh / yr	1,094	1,218	1,181	1,068	796
CHP Capital Costs	€	€491,000	€178,000	€201,000	€151,000	€125,000
Annual Cost Savings	€ / Yr	€137,000	€66,000	€66,000	€58,000	€50,000
NPV	€	€673,000	€386,000	€384,000	€344,000	€297,000
Payback Period	Yrs	3.6	2.7	3.0	2.6	2.5
CO ₂ Saving against all fossil fuels	TCO ₂ / Yr	588	362	358	321	260
	%	31 %	19 %	19 %	17 %	14 %
CO ₂ Saving against all fuels including renewables and nuclear	TCO ₂ / Yr	195	238	231	212	165
	%	12 %	15 %	15 %	13 %	10 %
CO ₂ Saving against modern CCGT	TCO ₂ / Yr	60	196	187	175	132
	%	4 %	13 %	13 %	12 %	9 %

Technically Feasible: **YES**
Cost Effective: **YES**

Note: For entries shown in red and marked as not viable in the table above, this is due to them having a negative NPV at the discount rate you selected and they are therefore not cost effective on this basis. However the payback period should also be considered.

Download as CSV

- Simple and intuitive to use
- Allows users to assess the viability of CHP
- For a given site it provides the 5 best options showing their:
 - CHP capacity,
 - Capital cost,
 - Payback period,
 - Net Present Value,
 - Cost savings &
 - Primary energy savings
- Login facility allows registered user to save scenarios



CHP Site Assessment Tool Result

CHP Site Assessment Tool

Result Summary

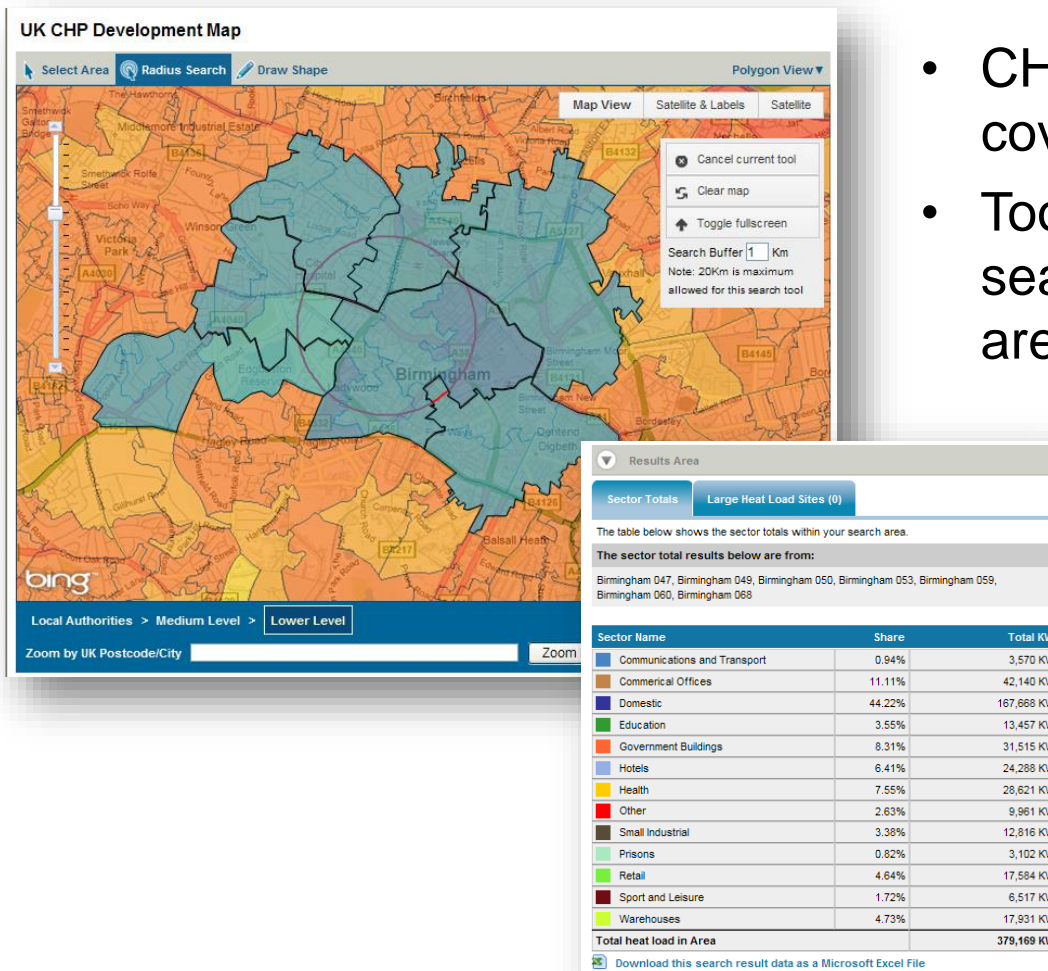
Building Name : aa
User Name: : a
Today's Date: : 4 December 2013
Building Sector: : Hospital
Building Floor Area (m2) : 50,000
Building Region: : North West

Technically Feasible : YES
Cost Effective : YES

	Units	Option 1	Option 2	Option 3	Option 4	Option 5
Technology		Reciprocating Engine	Reciprocating Engine	Reciprocating Engine	Reciprocating Engine	Reciprocating Engine
CHP Capacity	kWe	750	1,000	1,250	500	1,500
Electricity Generated	MWh / yr	3,568	3,372	3,587	2,818	3,242
Useful heat Recovered	MWh / yr	1,909	2,046	1,917	1,436	1,721
CHP Fuel consumption	MWh / yr	9,575	9,701	9,617	8,092	8,597
Primary Energy Savings	MWh / yr	2,362	1,901	2,379	1,238	2,229
CHP Capital Costs	£	£693,000	£885,000	£1,070,000	£491,000	£1,249,000
Annual Cost Savings	£ / Yr	£299,000	£284,000	£305,000	£233,000	£276,000
NPV	£	£1,851,000	£1,532,000	£1,526,000	£1,490,000	£1,104,000
Payback Period	Yrs	2.3	3.1	3.5	2.1	4.5
CO2 Saving against all fossil fuels	TCO2 / Yr	992	873	998	676	922
	%	7 %	6 %	7 %	5 %	7 %
CO2 Saving against all fuels including renewables and nuclear	TCO2 / Yr	432	344	435	234	413
	%	4 %	3 %	4 %	2 %	4 %
CO2 Saving against modern CCGT	TCO2 / Yr	239	162	241	82	238
	%	2 %	2 %	2 %	1 %	2 %



CHP Development Map



- CHP Development map has UK wide coverage
- Tool allows CHP developers to search for heat loads in specific areas

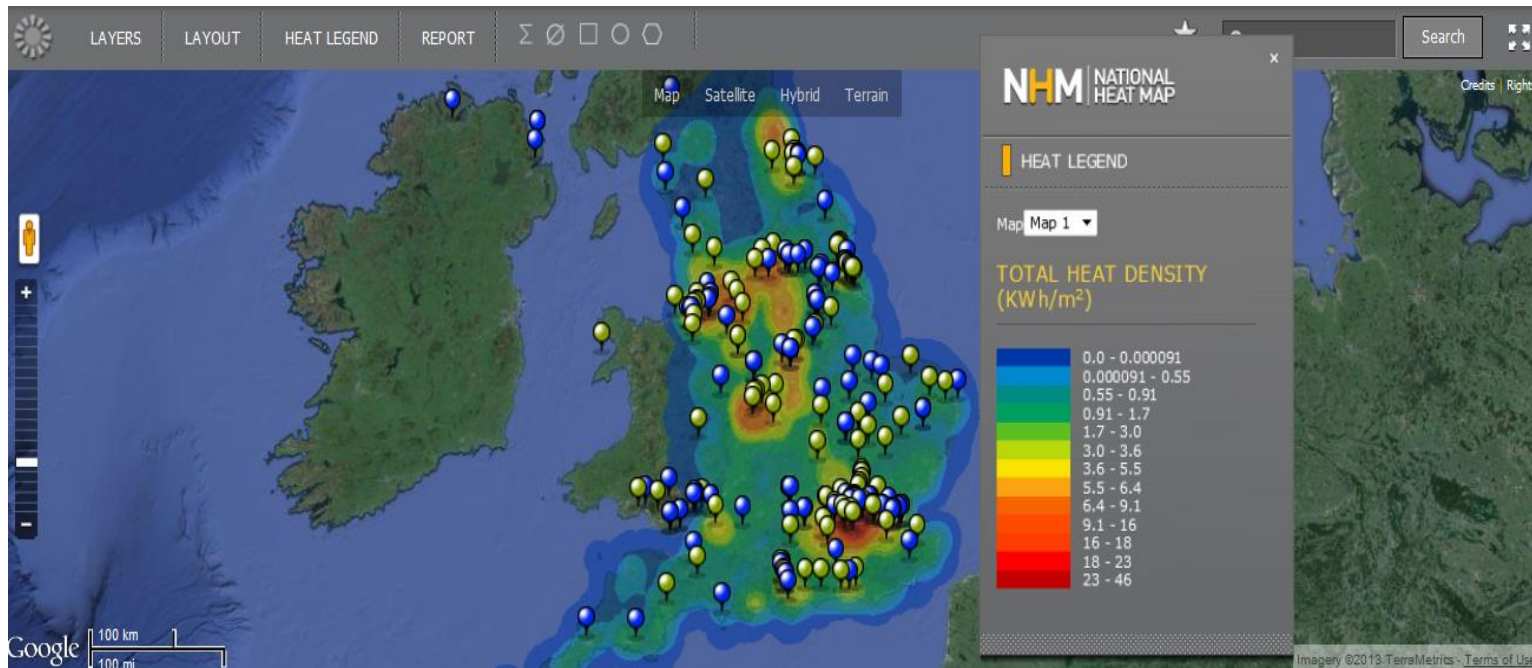
CHP Map includes:

- Refined and updated heat load data;
- Greater zoom resolution;
- Radius and Area Search tools;
- Ability to search on local authority level and middle and low level output layers providing greater search resolution.



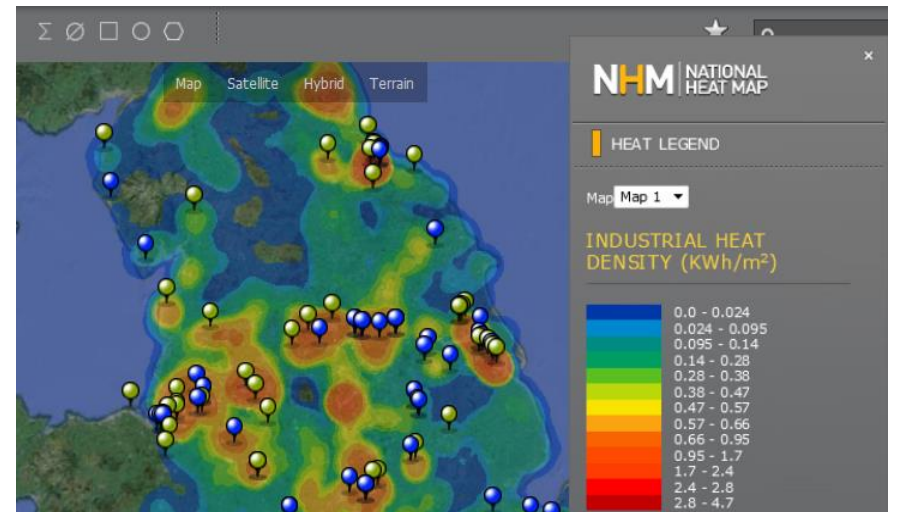
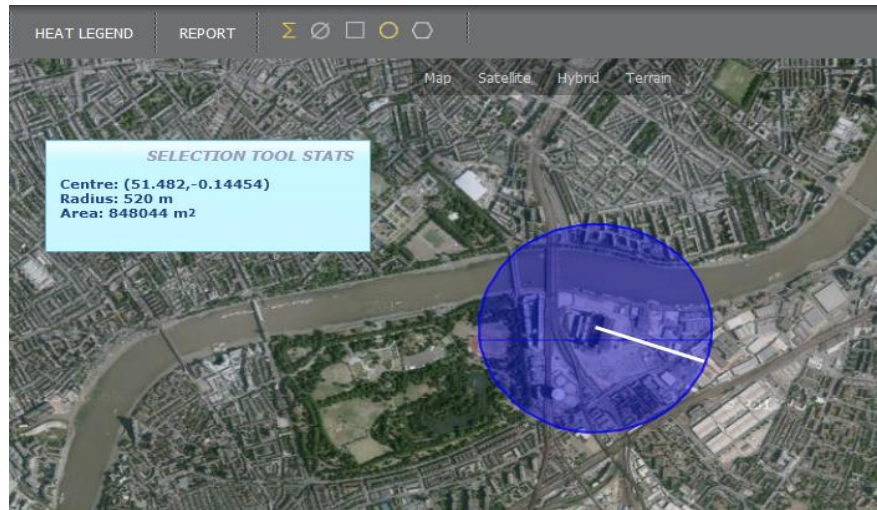
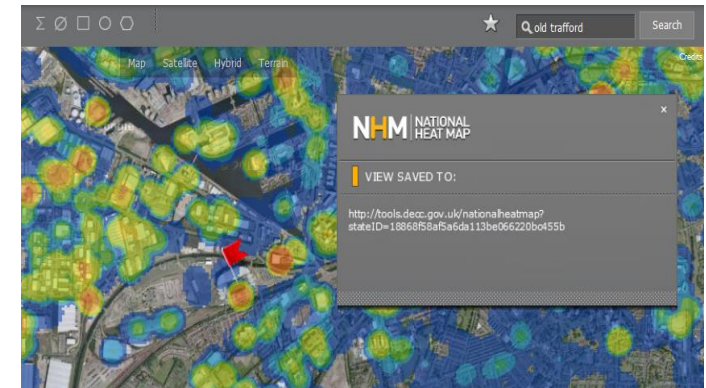
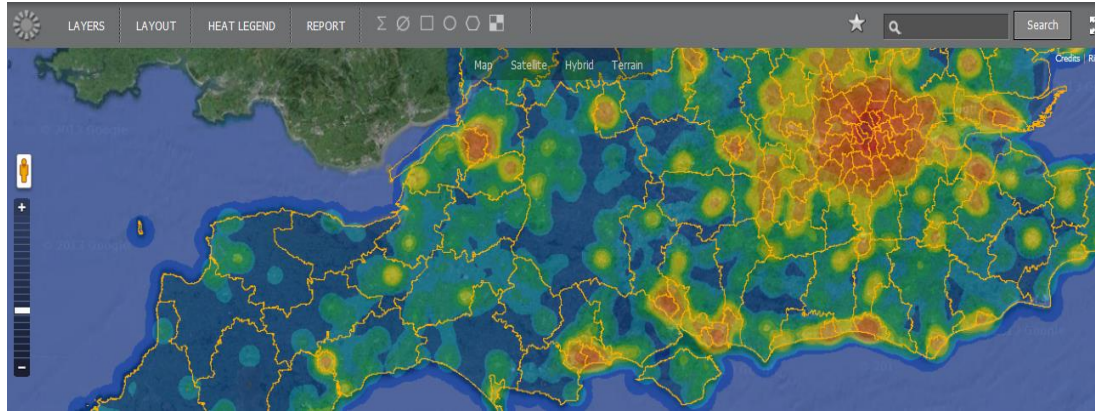
The National Heat Map

- Developed by DECC and Centre for Sustainable Energy in 2012
- High resolution and same functions as Google Maps
- Heat demand density/m²/year (space, water, process) and potential heat supply points
- Interactive tools assist review and navigation





The National Heat Map





CHP Focus helpline

- Specific Expert Advice
- Referral to appropriate contacts for more detailed information where necessary
- Email: chpfocus@ricardo-aea.com



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