

No.4 Quantifying the Savings**Brief Description:**

There have been many concerns raised as to how Local Authorities and Local Strategic Partnerships will be measured against NI 186, given that;

- It is a numerical target but the data relating to the target period will not be available until two years after the end of that period;
- It includes components that are the responsibility of national government;
- There will be lots of action on climate change that occurs 'below the radar' that's hard to quantify and even harder to attribute to specific interventions.

Both the Department of Energy and Climate Change (DECC) and Government Office for the North West support some form of qualitative assessment, and have acknowledged that areas should not necessarily be held to account for emissions resulting from national issues beyond their control.

It is also expected that more national guidance and help to quantify savings will emerge over time. For example, the Energy Saving Trust is currently developing an online tool (TRACE: Tracking Actions on Carbon Emissions) that will be consulted on this summer.

At this stage, we recommend that LSPs concentrate on developing actions that will contribute towards NI186, rather than worrying about the final CO₂ figures. Remember, it is DECC's job (not yours) to collect the national data. The important thing for LAs and partners is to try to quantify the CO₂ impact of existing and planned actions with enough accuracy to enable sensible strategic decisions to be made.

So, do not tie yourself in knots trying to work out the exact savings from your programmes – estimates based on similar examples from elsewhere are sufficient, if these can be scaled up or down to be comparable. It is more important to show that you are tackling the 'biggest wins', rather than measuring to the last tonne of CO₂.

Please also remember that lots of existing activity in your area, such as ENWORKS and Carbon Trust programmes with businesses, or domestic energy support through Energy Saving Trust Advice Centres, will already be delivering quantifiable CO₂ savings. You should be able to show that you are engaged with work like this, and can demonstrate how it fits into your strategic thinking.

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Within the Local Area Agreement (LAA) targets are measures that are the responsibility of national programmes which are expected to deliver 6-8% of the target. LAs and LSPs are expected to deliver just under 4% reduction in per capita CO₂ themselves through measures that can be influenced locally. LAs should also ensure that they do not obstruct the achievement of any National Measures in their area, which are of particular relevance to planning functions.

LSPs should concentrate on getting the most benefit from national and regional measures, perhaps topping up these programmes with local support, as well as developing local responses to specific needs.

Category:

The actions proposed below cut across the three Defra categories for CO₂ emissions Industry/Commercial, Domestic and Transport

Partners:

Partners will need to report on their own CO₂ reduction activities, as well as those of any programmes they run. Other organisations will be able to provide information to assist with the calculations/estimates. These include:

- LSP members reducing their own CO₂ emissions
- Support organisations e.g. EST, Carbon Trust, BRE
- Statistics providers e.g. BERR/DECC/Defra, Office of National Statistics
- Energy suppliers (linked to CERT)
- Installers of renewable energy and energy efficiency equipment
- Local community representatives
- Local support agencies and organisations working on climate change
- Housing Associations and Registered Social Landlords
- Other LAs

Which Measures should we include?

DECC has listed the following measures as ones that will enable the NI 186 target to be met.¹ Some are listed as National Measures and some as National Measures with Local Authority influence. Both are relevant to you as explained below.

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National Measures

These are the responsibility of National Government and relate more to regulations than 'softer' areas of intervention. LAs are not expected to influence those in *ITALICS*, but may have a significant role to support those in **BOLD**, through providing or publicising information on them.

Measure	Sector
<i>Climate change agreements</i>	<i>Business</i>
<i>Business Smart Metering</i>	<i>Business</i>
<i>Products Policy</i>	<i>Business</i>
<i>Energy Efficient Products/Product Policy (additional)</i>	<i>Domestic</i>
<i>Better billing</i>	<i>Domestic</i>
<i>Real time displays and Smart metering</i>	<i>Domestic</i>
<i>Raising minimum standards for window replacements</i>	<i>Domestic</i>
<i>Tradable Obligations on House Builders</i>	<i>Domestic</i>
<i>Voluntary Agreements</i>	<i>Transport</i>
<i>Renewable Transport Fuel Obligation (RTFO)</i>	<i>Transport</i>
<i>Fuel duty Escalator</i>	<i>Transport</i>
Carbon Trust Carbon Management Programme/investment in energy efficiency in SMEs	Business/ Public
Measures to encourage/assist SMEs to take up energy saving opportunities	Business
Energy Performance of Buildings Directive	Business
Carbon Reduction Commitment (CRC)	Business/ Public
Energy Performance Certificates (EPCs)	Domestic

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National Measures with Local Authority Influence

LAs are expected to use these measures to help deliver their targets, and should include the impact of these in their action plans. Those in **BOLD** are expected to deliver the greatest savings.

Measure	Sector
Building Regulations	Business
Revolving loan fund for the public sector	Public
Activities with the Carbon Trust	Public
Carbon neutral Government	Public
Energy Performance of Buildings Directive	Public
Products policy	Public
Energy Efficiency Commitment (EEC), Carbon Emissions Reduction Target (CERT) & future obligations beyond 2011	Domestic
Building Regulations	Domestic
Zero Carbon Homes	Domestic
Energy Performance of Buildings Directive	Domestic
Package of measures to improve energy efficiency in buildings	Domestic
Warm Front and fuel poverty programmes	Domestic
Winter fuel payments linked to energy efficiency	Domestic
House extension consequential work	Domestic
Green roofs	Domestic
Grants to encourage top-up loft insulation under the EEC	Domestic
Home Information Pack (HIP)	Domestic
Merton Rule (renewable energy) implementation	Domestic / Business
Extension to sustainable distribution programme	Transport
Speed limit changes and enforcement	Transport

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Local Measures

These are additional measures that are expected to be promoted at the local level.

Measure	Sector
Environmental management systems e.g. ISO12001/EMAS	Business/ Public
Smarter choices - soft measures to reduce car use	Transport
Restrictive measures e.g. road pricing, congestion charging	Transport
Public transport measures e.g. increased, cleaner buses	Transport
Vehicle maintenance e.g. tyre pressures	Transport
Driver training (behavioural measures)	Transport
Municipal fleet clean switch	Transport
Measures that can be used to reduce sprawl	Transport

Source: adapted from Analysis to Support Climate Change Indicators for Local Authorities²

Key steps to getting started as a Partnership

1. Understanding the target in numeric terms
2. Quantifying what's happening already
3. Quantifying the impact of your Action Plan

1. Understanding the target in numeric terms

Work out the total you're aiming for. This gives you an idea of the size of the challenge.

A target of 4% from local measures means that you have to encourage, for example;

- ALL households, businesses, car drivers and freight operators to reduce their emissions by 4%; or
- 40% of them to reduce by their emissions by 10%; or
- 20% to reduce their emissions by 20%.

In practice it will be a combination of the above for different measures.

Case Study – Cumbria:

Cumbria has a baseline CO₂ emissions for NI 186 of 5,379,000 tonnes or 10.85 tonnes/capita, a total target of 11.5% and a local target of 3.75%.

The total savings the Action Plan needs to hit are 3.75% x 5,379,000 = 201,700 tonnes per annum reduction by 2011.

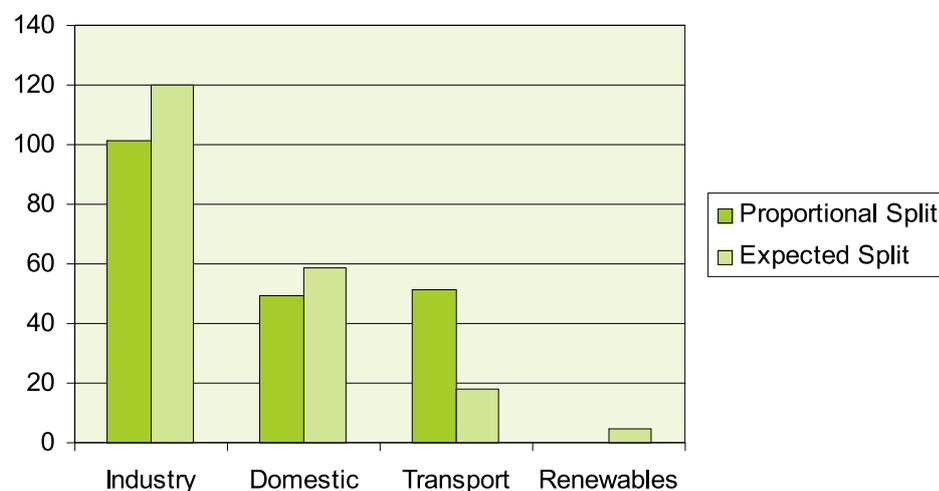
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Work out what that might mean for each sector. Here you'll need to apply some understanding of how your emissions break down and what's feasible in your area. The breakdown is given in the DECC figures. However, you should consider whether just splitting the target in the same way is realistic. In particular, if your transport emissions have been rising steadily and your LTP contains road development plans, allocating a third of your target to transport isn't likely to be sensible.

Remember: these figures are just estimates at this stage to give you something to work from – proper targets by sector will appear once you have worked out your action plan.

Case Study - Cumbria:

For Cumbria's 202,000 tonnes CO₂ target, greater proportions of the target were initially allocated to Domestic and Industry sectors, reflecting the NI 186 team's assessment of the potential for successful interventions to lower CO₂ in these sectors. As the LTP2 was developed against a background of ever-increasing transport emissions, it was unrealistic to conceive of a complete U-turn followed by significant reductions. The NI 186 team took a decision to increase their targets for Domestic and Business and introduce a target for small-scale renewables to compensate for some of this.



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2. Quantifying what's happening already

As part of your NI 186 Action Plan, you should have found out what's going on already that will contribute to the target (See **Briefing No. 1** and **Briefing No. 2**). You will then need to estimate the CO₂ impact of these activities. In most cases you should ask those doing the activity to tell you the impact. However, few will have this in terms of CO₂, so you will need to get what information they have and translate this into CO₂. The tables at the end of this briefing give CO₂ savings for typical activities.

For Housing;

- How many homes are your social housing providers planning to insulate or otherwise improve?
- What do your local CERT-installers plan to do over the period? They should be able to give this in terms of CO₂, as that's how their targets are calculated.
- What is your ESTAC planning to do? This should be quantified in annual and lifetime CO₂ savings.
- Do you have any other energy efficiency promotions planned and what do these hope to achieve e.g. through your DIY shops?
- Do you have any community groups running carbon reduction clubs or similar initiatives?

For Business;

- Who has targets that they are working towards already? This should include most of the public sector, and may also include your major businesses. Ask how much of this will fall into your target period.
- What does your ENWORKS provider plan to achieve in your area?
- Are your business support organisations providing programmes to help reduce energy bills (e.g. Chamber of Commerce)? How many businesses do they expect to influence?

For Transport;

- What does your LTP predict in terms of traffic increases/decreases?
- What do your workplace or school travel planners expect to achieve (that is not already included in the LTP)?
- Have you any new initiatives planned that are not included in the LTP?

For each planned action, you should try to have an estimate of the CO₂ impact in your Action Plan. However, where this is not possible at the start, don't worry, you may be able to get better information as your plan develops and more organisations become involved.

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Case Study – Cumbria

At the start of the NI 186 programme for Cumbria, less than half the target could be accounted for by known planned actions. As the work progressed, more partners became involved in the process and were able to give information on their contribution. The initial assessment showed likely savings of 1.75% meaning Cumbria had to identify ways to make the further 2% saving to hit the target of 3.75%

	Annual CO2 Savings	% of Baseline
Housing		
ESTAC Programme	6,800	0.5%
CERT - known planned actions	21,000	1.6%
Social Housing – possible actions	3,300	0.3%
Business/Public		
County Council (inc schools & FRS)	9,600	
Enworks	25,000	1.0%
CBEN and other networks	2,000	0.1%
Transport		
LTP actions - 0.6% growth pa	-24,600	-1.8%
Total	43,100	1.7%

Estimating Baseline Emissions

Part of this work may involve helping to estimate the baseline emissions of various organisations where these have not already been calculated. You can use this “ready-reckoner” to give a reasonable estimate.

Divide their 2008 energy bills and by the average cost/tonne CO₂ for the sector:

Industry	£130/tonne CO ₂
Domestic	£230/tonne CO ₂
Transport	£440/tonne CO ₂

Note: Energy prices were high in 2008 – for average prices for other years see www.quantumst.co.uk

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3. Quantifying the Impact of your Action Plan

Collecting the information to quantify the impact of your planned activities should give a good understanding of what will achieve relatively high levels of savings. This should be used to set your priorities for further action.

Further savings are likely to come from expanding or replicating existing activities and savings can be scaled up from the figures for the original programmes.

Where new projects are planned, savings estimates should be made based on similar examples. Some savings figures for typical programmes are given below. It's important to be realistic about the number of people, homes, businesses etc. you will actually involve in a programme – just giving out information will achieve a tiny fraction of the savings of an installation programme.

Fact Box

Achieving 20,000 tonnes CO₂ savings in Housing could be achieved by either;

- Topping up loft insulation in 77,000 homes; or
- Installing cavity wall insulation in 35,000 homes; or
- Insulating solid walls in 10,000 homes; or
- Replacing old gas boilers in 28,000 homes; or
- Installing 61,000 solar hot water systems; or
- Installing 2.5 million low energy lightbulbs.

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Case Study – Cumbria

Cumbria had to identify ways to make the further 160,000 tonnes/year CO₂ saving to hit the target of 3.75%. The additional actions identified to hit the target are listed below:

Additional Housing Actions	Households	Annual CO ₂ Savings
CERT - maximise funded measures	56,000	50,000
Community Energy Programme	900	1,000
Concierge service (additional to CERT)	-5000	5,000
Community Support (additional to CERT)	-2000	2,000
Impact of new build	-	-8,500
Small-scale renewables	-	6,000
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Additional Business Sector Actions	Businesses	
Other public sector actions	-	34,550
Web-based support	5,000	7,500
CBEN Revision - target extra 3500 companies	3,500	25,000
Facilitation of business-to-business networks	1,000	5,000
Carbon Trust - promote use of	205	24,000
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Additional Transport Sector Actions	People	
Individual Travel Planning - 4 communities	45,000	18,000
Workplace Travel Planning	30,000	3,900
Liftshare network	50,000	2,500
Tourist Travel Adviser	-	5,000
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Total Additional Actions		180,950

Taking forward all the planned and proposed actions would produce savings of around 224,000 tonnes CO₂, or 11% over the target. For the full report and other actions see:
http://www.cumbriastrategicpartnership.org.uk/Climate_Change/climatechange.asp

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CO₂ Savings from Typical Measures

Housing Energy Efficiency

Action	Annual CO ₂ savings per typical property (tonnes)
Cavity wall insulation	0.5 – 0.8
Loft insulation (from nothing to building regulations (270mm))	1
Loft insulation (from 50mm up to 270mm)	0.3
Solid wall insulation (external)	1.5 – 2.5
Solid wall insulation (internal)	1.4 – 2.4
Floor insulation	0.25
Filling gaps between floor and skirting board	0.13
Draught proofing	0.15
Fitting a hot water jacket to tank	0.195
Pipe insulation	0.065
Replacing 60% efficient boiler with one 90% efficient	2
Fitting double glazing	0.7

Small-scale Renewable Energy

Wind turbines	0.537 kg CO ₂ per kWh generated
Solar PV	0.537 kg CO ₂ per kWh generated
Micro-hydro	0.537 kg CO ₂ per kWh generated
Solar Thermal - per house	Dependent on fuel source displaced - annual tonnes CO ₂ saved: 0.325 (gas), 0.92 (electricity), 0.365 (oil), 0.645 (solid)
Ground Source Heat Pump (GSHP) – per house	Dependent on fuel source displaced - annual tonnes CO ₂ saved 1.2 (gas), 8.7 (electricity), 1.8 (oil) 6.5 (solid fuel)
Air Source Heat Pump (ASHP) – per house	Dependent on fuel source displaced - annual tonnes CO ₂ saved: 0.83 (gas), 7.5 (electricity), 1.3 (oil), 5 (solid fuel)
Biomass	Dependent on fuel source displaced - annual tonnes CO ₂ saved: 0.33kg CO ₂ per kWh heat generated (oil). 0.66kg CO ₂ per kWh heat (coal)

New Build Housing

Setting high standards for new housing development – Code for Sustainable Homes	Average house CO ₂ emissions reduced vs current Building Standards (2009) by: 0.48 (CSH3), 0.845(CSH4), 1.92 (CSH5)
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Community

Establishing community-based energy efficiency initiatives	Potential for ~20% savings for households involved
Community based renewables (e.g. CHP, private wire networks)	Variable according to scheme.

Business Sector

Business action on energy efficiency	20% energy savings possible
Direct Business Support	Carbon Trust and ENWORKS achieve on average 70-80 tonnes CO ₂ per business.
Business – providing information	The Carbon Trust estimates savings of 1.5 tonne CO ₂ for each business that accesses information via its website or advice line.

Transport Sector (Soft Measures)

Joining car clubs	1 tonne per person. Research shows that giving up a car and joining a car club reduces mileage by over 60%
Enforcing and reducing speed limits	Enforcement of the 70/ 60mph speed limits could reduce emissions by 3%. A 55mph limit would save a further 3%
Workplace travel plans	Average reduction in car trips of 17.8%
Personalised travel plans e.g. Sustrans pilot schemes cost c£20 per household for a project of 400,000 households.	Studies show consistent traffic reduction of 10 – 13%. Evaluation of the Lancashire schemes showed reductions of 13,000 tonnes CO ₂ per year over 50,000 households, or 0.26 tonnes per participating household per year.
Eco-driving/training	Drivers utilising eco-driving techniques could save ~8-10% of CO ₂ emissions. Fuel savings e.g. 2-10% where bus drivers have received training

Resources and support

- The Energy Saving Trust's Practical Help service (0870 241 2089, practicalhelp@est.org.uk) is a dedicated service for local authorities and housing associations and includes one-to-one support for implementing achieving the NI186 target www.energysavingtrust.org.uk/business/Business/Local-Authorities/Getting-Help-And-Advice/Practical-help)
- The Carbon Trust's Local Authority Carbon Management can help with approaches to data collection www.carbontrust.co.uk/carbon/publicsector/la

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- The Nottingham Declaration online action pack is intended to help local authorities structure a strategic approach to tackling climate change:
www.nottinghamdeclaration.org
- Get up-to-date area emissions data and 'supplementary guidance' including details of the 'Measures' at **www.defra.gov.uk/environment/localgovindicators/ni186.htm**
- The DfT's research, including the Carbon Pathways Analysis, looks at emissions from transport-related sources and suggests more research will address emission reduction opportunities. See **www.dft.gov.uk/webtag**,
www.dft.gov.uk/pgr/sustainable/analysis.pdf and
www.dft.gov.uk/webtag/webdocuments/3_Expert/3_Environment_Objective/pdf/3.3.5-draft.pdf
- 'Designing a monitoring strategy to support sustainable transport goals'
[www.distillate.ac.uk/outputs/Designing a Monitoring Strategy.pdf](http://www.distillate.ac.uk/outputs/Designing_a_Monitoring_Strategy.pdf)
- The Highways Agency has developed a tool to calculate the carbon footprint from maintenance, construction and management activities. See **www.ha-partnernet.org.uk/sustainability** and
www.standardsforhighways.co.uk/ians/pdfs/ian114.pdf
- 'Addressing climate change and fuel poverty – Energy measures information for local authorities' **www.berr.gov.uk/files/file41260.pdf**
- The LA Air Quality Support Helpdesk exists to provide support on monitoring, modelling and emissions **www.laqmsupport.org.uk/**
- BRE **www.bre.co.uk**

Case Study Links

A 'Green streets' project resulted in average 23% CO₂ reductions per household (6.14 tonnes per house before the project started)

http://www.ippr.org.uk/uploadedFiles/research/projects/Climate_Change/green_streets_final.pdf

Through working together as a community, Ashton Hayes has reduced its CO₂ emissions by 21% since the project started **<http://goingcarbonneutral.co.uk/>**

The Kirklees Warm Zone project has implemented 13,066 loft and 6,989 cavity wall insulations leading to estimated CO₂ savings of 13,289 tonnes

www.kirkleespartnership.org/laa/pdf/10PictureofKirklees.pdf

Pilot schemes operated by Sustrans in Preston and South Ribble and Lancaster and Morecambe saw a 13% and 12% reduction in car trips

http://www.sustrans.org.uk/webfiles/travelSMART/behaviour_change_ff36.pdf

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Astra Zeneca is aiming to reduce CO₂ emissions by 12% in absolute terms by 2010, compared to 2005 through energy efficiency measures, CHP plant, events, etc.

www.astrazeneca.com/responsibility/climate-change

With £800,000 of investment Caerphilly County Borough Council has saved 876 tCO₂ annual savings by focussing attention on the leisure sector

www.salixfinance.co.uk/cscaerphilly.html

The Northwest Greatest Hits for NI 186 series includes the following briefings:

- 1** No.1 Greatest Hits for Unitary LSPs
- 2** No.2 Greatest Hits for District LSPs
- 3** No.3 Your Top 10 is my Top 10 –
Explaining how climate change targets meet other targets
- 4** No.4 Quantifying the Savings
- 5** No. 5 Greatest Hits for Low Carbon Economic Development
- 6** No.6 Greatest Hits for Engaging with Business
- 7** No.7 Greatest Hits in Planning
- 8** No. 8 Greatest Hits for Local Transport Plans
- 9** No. 9 Greatest Hits for Revolving Loan Funds
- 10** No.10 The Whole NI 186 Picture

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References

1. <http://www.defra.gov.uk/ENVIRONMENT/localgovindicators/documents/ni186-report-2008.pdf>

2. <http://www.defra.gov.uk/ENVIRONMENT/localgovindicators/documents/ni186-report-2008.pdf>

CLASP – The Northwest Climate Change Local Area Support Programme
www.clasp-nw.info