Green Deal Guidance for the Water Sector

November 2012

The **Energy Saving Trust** gives impartial, accurate and independent advice to communities and households on how to reduce carbon emissions, how to use water more sustainably and how to save money on energy bills.

We work in partnership with government, local authorities, third sector organisations and businesses. Our activities include:

- delivering or managing government programmes
- certification and assurance for businesses and consumer goods
- developing models and tools for the energy and water sectors

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Waterwise is acknowledged by governments and regulators as the leading UK authority on water efficiency.

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Introduction

This Guidance has been developed to help increase and simplify the delivery of joint energy and water efficiency programmes, through partnership working between water companies and energy efficiency programme providers. This includes Green Deal, ECO and other local authority energy efficiency/fuel poverty-led in-home schemes.

The Guidance covers the following topics;

- **Background to Green Deal and ECO**
- **Application of Guidance**: what the Guidance provides and how to use it
- **Securing Partnerships**: designing effective water and energy partnerships
- **Water Efficiency Devices**: a simple list of the water efficiency devices the water sector recommends, and could offer, to Green Deal and in-home delivery schemes.
- **Advice and Customer Engagement**: recommended water efficiency information materials and customer advice, and how best to engage with households about saving water
- **The Savings**: a standardised set of water, energy, money and carbon savings which can be reported following the installation of the recommended water-saving devices. These savings are calculated at household level and for large-scale installation programmes
- **Training**: an outline of the water efficiency training recommended for in-home assessors and installers
- **Green Deal documents and links**: a list of key requirements and information sources for Green Deal Providers and partner organisations.
- **Water Company contacts**: a list of best placed contacts for each water company

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Input was obtained through interviews held with the Department of Energy and Climate Change (Green Deal team), the Department of Environment Food and Rural Affairs, the Environment Agency, Ofwat and Ofgem, water and energy companies, Green Deal Providers, local authorities and Registered Housing Providers. A complete list of stakeholders interviewed as part of the development of this Guidance can be found in **Appendix 6**.

1. Background to Green Deal and ECO

The Green Deal and Energy Company Obligation

The Green Deal and Energy Company Obligation (ECO) are energy efficiency retrofitting programmes led by the government but delivered independently of it, by registered Green Deal Providers and energy companies.

Green Deal covers households and non-domestic properties. Customers can take out a Green Deal from the end of January 2013. Energy efficiency retrofitting measures will be financed through a loan scheme (set up through legislation) repaid through savings on energy bills. Green Deal will include at least two visits, one each from an advisor and an installer.

ECO is designed to complement the domestic Green Deal. ECO will combine with Green Deal finance to make some of the most effective carbon-saving measures affordable under the Green Deal. ECO will also be used to provide insulation and heating measures to low-income and vulnerable households and insulation measures to local communities.

The Government, regulators and water companies are clear that water efficiency is to play an important role in future water company plans. The December 2011 Water White Paper '*Water for Life*'[i] states that;

> *"The Green Deal is an opportunity to get targeted advice to households on steps they can take to improve the sustainability of their properties, including measures to improve water efficiency. The Government is working with industry and other stakeholders to develop water efficiency advice which will be available when a household or business is looking to find out more about the Green Deal or undergo a Green Deal assessment. Water companies have an opportunity to promote water efficiency by working with Green Deal assessors who are visiting homes and workplaces."*

The opportunity for including water

Water efficiency can offer significant energy, carbon and other household bill reduction savings for Green Deal, ECO and other in-home energy efficiency schemes. Hot-water-saving devices such as showerheads and taps have been included in the Green Deal List of Measures. Water use in the home accounts for on average 23% of domestic energy consumption, and with clear evidence that the target householder audience prefers a joint delivery mechanism, addressing energy and water savings together is becoming a more common and successful approach.

Combined energy and water delivery initiatives have been or are currently being delivered in many areas in England, Scotland and Wales. These seek to integrate simple water efficiency device installation and advice provision into existing energy efficiency/fuel poverty delivery schemes. These schemes are predominantly aimed at domestic building stock, but can also benefit non-domestic buildings.

The introduction of Green Deal / ECO, alongside similar in-home energy efficiency schemes, potentially increases the long-term opportunities to install water-saving devices and reach households with related targeted advice. Showerheads and taps have been included in Green Deal's List of Measures, *What measures does the Green Deal cover?*[ii]. The Government stated during the Green Deal and ECO consultation that;

> *"Water companies and Green Deal Providers could create partnerships to see a range of work being done in the property all at the same time*[iii]*." (DECC, 2011)*

Following a 'Water Sector – Green Deal' meeting held by Ofwat in July 2011, it was clear that there would be benefit in developing a simple Guidance document, suitable for water companies, DECC and Green Deal Providers, outlining what types of water devices and educational materials the water sector would recommend for integration in Green Deal delivery to households, as well as methods of delivery and associated issues. This Guidance has been developed to assist future partnership working between Green Deal / ECO delivery schemes and water companies.

The regulatory framework for water and the Green Deal

Water companies have made notable advances in the scale and quality of their water efficiency retrofitting and advice programmes over the last two price review periods.

However, both the Water White Paper and the Water Resource Planning Guideline[iv] published by Defra, the Welsh Government, Ofwat and the Environment Agency in June 2012 make it clear that water companies will be required to significantly increase the level of demand management in both their 25-year Water Resource Management Plans and in their plans for the next five-year price review, in 2014. The guideline states:

> *"Government expects water companies to show in their water resources management plans how they will promote efficient water use and the impact that will have. Where a company is in an area designated as water stressed, or where it has demand that is above the national average (147 litres per head per day) Government expects the demand trend to be significantly downwards"*.

But both the Guideline and the Water White Paper are explicit that an increase in water efficiency activity is required across the industry, and not only in areas currently defined as water-stressed, and cite the need to manage demand: all companies will be expected to show how they will reduce water use per person.

Water companies are increasingly considering energy efficiency and external delivery opportunities, including Green Deal and ECO partnerships to fulfil some of their demand management needs. And they are already being approached by Green Deal Providers to discuss potential partnerships.

This Guidance is of relevance for the remaining period of Water Efficiency Targets, during PR09, and for the evolving regulatory framework for demand management in PR14.

2. Application of Guidance

This Guidance is written to benefit both water companies and Green Deal Providers. Its primary aims are to provide:

- a single source of information on evidence-based water, carbon, energy and household bill savings for use in Green Deal and ECO partnership delivery
- a practical, evidence-based guide on initiating, undertaking and evaluating a joint energy-water efficiency partnership approach, within Green Deal and ECO initiatives
- a simple document to assist Green Deal and ECO delivery organisations to easily and efficiently integrate water content into their in-home assessment and installation visits.

In addition, this Guidance document aims to;

- demonstrate to all relevant stakeholders that water efficiency will result in quantifiable energy bill and carbon savings
- provide a simple mechanism, with industry-wide support, for including additional carbon reductions for Green Deal Providers and additional energy bill savings for households
- help the water sector to increase the quantity of water devices installed and improve the quality of water efficiency advice used during in-home visits
- increase the amount and quality of customer engagement on water efficiency and help deliver Water Efficiency Targets and future demand management programmes.

This Guidance has been developed with a focus on households as the primary delivery audience. However, the devices and advice content outlined in the document are also applicable to Green Deal delivery for small and medium-sized businesses.

This Guidance could be used as the basis, or minimum standard, for partnership discussion and joint delivery agreement with any Green Deal, ECO or local authority in-home improvement scheme.

3. Securing Partnerships

There is no hard and fast rule or plan to developing a successful energy-water efficiency delivery scheme. Nor is there a standardised method for integrating water efficiency into existing energy-saving programmes. These have so far been developed case by case, and specific to each water company and local in-home carbon reduction scheme.

A number of the steps that are usually taken during the development of a retrofit scheme, such as **market segmentation** and **maximising consumer uptake**, are not likely to be required of/by the water company partners in a Green Deal or ECO partnership. This responsibility will fall to the Green Deal Provider or local authority scheme. The integration of water efficiency will effectively piggyback on the parent energy efficiency delivery programme. The key objective for the water sector will be to ensure the quality of water efficiency installation and advice provision is high, and not treated as a low-priority extra. This will impact directly on the programme's success.

Finally, Green Deal is a new market and will develop over time. It will be important to keep partnership and delivery options open, as market and opportunities will evolve over the lifetime of Green Deal and ECO. Water companies should guard against sole delivery contracts to allow for this. Water companies hold all customers across their regions – an attractive proposition for Green Deal Providers. Negotiations should satisfy all parties and always aim to result in quality improvement in water efficiency for the consumer.

The following steps are proposed as options to help secure partnerships with either public (city, local authority, social housing providers) or private (Green Deal Providers, registered landlords) delivery schemes;

Step 1: Identify delivery scheme:

At present there is no set list or map outlining the Green Deal/ECO schemes within each water supply area. The number of provider organisations undertaking in-home advisor or installation operations is likely to vary over the next few years. An up-to-date list of registered Providers is maintained by the Green Deal Oversight and Registration Body. This will also include the local authority schemes registered as ECO scheme providers. http://www.greendealorb.co.uk/

Not all local authority involvement will be listed by the Green Deal Oversight and Registration Body. Local Authority involvement will vary, dependent on whether they become a provider themselves or a partner within a multi-stakeholder programme. Similarly for housing providers, although ECO might be a bigger initial driver for them. Energy Saving Trust is working with most local authorities on Green Deal/ECO financing or delivery options, and will be the best point of contact to access many local schemes.

Step 2: Initiate discussions:

There are likely to be multiple private and public scheme providers operating within each water company supply area. Contacting and starting partnership discussions with each of them could create considerable additional workload for the water sector. The Energy Saving Trust and Waterwise can assist in setting up partnership agreements.

Inviting all known and potential private and public scheme providers to a single meeting for each water company should be considered. This would provide a platform for open dialogue about water company involvement and potential water efficiency offerings. Specific financial arrangements between each partnership approach could be negotiated on a case-by-case basis.

Such a meeting would also provide a platform to identify the long-term delivery schemes which would help deliver both current PR09 Water Efficiency Targets and potential demand management and customer engagement programmes planned for PR14. Some of the key issues to cover with Green Deal / ECO delivery partners are listed in Step 3.

The following model wording could be used as a mission statement/calling notice by the water company:

"We [X water company] would be happy to work in partnership with the Green Deal / ECO schemes operating in our area, and recommend as a minimum installing the water efficiency devices listed in [Chapter 4] and using the water savings advice and engagement methods outlined in [Chapter 5]. The recommended energy, water, energy bill and carbon savings that can be reported for each water device installation are outlined in [Chapter 6]."

Step 3: Seek agreement on key issues:

The following key issues will need to be raised and agreed with all Green Deal / ECO organisations seeking partnership approaches, at contract stage.

- **Installation targets**: It is important to water companies that the opportunity for product installation and advice is fully exploited, at both the assessor and installer visit. Installation targets should be agreed between partners at design stage. These should cover proportion of homes targeted which take up the offer (as a range) and absolute targets for individual water-saving devices. Data collection methods should also be agreed, to ensure accuracy.

- **Devices to install**: It is recommended that the devices listed in **Chapter 5** are offered to all Green Deal / ECO schemes, as a minimum. The hot-water-saving devices are likely to be most relevant to these delivery schemes, due to their household bill and carbon reduction potential, but water companies are likely also to want to offer a toilet retrofit, and potentially signpost to meter installation.

- **Uptake:** Factors influencing uptake of a water company retrofit programme can go beyond those associated with energy. For example, the offer of a water meter has been shown by water companies to increase uptake on device installation.

- **Training:** It is essential that staff be trained in both fitting devices and communication with customers. Partners will need to be satisfied with the level of water efficiency training on both advice and device installation: advice can be sought from Waterwise and the Energy Saving Trust, and training can be sought from Waterwise. Water companies will want to ensure their delivery partners are using registered plumbers, where relevant.

- **Advice to give**: Providing water efficiency advice is just as crucial as installing devices. Hot water, and resulting energy bill savings from behavioural improvements, can be just as significant as device savings. It is recommended that the in-home advisors / installers use the water efficiency advice content outlined in **Chapter 6**, and follow the guidance on engagement quality. The key objective is for each household to improve their water-using practices following a Green Deal / ECO visit.

- **Reporting requirements**: Due to the variability in water device types and performance levels across all housing categories, water companies should require their partnered delivery organisations to report as much installation and engagement data as possible. Key areas to report include; number and types of measures installed, number of homes visited, issues preventing installation, customer feedback and further water queries, and pre/post-install flow rates. This will enable greater resolution on notional water savings from across the project, and the potential take-up of devices for future programmes. The most efficient reporting by assessors and installers would be electronic rather than paper-based. It should be considered best practice to submit evidence from water and energy partnerships to the Waterwise Evidence Base on Large-scale Water Efficiency.

- **Project Costs**: Evidence from stakeholder interviews relating to previous joint energy-water retrofit programmes has highlighted that integrating water efficiency into an existing energy efficiency home visit scheme can save the water company between £20-40 per house. This saving is only relevant in comparison with water-only home installation visits.

  The delivery organisation is likely to seek a 'referral' fee from the water company, to help offset the additional time required for their advisors / installers to install the water-saving devices and/or provide water efficiency advice to the householder. The specific financial arrangements per device or house should be decided between the water company and delivery organisation. It is not the role of this Guidance to specify a standard fee amount.

- **Liability and insurance**: This guidance does not mandate liability and insurance structures for Green Deal partners, as legal approaches and drivers vary within companies, not least in the context of water companies of vastly differing size. However, it is clear that the issue must be agreed between partners at the design stage.

- **Delivery area boundaries**: Water company areas will not match those of either national Green Deal Providers or local authority boundaries. Neighbouring water companies offering a similar approach could help address these barriers to Green Deal Provider involvement.

- **Signposting:** Partners should agree at the design stage of a partnership the signposting interface between the water company, customer, installer and national Green Deal helpline. This may need to be customised for each project. It will need to cover signposting for customers receiving a retrofit and advice, for follow-up queries on the programme itself and on energy (and water) savings. If a water meter is being offered to increase household bill savings from any water savings resulting from the project, this will need be to be arranged with the water company

- **Branding:** Branding should be agreed at the design stage of a partnership. Stakeholder interviews indicated clearly that it was essential that water not be seen as an inferior addition to the programme, as this would significantly affect the success of the project. In particular, water companies report that the inclusion of local authority branding helps increase uptake. Green Deal Providers, installers and assessors are bound by licence conditions for how they use Green Deal branding. Details of this can be found from the Green Deal Oversight and Registration Body.

- **Data protection:** The Contract agreed at the start of a Green Deal partnership should clearly set out procedures and measures for data collection, sharing and use. This should include naming the Data Provider and the Data Processor, and security measures and principles for storage and transfer.It is essential to be clear to customers about how their data will be used. For example, if data is collected for billing purposes the data cannot then be used for research purposes. The Data Protection Act 1998 sets out the legal requirements relating to safeguarding personal data[v]

- **Data-gathering to inform future work:** As best practice, non-attributable data should be collected from participating households to provide evidence to inform both future partnerships and government policy (and should be fed into the Waterwise Evidence Base). Such data is important to water companies as it enables them to target customers with future water efficiency advice and offers – but it is essential that customers are asked at the point of data-gathering whether they are happy to be contacted again, and this too should be clearly set out in the partnership contract. In addition, Defra would like to assess the impact of the Green Deal on water efficiency. Green Deal partnerships can provide a national profile of the number of homes retrofitted for water efficiency alongside energy efficiency in the Green Deal; uptake rate for Green Deal partnerships including water efficiency; profile of customers taking up the offer; devices installed (and, if possible, whether devices are used or removed); and the amount of water saved (as well as water meter penetration).

Step 4: Contracts and Agreements:

Water companies should arrange either a commercial contract or partnership agreement with each in-home provider. This will be necessary to ensure that actual in-home installation and quality of engagement is achieved according to the minimum standards outlined in this Guidance and/or the water company's own requirements. It is likely that several in-home provider organisations could offer delivery mechanisms within any water supply area, so using a standard contract/agreement for each provider is recommended.

A contract or agreement can be based on total works over a set period of time, or performance outcomes. A performance-based contract could require proof of installation, evidence of level of advice given and measurable datasets, all of which could be audited at a later date. It is recommended that the points listed in step 3 are referred to and addressed in contracts.

4. Water Efficiency Devices

This chapter covers the primary water efficiency devices currently being used by the UK water companies for in-home installation programmes. The listed devices are readily available and simple to install. These devices have also been selected for easy compatibility within Green Deal, ECO and other energy efficiency delivery schemes, due to their hot-water-saving ability or significant cold-water-saving potential with little or no disruption to the parent programme's objectives. Where evidence is available, customer views have been included.[vi]

The products listed have been divided into three categories:

• Retrofit products which save hot water *These are on the Green Deal List of Measures, but in practice might be provided for free by the water company*	– **Showerheads** – **Tap retrofit devices**
• Retrofit products which save cold water only *These are not on the Green Deal List of Measures, but can be designed into Green Deal partnership offers*	– **Dual-flush devices** – **Cistern Displacement Devices**
• Other products included in water company packs *These are additional products which in-home advisors and installers could supply to customers*	– **Boiler retrofit devices** – **Devices to influence behaviour**

For maximum water, energy and bill savings and customer engagement, this Guidance recommends that Green Deal partnerships include a retrofit of showers, taps and toilets, as well as repair of leaking taps and (where appropriate) toilets. There is also potential for boiler retrofit devices to be included in the Green Deal partnership offer.

Showers and tap devices are included in the Green Deal List of Measures, and therefore qualify for Green Deal financing: they can explicitly be part of a Green Deal package covered by the loan which householders will pay back over time, through savings on their energy bills. However, it is more likely that these devices will be provided in partnership with (and by) the local water company as part of the in-home advice and installation visits.

A retrofit of showers and taps could be undertaken in less than 10 minutes. Home assessor and installer visits also offer an opportunity to identify leaky toilets and other water-saving options for each household. Additional water efficiency offerings will need to be agreed by all partners, but will ultimately benefit the programme and household. It is strongly recommended that advice is provided during the installation visit on how best to use each device and how best to save water – omitting this would severely compromise the delivery of water savings. A water meter could also be offered, via the water company, to increase household bill savings from any water savings resulting from the project.

Devices that save hot water

In June 2012, the Department for Energy and Climate Change (DECC), confirmed in its response to the most recent consultation on the Green Deal and ECO[vii] that "hot water showers, hot water systems and hot water taps" are included in the Green Deal List of Measures.

A number of devices will also achieve energy savings through the reduction of hot water use. These relate to showers, taps and boilers. Hot water use accounts for around one quarter of household energy bills.

The following tables outline the basic types of water-saving devices which could easily be integrated into a planned or existing in-home retrofit scheme. Specific brands are only listed in some cases (usual water company practice is followed in this respect). Each water company will have a range of recommended or preferred devices which could be included in a programme. The potential water, energy, carbon and money savings from each device type are listed in **Chapter 7.**

Low-Flow/Aerated Showerheads

The Devices: The two main types of water-saving showerheads are low-flow and aerated. An aerated showerhead appears to deliver a higher flow than it actually does, providing the user with the experience of a power shower but with significantly less water. Low-flow showerheads restrict the volume of water flowing through the showerhead: current design has mostly eradicated customer concerns over shower experience from these devices. A wide range of showerheads is currently available.

Positives: These devices are very popular with customers and have been fitted in a large proportion of homes during retrofit projects. Unlike with other devices, their appearance matters to customers, and counts in their favour. They are generally easy to install and will deliver a reduction in water use and energy bills. They usually deliver a flow rate of between 6 – 8 litres per minute. Feedback from programmes such as Tap into Savings and London RENEW has been positive on both user experience and acceptance of a new device.

Incompatibility: Not all of these devices can be installed with electric showers and monsoon showers (a rain-head, high-powered shower). In addition, some aerated showerheads may not operate to designed performance levels on gravity-fed systems, as they require at least one bar of pressure to function correctly. Basic training would enable the surveyor/installer to advise the householder on suitability of installation. For maximum savings they should only be fitted in showers with a pre-retrofit flow rate of over 8 litres per minute. A shower's post-retrofit flow rate can easily be checked by either the in-home assessor or installer, by measuring the volume of water delivered by the showerhead over a set time (for example, volume over 10 seconds, multiplied by 6 = L/min).

Tap aerators/flow-restrictors

The Devices: A tap insert can either aerate or restrict the flow of water from the tap without reducing water pressure. A tap aerator is a simple and inexpensive way to reduce flow rates for both kitchen sink and bathroom basin taps. Aerators come in a number of sizes and varying flow rates and are available to fit most taps.
As with other water efficiency devices, there is currently limited data available on actual savings. Available data shows only small water and energy savings.

However, this is acknowledged for tap inserts as a fitting and applicability issue, and water company practitioners are keen to continue using tap devices in retrofitting programmes, so this Guidance recommends that the following steps be taken to ensure their efficacy and popularity:

- Installers should complete a flow test before attaching a tap aerator, to identify the suitable device
- The widest variety of tap inserts should be made available to installers.

Positives: Fitted correctly, a tap aerator can reduce water use from those taps by up to 50% - about three washing up bowls of water a day. Overall feedback has been positive.

Incompatibility: Some studies have recorded negative feedback relating to whether aerators were successfully installed and that many kitchen and basin taps do not allow an aerator to be fitted. Some studies have not recorded water savings from tap devices. Where problems have occurred this has related to incorrect installation: this can be addressed through appropriate installer training.

Installers can also fix leaky taps – one leaking tap can waste 5,500 litres of water per year.

Retrofit products which save cold water only

One third of the water used in a home is for flushing the toilet. There are around 45 million toilets in UK homes. Over seven million are older single-flush 13 litre toilets, and approximately five million are the more modern water-efficient dual-flush toilets, using six litres for a full flush and four litres with a reduced flush. The average household flushes the toilet 5,000 times per year.[viii]

Converting toilets to dual-flush or low-flush represents the biggest potential household water saving, roughly equal to a combined tap and showerhead retrofit package. Although behavioural elements are relevant (for example, the potential for double-flushing), these are less significant than with shower devices, where shower frequency and length can vary widely. Toilet retrofit products can save a significant volume of household water and, for those householders on a water meter, deliver a marked reduction on their water bill. A toilet retrofit will not save energy at a household level, but will save carbon and energy at a regional and national level through reduced water company pumping and treating.

Water companies can include toilet retrofit products in a Green Deal partnership offer to customers, despite their not being part of the Green Deal financing mechanism. The installer can be trained to offer advice and to fit retrofit devices during the Green Deal visit, either at product cost to the customer (up to around £20), or with the cost met by the water company. If a water meter is also offered as part of the Green Deal package, customers will save on their water bills as well as their energy bills, from the entire retrofit of taps, toilets and showers.

Toilet conversion kits

The Devices: Toilet conversion kits usually involve the installation of a simple device converting the cistern to a dual-flush mechanism. These can reduce the original full flush volumes by up to 50% per flush, while retaining the existing siphon, and in some cases handle. Half-flush volumes can be adjusted. Several well-tested dual-flush conversion products are currently available. Their installation takes up to ten minutes on most existing cistern water tanks. Existing programmes have highlighted the importance of installer training on toilet conversion devices.

Positives: Dual-flush conversion kits have the potential to save the most water. Some studies report high customer satisfaction with the commonly-used products (such as ecoBETA).

Incompatibility: Dual-flush conversion will only suit older single-flush toilets with 7.5 litre or more cisterns. There is a risk of householders practicing double flushing due to either insufficient water to clear the pan, or users simply not being accustomed to the lower flush volume. Provision of advice on correct usage at time of installation is important.

Cistern Displacement Devices (CDDs)

The Devices: CDDs are simple bags which are placed in the cistern of a single-flush toilet. Toilets installed before 1993 usually have a flush of 9 litres or more in volume, and those installed from 1993-2001 usually have a flush of 7.5 litres. Cisterns installed post-2001 have a maximum flush of 6 litres, and CDDs are not recommended for these. CDDs save water by reducing each flush by approximately 1 litre.

Positives: CDDs are cheap and very simple to install and generally receive positive feedback. They can be fitted by the installer or the householder. They have a lifespan of up to 10 years. CDDs have generally received positive feedback.

Incompatibility: There is a small risk of double-flushing by the resident, so advice on use is important alongside installation.

Other Products and Services

The following devices and services could be additional offerings from a water company to an in-home retrofit scheme. They include the potential to save additional water, energy and money for the householder, and can help improve the programme's customer service and subsequent feedback and acceptance.

- **Boiler retrofit devices**

The Devices: Devices which can be fitted to an existing boiler to reduce the flow of water through the boiler until the desired temperature is reached are now available. These devices reduce the amount of water and gas used in the initial heating process.

Devices include CombiSmart and CombiSave. These products are not currently covered in the Green Deal List of Measures, but they could be included in a Green Deal partnership customer offer.

Positives: Boiler retrofit devices address a commonly-voiced concern about the (running) waste of water when waiting for it to turn hot, so are likely to be well-received.

Incompatibility: Such devices are only suitable for households with combi-boilers. A qualified plumber is needed to fit these devices.

- **Leaky toilets:** Some dual-flush and standard single-flush toilets leak. The water saved from fixing a leaky toilet could potentially dwarf that saved from a water retrofit. This Guidance recommends that water companies request that their partner schemes' in-home assessors and installers identify leaky toilets and signpost this back to the water company. The ability to identify and test for leaky toilets could be included in assessor/installer training.

- **Water Efficiency Packs**: Most water companies offer customers additional water-saving and behavioural products. These include shower timers and water-saving crystals for pot plants. Some water companies may also be able to offer water-saving products for outdoor garden use, such as trigger hose fittings, watering cans and water butts. These are provided to help reduce water consumption and household water bills (if metered), and therefore could be easily included within the in-home assessor/installer's offering to the resident. Although they will not save on hot water and energy bills, they have proved to be very popular with residents, could help improve householder feedback on an in-home visit, and help reinforce the water efficiency and behavioural element which may increase savings on other devices.

- **In-line aerators/flow-limiting devices for showers:** These are screwed between the showerhead and the hose, to reduce flow or introduce air into the water stream to give an aerated flow. Showerheads are preferred by water companies, but are more costly so many companies use in-line devices instead. They are a legitimate alternative product, and did receive accreditation under the almost-concluded Carbon Emissions Reduction Target (CERT) obligation on energy suppliers. These products can prove popular with householders who do not want a new showerhead which may not fit their existing bathroom suite. Little evidence on the savings from these devices is available, although this is expected to improve with product evolution. In-line devices are incompatible with some showers, as set out for showerheads above.

- **Water meters:** A Green Deal partnership should seek to offer a hot water retrofit of showers and taps. Combining this with a cold water toilet retrofit and signposting the householder to water company information on water meter installation could improve its benefit to customers. The installation of a water meter is paid for by the water company and could increase their household bill savings – post-installation, with the householder saving on both their water and energy bills. Offering a water meter would be subject to individual water company metering policies.

  Evidence also shows that the water savings from a hot and cold water retrofit are increased when combined with a metering programme. In the Phase II Report of Waterwise's Evidence Base, which covers 9 projects and around 7,000 homes, savings from a multi-measure water efficiency retrofitting programme were up to 34 litres per property per day when not combined with metering. However, Anglian Water's Ipswich Area trials resulted in savings of 41.5 litres per person per day – the highest reduction in consumption of all the trials analysed in that report.

  Water companies report that linking a programme of multi-measure retrofit and advice to influence behaviour with metering helps to make customers aware of their consumption and how much they could save by opting to be charged via a water meter. It can increase water savings and uptake, as well as water company metering penetration.

- **Signposting:** Previous energy-only and combined energy-water efficiency schemes have highlighted that householders have made water-specific enquires that might be outside the in-home assessor/installer's knowledge or programme's offering. It is important that the installer is trained to answer the most common queries. Further signposting will need to be agreed between partners at the start of a project.

5. Water Efficiency Advice and Customer Engagement

The full potential of water-saving programmes, including those linked with energy efficiency delivery, relies on two key elements – water saving devices and water-using behaviours. Effective advice and customer engagement on each is essential: water companies report that the success of a project can stand or fall on this interface with the customer.

Extensive evidence and analysis from household retrofitting programmes to date has identified two key elements of advice and customer engagement: quality and methods of engagement, and content of advice. This chapter therefore sets out how best to engage with customers, for maximum impact in terms of uptake and water and bill savings, as well as the proposed content of that advice, drawing on best practice across the sector.

Finally, this chapter briefly discusses the non-attributable information which should usefully be collected from customers to inform future work.

Quality of engagement delivery

When installing new energy and water-saving devices it is crucial to engage with the household to ensure the devices are used correctly, as well as provide context on why water efficiency is important to them, and advice on behavioural changes. Training on both advice and installation is essential.

One indicator of successful engagement will be if the householder remembers the advice given and makes positive changes to the way they use energy and water. All previous in-home engagement and water efficiency advice programmes have concluded that providing simple, quality and tailored advice is important to this success. Evidence shows that limiting engagement to 'top tips' and the leaving of leaflets or brochures will not change behaviours. It is essential that the in-home advisor provides advice specific to both the household and the devices fitted, in a way that the resident understands.

To increase the levels of water-saving and energy-saving awareness, and to increase long-term behavioural change, this Guidance recommends the following measures:

- Ensure the adviser is equipped to answer the most common queries, and signpost the others
- Ensure the assessor/adviser/installer has received appropriate training on water efficiency: installation and advice-giving
- Go beyond communicating 'top tips' when developing the messages and advice for a project
- Focus on in-depth advice, rather than quantity of contacts made
- Deliver personalised advice, designed to suit each family: through training, ensure that the assessor/adviser/installer will know which things to focus on, following the inspection and review of current and retrofitted water devices, household size, and current water-using behaviours
- Integrate water-saving advice and behavioural change recommendations with actual installation of the relevant devices.

Advice

This section draws on best practice to recommend the most effective messages to be used with householders during assessment and installation visits. (Full advice content is listed in **Appendix 5**).
This includes:

- simple background information on water and water efficiency
- tailored advice on device use and behavioural change
- signposting
- addressing common myths and pitfalls.

Simple background information

Simple background information provided to the customer to encourage them to take up a retrofit and to change their behaviour should cover the following:

- **Why saving water is important:** average use, trends, why water is less abundant than is generally thought

- **Household bills**: links between water and energy use including percentage of energy use from heating water, potential saving in energy bills, potential saving in water bills if metered

- **Where your water comes from and goes:** links to local rivers and reservoirs, basic information on water and wastewater processes.

Tailored advice

Advice on device use and uptake and behavioural change, tailored to household and home size, current use patterns and knowledge, and devices installed, should cover the following:

- **The range of device options available:** following the home inspection, the in-home advisor should identify for householders the water-saving devices and options available to them

- **The actual devices fitted:** it is crucial to explain to the resident how to use each of their existing and newly-fitted water-using devices and appliances effectively, and to recommend that they pass this information to other members of the household

- **Water-using behaviour:** simple and effective changes to water use in the bathroom, kitchen and garden. Recommended content of advice can be found in **Appendix 5**.

Signposting

Assessors and installers should be able to answer the most common queries, but should be equipped to signpost beyond this, according to the signposting protocol and interface agreed at project design stage. This may include the water company and the following websites:

- Waterwise: http://www.waterwise.org.uk/pages/save-water.html
- Energy Saving Trust: http://www.energysavingtrust.org.uk/Heating-and-hot-water/Saving-money-on-hot-water

Addressing common myths and pitfalls

Being in the home provides an excellent opportunity to answer questions householders may have around water, and to address some popular myths. Evidence from existing projects shows that the same topics will come up repeatedly, so it is important to have the relevant information available. The following points are aimed at assisting the in-home assessor and installer to answer the common questions and points raised by householders, and should be covered in training:

- **Why the devices are free, and why the water company wants customers to save water:** it is important to explain to the resident why the devices are being provided for free and what the motivation is for the water company to do so. Being clear about this will help to alleviate any suspicions the resident may have about the offer having a 'catch'

- **What happens if something goes wrong:** there must be clear channels via which the resident can get in touch with the water company - or other signposted body (as agreed at contract stage) - should something go wrong. Providing a telephone number or other contact details at the time of the visit will avoid problems later on

- **Water metering**: customers will often want to know more about water metering, and seek advice on whether they should have a water meter installed. Their local water company website will have information on this topic, and many will have a calculator which will help the resident to work out if they would be financially better-off on a meter. Apart from where compulsory metering programmes are being rolled out (and only where water meters are in use), the resident can 'try' a water meter for up to a year, and return to unmetered charges within that year if they wish

- **Leakage**: concerns around how much water is wasted through leaks is a common barrier encountered when promoting water efficiency. It would be useful if the assessor / installer were provided with information about work by the water company to tackle leakage in the area.

Collection of information to inform future work

Under best practice, non-attributable data should be collected from participating households to provide evidence to inform both future partnerships and government policy (and can be fed into the Waterwise Evidence Base). Such data is important to water companies as it enables them to target customers with future water efficiency advice and offers – but it is essential that customers are asked at the point of data-gathering whether they are happy to be contacted again, and this too should be clearly set out in the partnership contract.

In addition, Defra would like to assess the impact of the Green Deal on water efficiency. Green Deal partnerships can provide a national profile of the number of homes retrofitted for water efficiency alongside energy efficiency in the Green Deal; uptake rate for Green Deal partnerships including water efficiency; profile of customers taking up the offer; devices installed (and, if possible, whether devices are used or removed); and the amount of water saved (as well as water meter penetration).

6. The Savings – water, energy, money & carbon

There will always be variability in actual savings due to variability in occupancy, water pressure, specific device and household water-use behaviours. However, it is important that all in-home energy-water retrofit schemes use a consistent set of savings numbers.

This chapter sets out a standardised set of water, energy, money and carbon savings which can be reported following the installation of the recommended water-saving devices. These savings are calculated at household level and for large-scale installation programmes. The savings values used in this Guidance are based on measured evidence, and differ from Ofwat's current savings values used for the Water Efficiency Targets, which are not derived from measured studies. Data sources and savings calculations can be found in **Appendix 6**.

Each person in the UK uses on average 150 litres each day. This includes a proportion of cold and hot water, with proportions varying between household and between water-using device. On average, water use contributes to about 23% of a household's heating bill, from showering and taking baths, running taps, and using kettles, washing machines and dishwashers. This accounts for about £160 per year on the average energy bill. Saving water in the home will reduce energy bills. As a result, saving water should now be core business for energy efficiency, carbon reduction and fuel poverty agendas.

The information outlined in this chapter provides a robust set of water, energy, carbon and money savings figures which can be used by all stakeholders involved in device installation and advice provision as part of Green Deal / ECO services and other energy efficiency/fuel-poverty-led in-home schemes. It draws on comprehensive and robust evidence, referenced later in this chapter.

Water Savings per Device

The figures shown in Table 1 list the notional post–installation water savings of the devices recommended in **Chapter 5**. The numbers have been set using existing evidence from actual measured in-home savings studies, referenced later in this chapter.

Table 1. Water Savings per Device

Water Saving Device	Notional Water Saving (per device)	Savings Range (90% confidence level)
Water-efficient showerhead	7.95 L/person/day	5 to 10.5 litres per person per day
Tap aerator	1 L/day	0 to 5 litres per property per day
Dual-flush retrofit device	2 L/flush	1.52 - 2.5 litres per flush
Cistern Displacement Devices (including all 'bag' devices)	1 L/flush	Small devices: 0.52 to 1.25 litres per flush Large devices: 1.09 to 2.06 litres per flush

Water, Energy, Carbon and Money Savings per Household:

The following results are the headline savings figures which may be useful to water companies and energy scheme delivery partners for reporting purposes. These figures are based on a single 'notional' (average) water-saving figure which has been assigned to each of the devices as listed in Table 1, following installation.

Table 2. Water, energy, carbon and money savings for households

Water Device	Household Occupancy	Water Saving	Water Saving	Household CO2 saving	Fuel bill saving	Water bill saving	Fuel + Water bill
		l / day	l / yr	kg CO2/ yr	£ / yr	£ / yr	£ / yr
Water-efficient Showerhead	Single	4.43	1,616.89	14.70	3.60	3.89	7.49
	Average 2.3 Family	10.30	3,762.21	34.20	8.39	9.05	17.44
	Family of 4	17.71	6,467.55	58.79	14.42	15.56	29.97
Tap aerator	Single	0.43	156.97	0.77	0.19	0.38	0.57
	Average 2.3 Family	1.00	365.25	1.79	0.44	0.88	1.32
	Family of 4	1.72	627.90	3.08	0.76	1.51	2.27
Dual-flush retrofit	Single	9.85	3,597.71	-	-	8.65	8.65
	Average 2.3 Family	22.92	8,371.23	-	-	20.14	20.14
	Family of 4	39.40	14,390.85	-	-	34.62	34.62
Cistern Displacement Device	Single	5.00	1,826.25	-	-	4.39	4.39
	Average 2.3 Family	11.63	4,249.36	-	-	10.22	10.22
	Family of 4	20.00	7,305.00	-	-	17.57	17.57
Showerhead + Tap + CDD	Single	9.86	3,600.11	15.47	3.79	8.66	12.45
	Average 2.3 Family	22.93	8,376.82	35.99	8.83	20.15	28.98
	Family of 4	39.43	14,400.45	61.87	15.17	34.64	49.81

Headline Savings notional average)

The household level savings displayed below use a gas boiler of average efficiency (65% efficiency at water heating) to derive energy and carbon savings.

- The installation of a **water-efficient showerhead** could save an average household (2.3 occupants) 3,762 litres of water, and £17.44 off their combined utility bills per year. A family of four could save 6,468 litres and about £30 off their combined energy and water bill each year

- The retrofit of a **dual-flush device** could save an average household (2.3 occupants) 8,371 litres of water and £20 off their water bill per year. A family of four could save 14,391 litres and over £34 off their annual water bill

- A **combined water efficiency retrofit** (showerhead, tap aerators and cistern displacement device) could save an average household (2.3 occupants) 8,377 litres of water and around £29 off their annual energy and (metered) water bills. This equates to a saving of 36 $kgCO_2$ from reductions in hot water usage. A family of four could save 14,400 litres, £55.81 and over 67 $kgCO_2$.

*Data sources and savings calculations can be found in **Appendix 5**.*

Water, Energy, Carbon and Money Savings for Large-Scale Installations:

The following results are the headline savings figures which can be used for reporting on larger-scale installation delivery.

Table 3. Water, energy, carbon and money savings for households

Water Device	Number of Households	Water Saving	Water Saving	Household CO2 saving	Fuel bill saving	Water bill saving	Fuel + Water bill
		l / day	l / yr	kg CO2/ yr	£ / yr	£ / yr	£ / yr
Water-efficient Showerhead	Village' 1000 Homes	10,300	3,762,211	38,768	8,804	9,051	17,855
	Town' 10,000 Homes	103,004	37,622,106	387,681	88,041	90,506	178,547
	City' 100,000 Homes	1,030,037	376,221,063	3,876,810	880,411	905,058	1,785,469
Tap aerator	Village' 1000 Homes	1,000	365,250	2,033	462	879	1,340
	Town' 10,000 Homes	10,000	3,652,500	20,333	4,617	8,787	13,404
	City' 100,000 Homes	100,000	36,525,000	203,326	46,175	87,867	134,041
Dual-flush retrofit	Village' 1000 Homes	22,919	8,371,233	-	-	20,138	20,138
	Town' 10,000 Homes	229,192	83,712,331	-	-	201,383	201,383
	City' 100,000 Homes	2,291,919	837,123,312	-	-	2,013,829	2,013,829
Cistern Displacement Device	Village' 1000 Homes	11,634	4,249,357	-	-	10,222	10,222
	Town' 10,000 Homes	116,341	42,493,569	-	-	102,225	102,225
	City' 100,000 Homes	1,163,411	424,935,691	-	-	1,022,248	1,022,248
Showerhead + Tap + CDD	Village' 1000 Homes	22,934	8,376,818	40,801	9,266	20,152	29,418
	Town' 10,000 Homes	229,345	83,768,175	408,014	92,659	201,517	294,176
	City' 100,000 Homes	2,293,448	837,681,755	4,080,136	926,585	2,015,173	2,941,758

These figures are modelled from a single 'notional' (average) water-saving amount that has been assigned to each of the devices as listed in Table 1. The energy, energy bill and carbon savings have been calculated using an average weighted heating system performance co-efficient, and the proportion of hot water within each (water device) saving. The weighted heating system approach incorporates the known percentage breakdown of different domestic heating systems that would be found within the respective scenario scales.

Headline Savings (notional average)

- The installation of a **water-efficient showerhead** within 1000 households could save approximately 3.76 ML of water, over £9,050 and £8,800 off water and fuel bills respectively, and 38,768 kgCO_2 per year. These savings could be proportionately multiplied for larger schemes

- The retrofit of a **dual-flush device** in 1000 homes could save 8.37 ML and over £20,000 on water bills

- A **combined water efficiency retrofit** (showerhead, tap aerators and cistern displacement device) in 100 homes could also save around 8.37 ML and over £20,000 in water bills each year, plus £9,265 off fuel bills and over 40,800 kg of household CO_2 emissions.

*Data sources and savings calculations can be found in **Appendix 5**.*

7. Training

Training is an essential element of a successful Green Deal partnership. All the stakeholders interviewed for this Guidance cited it as a fundamental factor in maximising water and energy savings, uptake rates, cost-effectiveness and the opportunity for future engagement. It is essential for staff to be trained in both fitting devices and communication with householders.

Any additional training on water efficiency will need to be agreed by partners at contract stage. Quality of training of both assessors and installers can significantly impact on uptake of the water efficiency element of a partnership, resulting water (and associated) savings, and the ability of a water company to target future water efficiency work. Waterwise will launch in late 2012/early 2013 a new CABWI accreditation for water efficiency advice and installation, at two formal Ofqual levels, and associated training. This will underpin standardised training and obviate the need for re-training when assessors and installers move from one project to another.

This chapter recommends three key elements of training to be considered in a Green Deal partnership;

- Scope of training
- Common pitfalls
- Training provision

Scope of training

Many of the stakeholders interviewed for this Guidance have run joint energy and water retrofitting partnerships. Drawing on that experience, and existing research and projects undertaken by Waterwise, this Guidance recommends the key core training elements for a successful Green Deal partnership, grouped into three areas.

Stakeholders were clear that full, robust training on water issues is crucial for assessors and installers, as well as helpline staff. Ongoing monitoring, quality control and training are also necessary. Poor quality of engagement is considered to be the biggest risk to an effective Green Deal partnership.

Who needs training?

All elements listed below are essential for installers. The 'Communication with customers' and Evaluation and monitoring' categories are important for assessors and helpline staff.

What should training cover?

Key elements of a successful Green Deal partnership training package:

- Communication with customers
    - Knowledge of reasons to retrofit and change behaviour, at household level and in a wider context, including average use
    - Effective communication of key messages on reasons to retrofit and change behaviour, at household level and in a wider context, including average use
    - Effective communication of Green Deal Provider/water company motivation, and knowledge/ communication of the various other partners potentially involved in the scheme
    - Advice on product fitted, and appropriate use
    - Information on recommended behaviour changes across indoor and outdoor household use
    - Signposting for further information
    - Understanding motivations and barriers and recognising when and how to use and address them
    - Addressing unintentional messages relating to motivations for the programme and non-existent "catches", such as a requirement to have a water meter.
- Installation
    - Knowledge of the range of retrofit devices available
    - Assessing appropriateness of retrofit device to fitting – taps, showers and toilets
    - Installing retrofit devices – to taps, showers and toilets.
- Evaluation and monitoring
    - Collection of information on the customer, home and water use, to enable future targeting, and all other data agreed between partners at contract stage (see **Chapter 2**).

Potential additional installer training, depending on the nature and design of a Green Deal partnership, could include:

- Water meter reading
- Identifying and fixing leaking toilets
- Boiler retrofits.

Other useful elements

Taking assessors and installers on a home visit as part of their training can aid successful implementation. A target could be set in training of an estimated number of home visits per day – depending on geographical area and sophistication of scheduling, installers could cover around 5 good-quality visits a day. Door-to-door visits could double this. It is essential not to compromise quality over quantity of visits. A useful reference is the *RE:NEW Good Practice Manual* for further guidance on area-based visits. A feedback session could be also held with staff mid-way through a project, to identify any difficulties encountered and enable them to be addressed.

Common pitfalls

Interviews for this Guidance and existing research and projects undertaken by Waterwise have highlighted common pitfalls relating to the interface between staff and customer, which can significantly impact on the effectiveness of a water and energy efficiency retrofitting and behaviour change project. These can be addressed through training. They include:

- The product recommended and advice given on use being inappropriate or inadequate, leading to low customer satisfaction with the product and significantly reduced propensity to future water efficiency
- The manner or method of recommendation of (or advice against) a product or the water efficiency package in general leading the customer to turn it down entirely
- Inappropriate or inadequate advice on product use significantly impacting on water savings
- Faulty installation or installation to an inappropriate fitting impacting on water savings
- Length of time allowed for training impacting on the quality and depth of training provision, influencing its effectiveness
- Staff joining midway through a programme receiving less training than initial staff
- Installers being incentivised to target quantity of visits over quality, leading to significantly reduced installation of harder-to-fit products and potential total lack of advice to or engagement with the customer.

All stakeholders considered poor quality engagement with householders to be the biggest risk to successful programme implementation.

Training provision

Interviewees for the project were clear that a standardised approach to training would be helpful, for Green Deal partnerships to adopt. This would have the following benefits:

- Addressing the discrepancy between customer groups of Green Deal partners, whereby one is bigger than the other – neighbouring water companies or Green Deal Providers could offer the same package (to each other as well as to customers)
- Enabling a clearer link to insurance and liability
- No need to retrain installers, assessors and helpline staff if they have worked for an existing Green Deal partnership or programme, or similar
- ”Ownership” of training – ensuring Partner A, who has not trained staff for the project, is satisfied with the training provided by Partner B.

Appendix 1: Recommended water efficiency advice content

This recommended advice content for in-home assessors and installers has been developed drawing on best practice customer engagement and retrofit programmes.

Useful Background Information

Why is saving water important?

Water is a very valuable resource. We need to use it carefully, as it is not as abundant as you might think. The average person in the UK uses 150 litres of water a day. Most of this water is used for personal washing and toilet flushing, but it also includes drinking, cooking, car washing and watering the garden. We use almost 50 per cent more water than we did 25 years ago, partly because of showering more and an increase in household appliances.

The UK is not an exceptionally wet country. We actually have less water available per person than France, Italy or Greece. Though it can seem as if it's always raining, with so many people using water every day, demand can easily outstrip supply. Many areas across the UK have suffered drought conditions in recent years, which are likely to become more common, and we have an ever-growing population. This is why we need to be more careful with our water use.

The water cycle does not mean that we can use as much water as we like, because it will simply return to nature. With more of us living in the UK, and less certain weather patterns, there is less and less water to go around. Treating and pumping water to our homes is energy-intensive, as is heating hot water in our homes for showering and washing. Furthermore, taking water out of rivers causes environmental damage.

What is the impact on my household bills?

Did you know that much of your water use at home contributes to your energy bill? The average person in the UK uses about 150 litres each day. About 23% of a household's energy bill is made up of water use - from heating the water when you shower, running hot water from the tap, or using your washing machine and dishwasher. This adds up to about £160 per year on an average energy bill. So wasting less hot water in your house will save on your electricity and gas bills.

If you are metered for water, as more and more people are, your water bill will be lower if you waste less water. The good news is that being water-efficient is simple and does not have to impact upon your quality of life.

Where does my water come from and go?

Each water company will abstract their water from a number of different source types and locations. These source types range from groundwater aquifers, rivers and surface catchment reservoirs. The water taken from rivers and aquifers is regulated by the Environment Agency through a permit system to ensure there is enough water available for plants and wildlife.

Rainfall during autumn and winter is usually critical to the availability of water resources across all regions. The impact of dry autumns and winters has been highlighted during the 2004/06 and 2011/12 droughts.

Your sewage is taken from your house through a system of pipes used to collect and carry rainwater, wastewater and trade waste to a waste water treatment works or other place for disposal. There are strict rules about how to dispose of sewage sludge, which is a by-product of the waste water treatment process. Where possible, it is recycled into a useable substance such as soil enhancer or topsoil substitute.

Advice on behavioural change

- ***Showers**: Try taking shorter showers to reduce the amount of water you use. By using a shower timer you can increase your awareness of the amount of time you spend in the shower. Every minute you cut off your daily shower could save you £5 to £10 off your annual energy bill*

- ***Baths**: A bath typically uses around 80 litres of water, while a short shower can use as little as a third of that amount. But beware, since many power-showers may actually use more than a bath. If everybody in a four-person family replaced one bath a week with a five-minute shower, £5 to £15 could be saved off their annual energy bill. You can minimise your water use by reusing your bathwater to water your houseplants or garden (not vegetables)*

- ***Kitchen taps**: If you do wash up by hand, make sure you use a washing up bowl, and don't leave the tap running. Using a bowl to wash up twice a day rather than leaving the hot tap running could save around £25 a year on your gas bill. Washing your fruit and vegetables in a bowl rather than under a running tap will cut down on water waste: as an added bonus, you can use the leftover water to feed your houseplants. Fill a jug with tap water and leave it to cool in your fridge, so you don't need to run the tap for ages to get a cold drink*

- ***Bathroom taps**: Remember to turn off the tap while brushing your teeth - a running tap wastes over 6 litres per minute. If the entire adult population of England and Wales remembered to do this, we could save 180 mega litres a day - enough to supply nearly 500,000 homes. Fix your dripping tap with a new washer: a dripping tap wastes around 5,500 litres a year. If you are on a water meter, fixing the tap could save you over £18 a year*

- ***Toilets**: Try to avoid flushing away cotton balls, make-up tissues, and spiders: throwing them in the bin will cut down on the amount of water wasted by every flush*

- ***Washing Machine**: Before starting your washing machine, wait for a full load - a full load uses less water than two half loads; so, you'll be able to save energy and water, and money. Look again at your washing machine's cycle options: some settings provide the same cleaning power as a normal cycle, but with less water and energy*

- ***Dishwasher**: Make sure you fill the dishwasher or you'll be wasting more than if you washed up by hand. Look again at your dishwasher's cycle options: many settings provide the same cleaning power as a normal cycle, but with less water and energy. Most modern dishwashers are so effective that you don't need to pre-rinse*

- ***Outdoor**: When watering your garden use a watering can, a drip irrigation system, or a hosepipe with a trigger. Use water you have collected in a water butt: the average roof collects enough rain water to fill 450 water butts every year. Using mulch and bark in your garden, on top of soil, can reduce evaporation by up to 75%. Use a bucket and sponge to wash your car: just 30 minutes with a hosepipe will waste hundreds of litres.*

Appendix 2: Green Deal documents and links

Both Green Deal and ECO programmes will evolve over time. This will see the entry of new stakeholders and providers, guidance documents and information sources. The following explanations and links provide the baseline information and minimum requirements for this dynamic agenda.

Green Deal Oversight and Registration Body:

The Green Deal Oversight and Registration Body (GD ORB), on behalf of the Secretary of State, manages the authorisation scheme for participants in the Green Deal and is responsible for a number of functions aimed at providing effective administration and oversight of the scheme.

The GD ORB's role includes maintaining a register of all authorised Green Deal Providers, Certification Bodies, assessors and installers; maintaining the Green Deal Code of Practice and controlling the use of the Quality Mark; ongoing monitoring of Green Deal Participants against the Code of Practice; producing an annual Green Deal report; and gathering evidence of non-compliance and referring participants to the Ombudsman or the Secretary of State where appropriate and imposing sanctions when directed. http://www.greendealorb.co.uk/

The Green Deal Advice Service

The Advice Service Standards include two specifications, providing requirements to organisations intending to deliver the Green Deal Advice Services and the relevant Certification Bodies.

Green Deal Provider Guide

This is an introduction to the role of the Green Deal Provider. More detailed Green Deal Provider Guidance is also available.
http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/green-deal/4964-green-deal-providers-guide.pdf

Green Deal Provider Authorisation – Guidance for Applicants

This document sets out the authorisation process for businesses who want to operate as a Green Deal Provider.
http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/green-deal/6068-green-deal-provider-guidance-authorisation-.pdf

The Green Deal Code of Practice

All Green Deal Providers, assessors, installers, product manufacturers and certification bodies acting in the Green Deal market must comply with the Green Deal Code of Practice. This code underpins the Green Deal scheme.
http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/green-deal/6533-green-deal-code-of-practice.pdf

Once registered, the Code is designed to ensure that all Green Deal participants operate fairly, transparently and effectively so that consumers signing up to the Green Deal can be confident that they are taking part in a properly-regulated scheme which will provide them with real benefits.

The key benefits of the Code are clear.

For consumers, key benefits include:

- Confidence that the people they are dealing with have appropriate training, qualifications and customer service procedures in place
- A clear process for dealing with complaints which includes a designated independent Green Deal Ombudsman.

For Green Deal Providers and assessors, key benefits include:

- Participation in a robust scheme that stipulates high standards for all those involved
- Clear procedures for every stage
- Use of Green Deal marketing material.

Green Deal Domestic Customers

Consumer protection will be vital to underpin the success of the Green Deal and will be built into every stage of the customer journey. In the event something goes wrong for the customer, clear and accessible mechanisms to enable redress will be vital.

Consumers are protected throughout the Green Deal customer journey through:

- A impartial advice line and website
- Safeguards on the selling of the Green Deal
- An objective assessment from an authorised assessor
- Existing legislation governing mis-selling, unfair trading practices and consumer credit agreements
- The requirement for the improver to obtain the necessary consents
- Authorised installers meeting high standards
- Clear obligations on Green Deal participants to work within a robust Code of Practice
- Clear confirmation procedures before the Green Deal charge can start to be collected
- Collection of the charge through the electricity bill, which is regulated by Ofgem
- Clear processes to follow when a property changes hands, to ensure people know about the Green Deal before they move in
- Making it clear before a customer enters into a Green Deal plan, situations when a customer may be required to pay the Plan off early.

Green Deal End-to-End Process

The Green Deal End-to-End Process outlines the sequence of customer interaction for all stakeholders involved, through the advice, finance, installation and repayment phases of the Green Deal. The process is illustrated in Appendix 4.
http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/green-deal/4350-green-deal-domestic-endtoend-process-map.pdf

Green Deal Advice Line - 0300 123 1234

The Advice Line and website provides information about the Green Deal, including how the Green Deal finance mechanism works through electricity billing, authorised assessors and installers by area, and how liability under Green Deal Plans transfers to subsequent bill payers.

The phone line will be run by the Energy Saving Trust (EST) with HGS. As well as giving advice on energy efficiency, it will provide information about government schemes such as the Carbon Emissions Reduction Target (CERT), which requires energy suppliers to install free or subsidised insulation, and Warm Front, the government's heating grant scheme (see below).

Energy efficiency advisors will be on hand to take calls from the public on the new number of **0300 123 1234**.

Green Deal Measures

A Green Deal Measure is an "improvement" made to a property which has been financed through the Green Deal. This can include part-financing, where a customer has chosen to pay for some of the work themselves. These measures are outlined in ***What measures does the Green Deal cover?***
http://www.decc.gov.uk/assets/decc/what%20we%20do/supporting%20consumers/green_deal/1734-what-measures-does-the-green-deal-cover.pdf

There is no standard Green Deal Measure or list of measures that are appropriate for every property. What is appropriate for a property depends on a number of factors including the work already done, the characteristics of the building and in some cases, the geographical location.

Water-efficient taps and showers are included with in the Green Deal's current List of Measures, under 'Water Heating'.

DECC's ***What measures does the Green Deal cover?*** document also states that advice leaflets will include information on the types of improvements which can be made to the property and which the customer may want to consider, despite them not being directly associated with the building's energy use. This could include water efficiency measures.

Energy Company Obligation (ECO)

The Energy Company Obligation (ECO) will take over from the existing obligations: the Carbon Emissions Reduction Target (CERT), the Community Energy Saving Programme (CESP) and Warm Front. It will work in parallel with the Government's Green Deal. These existing obligations are due to end in December 2012 and the ECO will take over in addressing energy efficiency in the domestic sector.

It is likely that this form of support will be heavily linked to the Green Deal and will particularly support those householders (eg the poorest and most vulnerable) and those types of property (eg hard-to-treat) which cannot achieve financial savings without an additional or different measure of support.

The Government introduced this new obligation on energy companies from 2012, to take over beyond CERT. Ofgem will serve as the Administrator for ECO from the commencement of the scheme to 31 March 2015.

Carbon Emissions Reduction Target (CERT)

CERT requires all domestic energy suppliers with a customer base in excess of 250,000 customers to make savings in the amount of CO_2 emitted by householders. Suppliers meet this target by promoting the uptake of low carbon energy solutions to household energy consumers, thereby assisting them to reduce the carbon footprint of their homes. This obligation ends at the end of 2012.

Warm Front

The Warm Front scheme provides heating and insulation improvements to households on certain income-related benefits living in properties that are poorly insulated and/or do not have a working central heating system. Qualifying households can get improvements worth up to £3,500 (£6,000 where oil central heating and other alternative technologies are recommended).

Appendix 3: Green Deal end-to-end process

This chart outlines the customer contact journey sequence and where involvement from each of the primary Green Deal stakeholders is likely to take place. The inclusion of water efficiency measures could occur in two key areas of the End-to-End Process: Advice and Installation.

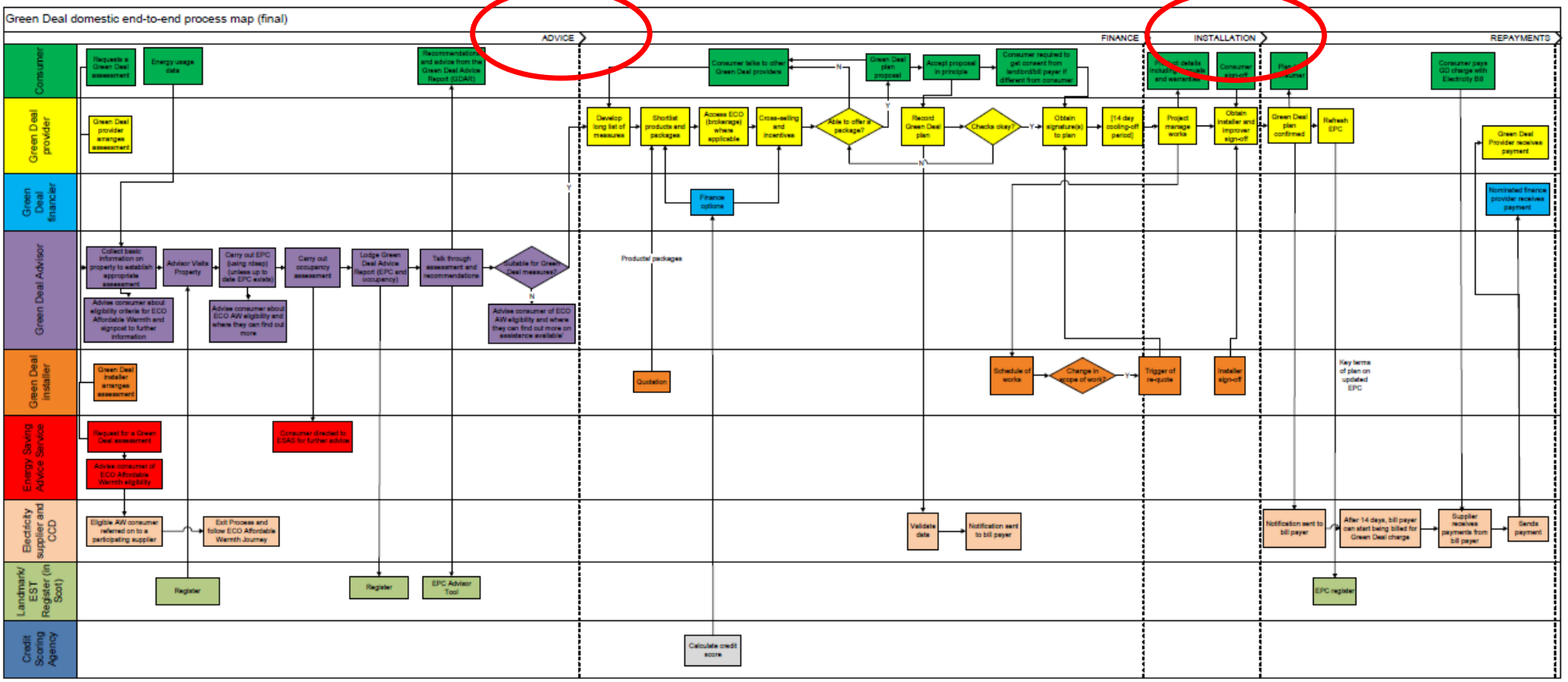
As Green Deal evolves and embeds over time, the details shown in the End-to-End Process map may change.

Advice Phase: A Green Deal assessor will visit the household and produce an assessment of the building's performance and provide recommendations for measures that could improve the energy efficiency of the home. Energy efficiency advice is likely to be provided during this visit. **Potential for water**: The identification of suitable water efficiency devices could also be conducted during this visit. Water efficiency information materials and advice could be provided.

Installation Phase: Once a property has undergone an assessment and the finance for measures has been approved, installation is the next step. **Potential for water**: All the recommended water-saving devices outlined in this document could easily be integrated into this visit. Although the Green Deal installer is not yet tasked with providing energy efficiency advice to the householder, it is recommended that this installation phase is developed to deliver detailed information and advice on both the energy and water savings potential for each household.

waterwise

energy saving trust



Appendix 4: Water company contacts

Water company	Contact details	Website
Affinity Water	waterefficiency@affinitywater.co.uk	www.affinitywater.co.uk
Anglian Water	01206 289729	www.anglianwater.co.uk
Bristol Water	0117 9536441	www.bristolwater.co.uk
Cambridge Water	01223 706050	www.cambridge-water.co.uk
Cholderton and District Water	01980 629203	www.choldertonwater.co.uk
Dee Valley Water	01978 846946	www.deevalleywater.co.uk
Dwr Cymru Welsh Water	0800 052 0145	www.dwrcymru.com
Essex and Suffolk Water	01268 664360	www.eswater.co.uk
Northern Ireland Water	08457 440088	www.niwater.com
Northumbrian Water	0845 604 7468	www.nwl.co.uk
Portsmouth Water	02392 249306	www.portsmouthwater.co.uk
Scottish Water	0845 601 8855	www.scottishwater.co.uk
Sembcorp Bournemouth Water	01202 597032	www.sembcorpbw.co.uk
Severn Trent Water	water_efficiency@severntrent.co.uk	www.stwater.co.uk
South East Water	01634 873215	www.southeastwater.co.uk
South Staffs Water	01922 638282	www.south-staffs-water.co.uk
South West Water	0800 378937	www.southwestwater.co.uk/savingwater
Southern Water	0845 278 0845	www.southernwater.co.uk
Sutton and East Surrey Water	01737 785878	www.waterplc.com
Thames Water	waterefficiency@thameswater.co.uk	www.thameswater.co.uk
United Utilities	01925 678417	www.unitedutilities.com
Wessex Water	0845 600 3 600	www.wessexwater.co.uk
Yorkshire Water	0845 1 24 24 24	www.yorkshirewater.com

Appendix 5: Data sources and savings calculations

Data Sources

This Guidance draws on existing evidence of measured water savings to assign"notional" (average) water saving to each of the devices recommended in **Chapter 5**.

Its primary sources are three studies, which together represent the most comprehensive and up-to-date field work and analysis in water company water efficiency projects. These are:

- *Waterwise Evidence Base Phase II Report, December 2010*[1]
- *WRC Identiflow project, February 2010*[2]
- *Environment Agency Report: "Water Efficiency Evidence Base – Review and Enhancement", June 2012 (Essex and Suffolk's H2Eco project)*[3].

This evidence represents a variety of assumptions and approaches. For example, the Waterwise Phase II data ranges from that based on direct measurement (metered trials with a single retrofit intervention) to assumed savings (based on metered savings dissagregated for a range of devices), and the WRC Identiflow data is only indirectly measured, involving detailed analysis and dissagregation of a range of devices. As a result, the water savings figures given are in a range.

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[1] *Waterwise Evidence Base Phase II Report, December 2010: Waterwise's Evidence Base for Large-scale Water Efficiency is acknowledged by regulators and water companies as the most comprehensive source of industry-wide data and analysis on water efficiency. The Phase II report analysed 9 metered water company retrofitting and behaviour change projects, which between them covered around 7,000 properties. Waterwise's Evidence Base was originally born of the Ministerial Water Saving Group. It is co-funded by Defra, Ofwat and the Environment Agency. The Environment Agency's Review of the evidence base in July 2012 (see below) confirmed that "The Waterwise Evidence Base Phase I and Phase II reports, published since 2008, represent the most significant available compendium of water efficiency research undertaken and related results." Phase II of the Evidence Base also considered longevity of savings.*

[2] *WRC "Water Efficiency Devices – Savings Assessment" report, February 2010: This project used WRC's Identiflow technology to measure in more detail the water events and behaviours in 74 homes, across four water company areas. It matched logger readings at entry to the house with resident behaviour reports and modelled these to produce per-household and per-device savings.*

[3] *Environment Agency Report: "Water Efficiency Evidence Base – Review and Enhancement", June 2012 - Essex and Suffolk's H2Eco project:This review examined Waterwise's Evidence Base for Large-scale Water Efficiency, the UKWIR database of water efficiency projects, the Ofwat table of assumed savings, linked to the Water Efficiency Targets, and a few other projects which had taken place since the Waterwise Phase II Report. The most comparable of these for this report was Essex and Suffolk Water's H2Eco project, carried out in four phases between 2007 and 2010, covering 3722 homes. Data is available from the 3,000 homes covered in each of Phases 5 and 6, but has not yet been subjected to the same level of statistical analysis. The data from phases 5, 6 and 7 of Essex and Suffolk's H2Eco - and from the next phase of Thames Water's Save Water Swindon - would be likely to be available for any follow-up to this Guidance.*

Savings Calculations

The Energy Saving Trust's Water Energy Model (WEM) was used to calculate savings figures for a number of prescribed water efficiency device and behavioural advice interventions. The water efficiency measures selected are limited to those which are easily integrated into an energy efficiency retrofit programmes, and that are tried and tested by all water companies. An average saving figure and potential (notional)saving range (based on 90% confidence level) has been modelled for the following metrics:

- Water volume (L)
- Water bill (£) using average UK water tariff for 2012-13
- Energy amount (kWh)
- Energy bill (£)
- Carbon (kg CO_2): domestic carbon emissions from heating water, excluding closed circuit heating systems
- Carbon (kg CO_2): industry carbon associated with pumping and treating water by a water company.

The following factors were used when undertaking the energy and carbon modelling for the large-scale scenarios.

- 79% of households use gas heating (65% efficient for heating water); 12% use electricity (100% efficiency for water heating); 6% use oil (68% efficient for heating water); 1% use LPG (65% efficient for heating water); 1% use solid fuel (50% efficient for heating water)

- Average combined metered sewerage and water tariff: £2.41 per cubic meter

- Fuel tariffs we use are: 4.49p/kwH Gas, 8.54 p/kWh elec, 5.87 p/kWh oil, 8.17p /kWh LPG, 3.69p/kWh Solid fuel.

Appendix 6: Stakeholders interviewed

Water Company	Interviewee
Anglian Water	Linda Berkshire and Louise Mitcham
Dee Valley Water	Chris Smith
Northumbrian Water	Tom Andrewartha
Sutton and East Surrey Water	Alison Murphy
Thames Water	David Grantham
United Utilities	Maxine Stiller

Stakeholder Organisation	Interviewee
Arun District Council	Michelle Cheeseman
British Gas (Centrica)	Andy Tunstall
Carillion	John Swinny
DECC	Joanna Warner and Helen Martin
DEFRA	Alison Maydom
Environment Agency	Lucia Susani and Claire Anderson
Kent County Council	Alan Turner
Newcastle Council	Simon Johnson
London Borough of Croydon	George Simms
London Borough of Sutton	Andrea Franca
London RENEW (Greater London Authority)	Rachael Hickman
London RENEW (Energy Saving Trust)	Cecilia Liszka
Ofgem	Steve McBurney
Ofwat	Paul Hope and Alice Mahar
Valley 2 Coast Housing Association	Lyndsey Barrett
Wilmott Dixon	David Adams
Wirral Council	Ed Kingsley

References

[i] Water White Paper, *Water for Life*, Defra, December 2011 http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf

[ii] *What does the Green Deal cover?*, DECC, July 2011 http://www.decc.gov.uk/assets/decc/what%20we%20do/supporting%20consumers/green_deal/1734-what-measures-does-the-green-deal-cover.pdf

[iii] Green Deal and ECO consultation, DECC, November 2011 http://www.decc.gov.uk/assets/decc/11/consultation/green-deal/3607-green-deal-energy-company-ob-cons.pdf

[iv] Water Resources Planning Guideline, Environment Agency, Defra, Ofwat and Welsh Government, June 2012 http://publications.environment-agency.gov.uk/PDF/GEHO0612BWPD-E-E.pdf

[v] Information Commissioner's Office's Guide to Data Protection, http://www.ico.gov.uk/for_organisations/data_protection/the_guide.aspx

[vi] In 2011 and 2012, Waterwise carried out a study of Customer Experience of Retrofits under its Evidence Base for Large-scale for Water Efficiency. Combined with qualitative focus group findings from the Waterwise-led Tap into Savings retrofitting and behaviour partnership covering 10,000 homes, the report will cover more than 20 projects. The report has not yet been published, but its findings are referred to in this chapter.

[vii] Response to Green Deal and ECO consultation, DECC, June 2012 http://www.decc.gov.uk/assets/decc/11/consultation/green-deal/5521-the-green-deal-and-energy-company-obligation-cons.pdf

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