RESOURCE EFFICIENCY
FOR THE
RETAIL SECTOR

BeGreen
PREVENTING WASTE & SAVING MONEY
epa

GreenBusiness
epa

Contents

Foreword from Retail Sector Organisation

As a business unit within Ibec, Retail Ireland proudly plays its role as the most effective and influential representative body for Ireland's retailers.

Our member companies operate a network of over 3,000 stores with a presence in every community right across the country. Directly employing over 275,000 people, paying over €8 billion annually in wages, generating over €5 billion in taxes each year and accounting for over 10% of Irish GDP Retail stands tall as Ireland's largest industry and largest private sector employer.

Retail Ireland warmly welcomes these guidelines from the EPA and GreenBusiness and is pleased to have been asked to support them.

As Irish retail continues to struggle against the effects of declining sales, stagnant consumer demand and rising business costs, dedicated guidelines demonstrating how the retail industry can achieve significant savings by maximising the efficiency and sustainability of resources, have never been so timely.

A particularly welcome feature of the guidelines is that significant savings can be achieved merely by making small changes. Thus, I am sure that the proposals will appeal to all levels and categories of retailers, from the largest corporate chains, to the independent, family-run SMEs.

Additionally, as responsible members of the communities in which we operate, retailers take their green obligations seriously, and as such, I am pleased to note that the guidelines provide another welcome opportunity for Irish retailers to make a valuable contribution to Ireland's environmental sustainability. I congratulate the EPA and GreenBusiness for their work on this project and I look forward to charting the success of these guidelines across the industry.

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Ibec

Prepared with the support of the Environmental Protection Agency through their BeGreen programme. **www.begreen.ie**

BeGreen ^{epa}
PREVENTING WASTE & SAVING MONEY

ORGANISING A RESOURCE EFFICIENCY (RE) PROGRAMME

All aspects of your business require some degree of management and structure. In order to successfully manage your resources and costs, it is recommended that your business adopts a simple resource efficiency management system. Remember, people are the main drivers of a successful programme.

1. Management commitment

For a programme to work, both management and staff must be committed to the programme. Management in particular must be convinced that the investment of staff time and finances in the area of resource efficiency is necessary.

Commitment is driven by cost saving, legal, environmental and social responsibility perspectives.

and so the journey continues...

7. Review improvements

Through regular monitoring, you should be able to identify improvements made by your actions. Check how you are progressing in terms of meeting quarterly or annual targets set out. Review of the savings actually achieved as against the expected savings. Review your action plan and improvements regularly. Don't forget to tell people how the project is going, and most importantly don't forget to reward people for improvements made!

6. Implement Action plans

Implement the action plans and involve staff. Ensure action plans are reviewed on a regular basis at Green Team Meetings. Involve your suppliers, who may be able to assist in helping you to be more efficient. For example, you can talk to your suppliers about reducing unnecessary packaging with deliveries.

2. Establish a Business Efficiency Green Team

A green team, which includes both staff and management, is a good way to manage any programme. The Green Team should consist of a core group of employees who have a direct influence on resources or have relevant skills or expertise. Typically representatives could be included from finance, maintenance, shop floor, and general management. The Green Team can be big or small - depending on the size of your business.

The green team can:
- Develop action plans and targets relating to energy use, water use and waste prevention.
- Develop training and awareness raising initiatives.
- Review actions taken and consider their effectiveness.

3. Review and identify

The assessment phase of a prevention programme is important in order to paint a picture of 'where we are now' so that the team can plan for 'where we want to go'. When you have collected information on your energy use, water use and waste generation you'll be able to set benchmarks.

Identify all RE opportunities which your business could pursue. This list of opportunities can be identified from RE checklists such as those in this guide pages 18, 26, 44.

PHASE 1
PHASE 2
PHASE 3
PHASE 4
PHASE 5
PHASE 6
PHASE 7
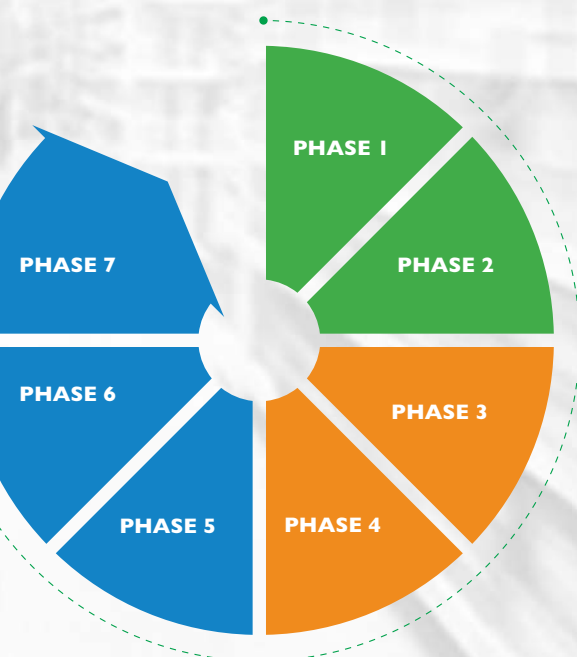
4. Create action plans

Create action plans for energy, water and waste. You should set out clear actions, the date you wish to achieve them by, and who will take charge of completing the task. Estimate expected costs and the savings that for each action (savings both financial and environmental). Remember to set realistic goals in order to help keep people motivated for continuous improvements.

5. Create awareness amongst staff through training

Training is a vital part of any programme. Staff should be aware of the RE action plans and specific ways in which they can help achieve targets set out. Training can cover areas such as waste prevention and segregation, procedures for use of equipment, lighting, and efficient use of water. Remember to listen to all your staff. There may be some very innovative ideas amongst the group.

♻ WASTE

Waste prevention is the best option for waste management. This involves looking at potential sources of waste and identifying ways to prevent these through simple changes in practices. This guide will help you focus on ways to prevent, reduce and manage your waste to help you save money for your business.

The success of a waste management programme depends on the actions of each person, but also on the design of the facilities and the level of awareness in the business.

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Use this to identify opportunities in your business

⬅ **MOST FAVOURED**

Prevent €

Reduce €€€

Reuse €€€€

Getting Started

1. Get to know your waste and your bills
   - Record waste data
   - Evaluate waste generation patterns

2. Waste Survey – get to know your waste better
   - Perform targeted assessment
   - Review/improve facilities

3. Constantly monitor

4. Promote/raise awareness

{ REMEMBER: LESS WASTE = MORE PROFIT
you don't have to manage (or pay for) what you don't produce! }

LEAST FAVOURED ➡

Recycle

€€€€€

Disposal, incineration or Landfill

€€€€€€€

Waste Hierarchy

Prevention
The simplest way to reduce the cost of waste is to not produce it in the first place. This follows the key principles of waste management.

Reduce
Reduce the amount of waste provided e.g., food waste caused by over-preparation, over-trimming etc.

Reuse
Feed people - reuse unused food in meals, donate unused food/meals to local charities or homeless hostels. Use reusable totes.
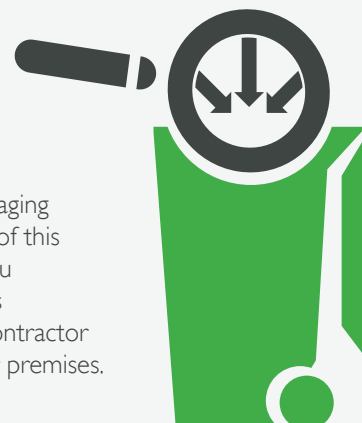
Recycle
Turning waste into a new substance or product. This includes recycling cardboard, paper, and food waste into compost.

Treatment or Landfill Disposal
New regulations now ban the landfilling of commercial food waste.

WASTE

In order to improve your waste management, you need to assess how much waste you are currently producing, the types of waste you are producing, and the areas of your business that generate the most waste.

Overall waste generation

Calculate the amount of general (landfill) waste, food waste, recyclable waste, and packaging waste produced by the premises on a daily, weekly or monthly basis. You can get some of this information from your waste collection service provider. They should be able to give you a figure either in number of lifts of a particular volume of bin (m³) or by weight (tonnes or kg). Monthly figures can be obtained and kept in a spreadsheet. Ideally your waste contractor can provide you with data (weights) of the different types of waste collected from your premises.

Waste survey

Conduct an internal survey of waste generation to get a picture of waste generation patterns and sources of waste generated. Waste can be weighed (packaging, other recyclables, general waste, and food waste) from specific areas of the premises at the end of each day. A cheap electronic bathroom scales can be used.

The waste survey will tell you the amount of wastes generated in each area, along with the types of waste generated. You can then focus on problem areas that can be improved. (You can also promote the well performing areas and use them as a good example for other areas).

Taking a walk around the bin areas every so often is a good way to keep track of waste habits in the shop. One member of staff can have this responsibility - it is important to talk to this person.

Set up waste benchmarks

Once you've gathered information on the type and extent of waste produced you can compile waste benchmarks, e.g. waste (kg) per month/week/day. You can use these figures to track the progress of any waste saving measures you implement or compare to similar businesses to see how you are doing.

A waste survey is a useful tool to investigate quantities of waste generated, recovery rates, success of segregation bins, fly-tipping, contamination rates etc. A waste survey will also help identify problem areas/well performing areas (and so help you focus your action plans).

Do you know how much waste you generate?

Find out the amount of waste generated per employee or per m² . Compare your findings to the benchmark below.

Waste benchmarks for retail

Business Type	Factor Used	Total waste (tonnes per employee/ annum)
Wholesale	Employee Numbers	1.96
Food Retail	Employee Numbers	1.88
General Retail (Drapery)	Employee Numbers	0.83

Waste Segregation

RECYCLABLES

FOOD WASTE

LANDFILL

MOST EXPENSIVE LEAST FAVOURED BIN!

GLASS

Why segregate waste?

Aside from being best practice, segregation of certain wastes is a legal requirement for retailers (e.g. packaging and food waste). Additionally, the high cost of landfilling waste means that it is usually more cost effective to divert waste from general (landfill) waste to various recovery and re-cycling routes. Food bin (food waste) costs can be relatively high. This is why waste prevention is so important.

Managing your waste – bins and waste area

IT IS IMPORTANT TO KEEP YOUR WASTE AREAS CLEAN, TIDY AND WELL LABELLED. THIS AVOIDS ANY CONFUSION OVER WHERE WASTE SHOULD GO AND REDUCES CONTAMINATION.

WASTE AREA
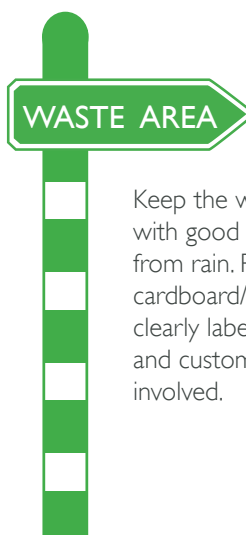
Keep the waste yard tidy and well signposted with good access. Lock/cover bins and protect from rain. Provide space for items such as baled cardboard/plastic film storage. Inside the building, clearly label and colour-code waste bins for staff and customer use. Make it easier for everyone involved.

♻ WASTE

TYPICAL COMMERCIAL

❶ Food Waste (Brown Bin waste)

Any retailer that sells food products, prepares food, or provides food to staff (e.g. in staff canteens) must comply with the Waste Management (Food Waste) Regulations 2009. Food waste must be segregated, separately collected and treated by authorised operators, or composted on-site in an authorised compost facility.

Even where exempt from the Regulations, separation of food waste from other waste streams is best practice and should be carried out. Diverting this waste stream from landfill waste is likely to be increasingly more cost effective as landfill costs continue to rise.

❷ Cardboard and Recyclable/Recoverable waste

Retailers are subject to the Waste Management (Packaging) Regulations 2007 and must segregate back door packaging waste and have it separately collected. Certain specified packaging types must be segregated on-site and separately collected and recovered. These specified packaging wastes are aluminium, cardboard, glass, paper, plastic sheeting, steel and wood.

Responsibilities under the Packaging Regulations vary depending on whether or not you are considered a producer or a major producer.

For tips on reducing packaging waste see 'Packaging' on page 12.

❸ General waste

Waste, which cannot be recycled, recovered, or composted will go into the residual waste bin. This waste is landfilled or incinerated and therefore it is desirable to keep this fraction to a minimum as it costs you the most. General waste should not exceed 20% of the total waste produced. If it is, then you are likely to be throwing away materials that can be recycled or reused.

❹ Fats, Oils and Grease (FOG)

Areas where hot food is prepared will generate a certain amount of used oils. Oil and grease should never be poured down the drain.

To prevent fats entering drains from wash-up, 'grease traps' may be required to collect FOG from effluent before discharge to sewer. This is also a requirement under most discharge to sewer licence conditions. The grease trap should be serviced regularly and grease trap waste collected by authorised persons.

Waste oil should be separately collected for recovery by licensed waste contractors. Many cooking oil suppliers provide this service free to customers.

WASTE TYPES

4 Many cooking oil suppliers provide collection service free to customers.

5 WEEE should be separately stored and should not go into general waste.

6 Place a collection box in staff areas, and public areas so that waste portable batteries can be collected.

WASTE OIL

❺Waste Electrical and Electronic Equipment (WEEE)

All WEEE (Waste electrical and electronic equipment) should be separately stored and should not go into general waste.

What to do with WEEE arising on your premises:

• Give a particular item of WEEE to an electrical goods retailer/EEE if you are purchasing a similar item (i.e. replacing a computer screen, printer etc.).

• Have the WEEE collected by an authorised collector, OR you can contact your local authority to see if you can deposit the WEEE at a local civic amenity centre.

GENERAL WASTE SHOULD NOT EXCEED 20% OF THE TOTAL WASTE PRODUCED. IF IT IS, THEN YOU ARE LIKELY TO BE THROWING AWAY MATERIALS THAT CAN BE RECYCLED OR REUSED.

❻Batteries

Use rechargeable batteries where possible so that you can reuse the batteries over and over again, rather than purchasing new ones constantly. Rechargable batteries can typically be used up to 1,000 times. Think of the cost savings and the amount of waste reduced. Retailers who sell batteries or equipment containing batteries/supplied with batteries are obliged to collect batteries from customers under the Waste Management (Batteries) Regulations 2008.

For retailers who do not sell any batteries/ battery containing equipment

All portable (i.e. AA, AAA, button cell, etc.) batteries should be separately stored and not put into general waste. Place a collection box in office or staff areas so that waste portable batteries can be collected. These can be obtained from WEEE Ireland or ERP.

What to do with waste batteries:

• Bring the waste portable batteries to a retailer who sells portable batteries. Note: Unlike with WEEE/EEE, you do not have to purchase more batteries – retailers of portable batteries must accept all waste portable batteries.

• You can contact your local authority to see if you can deposit the batteries at a local civic amenity centre.

• For industrial and automotive batteries, you can return the waste battery to a retailer of such batteries, who is obliged to take it from you.

WASTE

Packaging Waste

ⓘ Here are some tips on how to reduce packaging waste:

Unnecessary Packaging
Secondary and tertiary packaging (for collection and transport) is often excessive. Provide feedback to your supplier where unnecessary packaging is provided.

Type of Packaging
Source goods from suppliers who use re-usable or minimal transit packaging. Factor the type and quantity of packaging into negotiating new contracts with suppliers.

Pallets
Return pallets to suppliers for reuse. Damaged pallets (which are not part of lease schemes) can be sold on to a pallet merchant for repair or for wood recycling. Pallet exchange can also be practised.

Hot food/baked goods
Conduct a survey of the packaging used for products – is there any scope for improvement? For example, providing recycled paper bags for customers to pack bread, scones etc. rather than plastic bags, ensuring packaging available is product dependent rather than one size fits all.

Fruit and vegetables
Provide fruit and vegetables loosely rather than pre-packaged where possible. Provide feedback to your supplier to reduce any excessive packaging when supplying fruit and vegetables.

In cafés and canteens
• Provide condiments in refillable dispensers rather than in individual sachets.

• Use re-usable coffee filters in coffee machines.

• Give customers/staff the option to have their take-away tea/coffee in their own travel mugs – you could also reduce the cost of the tea/coffee slightly for those who use travel mugs to incentivise the practice.

• Provide single napkins to customers or have single napkin dispensers.

PROVIDE FEEDBACK TO YOUR SUPPLIER WHERE UNNECESSARY PACKAGING IS PROVIDED. USE REUSEABLE PACKAGING WHERE POSSIBLE.

Food Waste

The cost of food waste

For food retailers, careful stock control and staff awareness is key to reducing unnecessary food waste. It has been estimated that every tonne of food waste can cost between €2000 – €5000 to purchase, store (refrigerate, heat, cook, etc.) and manage (putting on shelves, taking off shelves, etc). Disposing of any food is therefore poor business practice. Remember, food waste = money, so the less food waste that is produced the greater your profit margins. How can I reduce food waste?

First thing, know your food waste...

WHERE IT COMES FROM

HOW MUCH OF IT IS THERE

WHAT IT CONSISTS OF

This will help you focus on the main wasteful food types, areas or practices in your business.

Most retail shops already have a lot of data on food that is not sold and ends up being disposed of. This information usually comes in an extensive spreadsheet with detailed information on each product. This will include cost of product wasted, cost of product sold at a reduced price, and percentage of product wasted overall.

Wastage (or shrinkage) boards are also used extensively within the sector for communicating this information to staff. However, while these systems contain a huge amount of information, they are rarely used to target significant reductions in food waste generation levels. If you are not gathering this data already this should be the first thing you do.

Department		Week 12 2012			Period 3 2013			Year to Date		
		€(DT)	RP%	€(CP)	€(DP)	RP%	€(CP)	€(DP)	RP%	€(CP)
Butcher D012	W	20.14	0.13%	20.87	50.16	0.10%	43.31	921.02	0.10%	654.71
	D	5.97	0.07%		48.65	0.08%		542.13	0.06%	
Dairy D013	W	5.98	0.26%	5.01	151.29	0.08%	141.87	1031.12	0.89%	587.24
	D	8.99	0.03%		61.25	0.11%		879.25	0.11%	
Bakery D014	W	26.13	0.15%	29.14	98.36	0.08%	113.25	998.42	0.09%	658.28
	D	10.21	0.03%		65.41	0.12%		561.21	0.13%	

The problem with these spreadsheets is that they contain a lot of numbers and can be difficult to use – converting all this data into usable graphs as shown overleaf can work to your advantage.
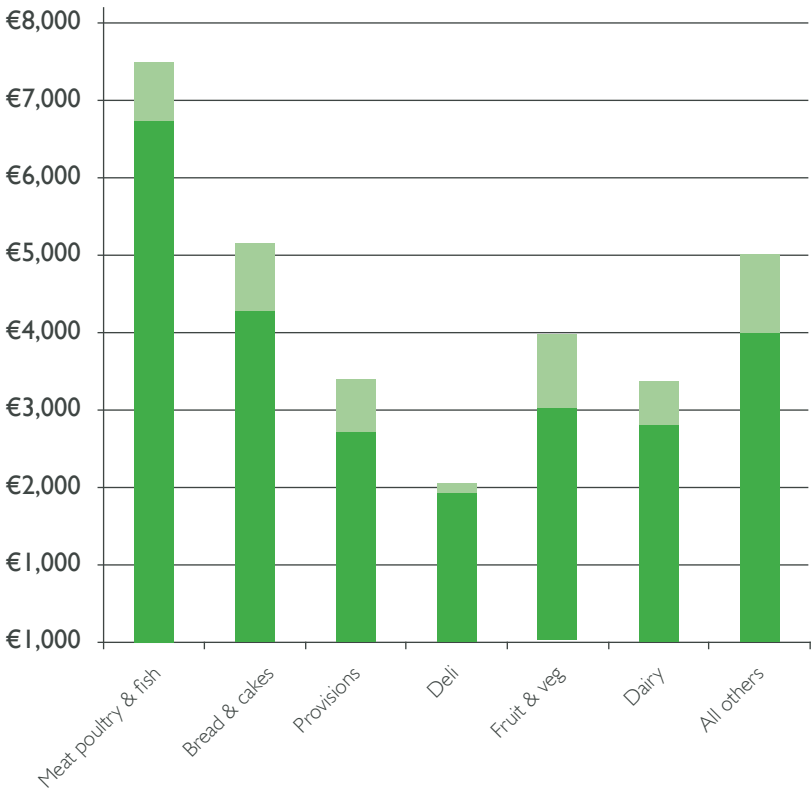
Quantifying your food waste amounts. The information below is based on a real-life case.

PRODUCT WASTAGE VALUE AND PRICE REDUCED PRODUCT - BY DEPARTMENT FOR THE YEAR (RETAIL PRICE)


For example, take the information you receive and summarise it by department. It will show you the main areas where you are losing money. While the data tells you this already, a visual representation is usually much more effective.

■ Price Reduced

■ Wastage

From this information you can identify the most important areas in your shop to improve on, as well as setting targets for percentage wasted in each department. In this case, the bakery and butcher departments should be the first to be addressed.

PRODUCT WASTAGE VALUE AND PRICE REDUCED PRODUCT - BUTCHER DEPARTMENT FOR THE YEAR (RETAIL PRICE)
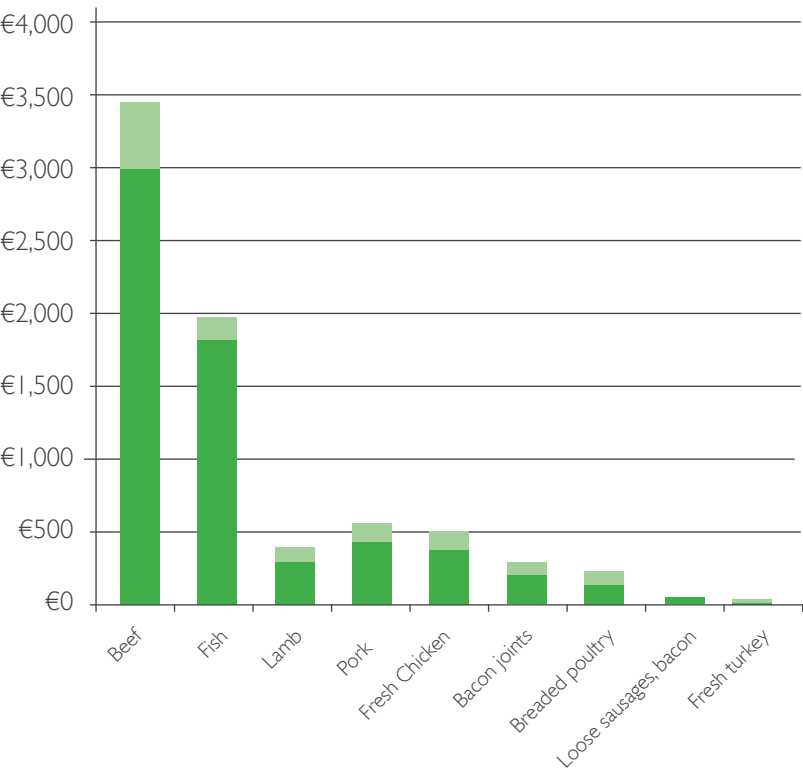
You should delve further into the data available for the top waste producing departments. In this case, looking in more detail at the butcher department, it was evident that beef was the primary offender.

■ Price Reduced

■ Wastage

It was found, in this case, that minced beef was the main waste contributor. The reason for the high volumes of wasted minced beef was that mince was usually made up in one batch in the morning and often it didn't all sell. Now, this shop is making smaller batches during the day, as needed.

The bakery department is often a large waste producer, as shops wish to have a full bakery section for the majority of the day. While this may create an impression of abundance, the fact that bread is relatively cheap to make does not mean that the cost to the shop is insignificant. For in-house bakeries in particular, you bear the cost of waste disposal, whereas purchased in bread may be taken back by the suppliers. So, if you are generating a lot of bakery waste, you should look into your baking practices throughout the day, especially the times and volumes cooked.

Ratio of wasted product to reduced price product.

A key waste indicator for the sector is the ratio of wasted product to reduced price product sold. One large retail chain aims to have 70% of waste product price reduced,with just 30% sent offsite as waste. The following example shows how far this shop is from that target. Of particular interest are the bakery and deli departments, which have high percentage waste and low percentage discounted sales.

RATIO OF WASTED PRODUCT TO REDUCED PRICE PRODUCT AND IDEAL RATIO

Price Reduced
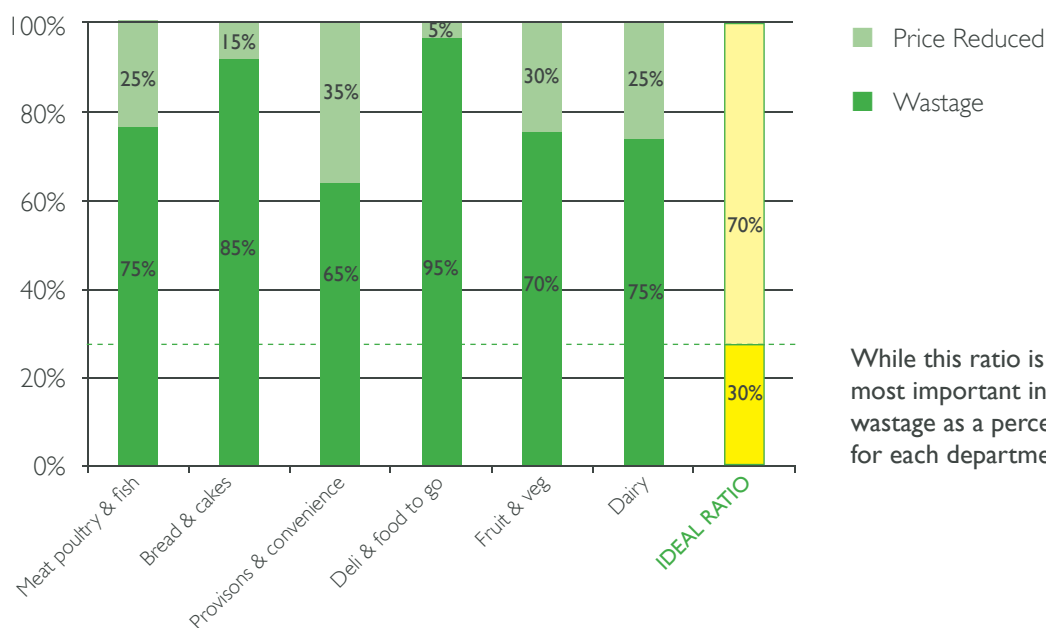
Wastage

While this ratio is important, the most important indicator is total wastage as a percentage of sales for each department.

CASE STUDY
Supermarket - Galway

As part of Galway County Council's (Local Authority Prevention Network) Programme they worked in conjunction with a large, family run supermarket. After an initial food waste assessment had been conducted a number of improvements were made to the way the shop was run. These included:

• Improved stock management and rotation
• Delivery dates arranged to maximise sale of perishable goods
• Bakery management - maximise sale of perishable goods (3 times per day)
• Changes in types of produce supplied i.e. (lean steak mince to replace lower grade produce)
• Monitoring customer trends
• Staff reporting system (if you bin something you must arrange for appropriate re-ordering)

While each of these contributed to a significant lowering in food waste volumes, the key aspect of their work was staff involvement. Staff were included in all decisions involved and in many cases drove the changes themselves. All in all, the ongoing improvement has seen food waste volumes drop by over 15% to date.

♻ WASTE

ⓘ Food waste good practice tips

Here are some good practice tips for the food retailing sector. Most shops are already doing these but hopefully you will find a few pointers to help you reduce your food waste.

Stock Control

- Use stocktaking software that allows you to track purchases, sales and product wastage.

- Rotate stock on shelves to ensure that those products closer to their use-by dates are at the front of shelves. Ideally, this should be carried out and re-checked regularly as displays may be disturbed by customers.

- Buying in bulk can be very cost effective. However, if your goods come in set delivery sizes, and you find this leads to product wastage. Pursue your suppliers for different options.

- Delivery frequency – tailor the number of deliveries to the type of goods. Perishable items, for example, can be delivered more frequently reducing the risk of overstocking. Put discounting procedures in place for near date expired items or items which need to sell quickly. Good stock control will ensure that these products are kept to a minimum.

- Seasonal planning – certain food types will sell better at different times of the year, so adjust your stock levels accordingly. For example, one retailer uses the long range weather forecast to inform orders of perishable goods.

Hot food, baked goods and deli counters

- Conduct regular visual surveys on the sale of hot food and baked goods. Demand will change with time of day, certain days of the week or times of the year. Unnecessary wastage can be avoided by preparing enough to meet the anticipated demand.

- Near-date expired meats could be cooked and sold at the hot food counter or in staff canteens.

- Exercise portion control at sandwich and deli counters – e.g. calculate how many slices per cut of meat or block of cheese etc. Order only what is necessary and plan around anticipated demand.

- Change salad container depths for different times of the week and/or year.

- Use the ends of deli cold meats in prepared sandwiches or food cooked on site.

- Bread waste can be crumbed and used internally, sold or frozen for use or selling at a later date (e.g. around Christmas or other holidays).

USE THE ENDS OF DELI COLD MEATS IN PREPARED SANDWICHES OR FOOD COOKED ON SITE

Display until and best before dates

Display by dates can often lead to perfectly good and sellable food going to waste. This date is usually 2 days prior to the best before date and is purely a guide for stock control. Beware if you use this date as the main guide for your stock control, it will lead to higher volumes of good food wasted.

Remember items that have reached their best before date can still be sold once clearly identified for the customer.

Don't forget - food approaching its use-by or best before dates can be used in the deli to make sandwiches etc.

Surplus food – giving it away

Donate food that will not be used before its use-by-date to local charities. Ensure that all food donated is carefully managed in line with HACCP and Food Hygiene Regulations.
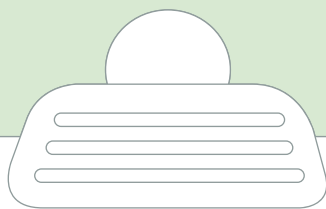
Waste Checklist

	Yes	No
Waste segregation – have you...		
A waste segregation system in place for packaging, food waste, WEEE, etc.?		
Ensured your waste storage area is tidy and well signed?		
Provided clearly labelled bins for staff/customers to segregate waste?		
Measuring and monitoring – have you...		
Calculated how much of each waste stream you produce?		
Calculated the costs of each waste stream you produce? (Costs should include: waste management costs, but more importantly the purchase cost of wasted product)		
Created waste benchmarks and compared against retail benchmarks?		
Calculated your total waste as % of sales?		
Reviewed current practices and identified areas where improvements can be made?		
Food Retailers – have you...		
An efficient stock control system, and a discounting system?		
Used seasonal planning to determine which foods will sell best?		
Procedures to ensure perishable food volumes are minimised?		
Considered using 'near date' items in your hot food counter?		
Crumbed your bread waste for use internally, or sale?		
Considered donating food to charities?		
Packaging – have you...		
Discussed ways to reduce packaging with your suppliers?		
Asked suppliers to provide you with reusable crates where possible?		
Factored packaging into you supplier contract negotiations?		
Waste Contractors – have you...		
Shopped around for the best price with contractors?		
Considered the value of baled cardboard and plastic, which can generate a revenue?		
Considered the value of food waste? (Purchase price of food is approximately €3/Kg)		
Procedures, staff awareness and training – have you...		
Communicated to staff the importance of reducing waste?		
Trained staff to segregate waste?		
Looked for feedback from staff on waste management procedures?		

WATER

Increasing water costs is an on-going concern for most business. Cold water typically costs €2 -€3 per 1000 litres. However, hot water costs can exceed €10 per 1000 litres, due to the energy consumed in producing this. For this reason retailers need to consider improve water efficiency. Remember wasted water is wasted money.

IN THIS SECTION...

Getting Started

Monitoring & Measuring

Reducing Water Consumption

Rainwater Harvesting

Water Checklist

Use this to identify opportunities in your business

Getting Started

Check out your water bills

The first step in getting to know your water consumption is to take a look at your bills. Bills are usually submitted quarterly. You will be able to see the amount you spend on water per quarter by looking at the bills. You will also see how much you pay per m^3.

Read the water meter

Locate your water meter or water meters. Some premises will have more than one meter. You will receive separate bills for each. Lift the lid off your meter to reveal the dial. Water use is measured in cubic metres (m^3 or 1,000 litres).

When water is flowing, the red dial will rotate. The black digits record cubic metres (m^3) and the red digits record litres. Water is charged by cubic metre.

Reading your meter/ meters will allow you to
- Monitor water consumption on a daily or weekly basis. This will allow you to match water consumption with activity. When your premises is closed you should expect little or no water used.
- Compare readings with those on local authority bills.
- Check for leaks using the night-time leak test.

How to carry out a night-time test

1. **Find your water meter**

2. **Record meter reading at the end of the day (at the close of business)**

3. **Ensure all water consumers are turned off, including urinals**

4. **Record meter reading first thing in the morning (before business opens), or after weekend**

5. **The difference in readings will tell you the night-time usage, when the business is closed**

6. **If water consumption is unexpected, and can't be accounted for, you probably have a leak! Leaks can be very costly.**
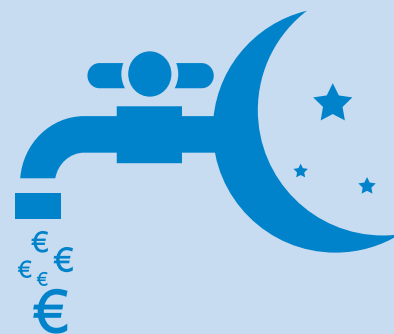
Monitoring & Measuring

Benchmarking

Record your daily, weekly or monthly water use by reading your water meter. Keep a log of meter readings and create benchmarks (e.g. m³ per day/week/month). When you have implemented improvements you will be able to measure the savings! You can also compare your usage to similar businesses to see how you are doing.

By measuring and monitoring you can identify potential over consumption in your business. The first step in implementing a water use efficiency initiative is to measure current consumption and benchmark your consumption.

Water benchmarks for commercial units

Business Type	Litres/ m² (floor area) / day
Retail	2.48
Shopping Centre	3.00
Café/ fast food/ butcher	2.48

Identify where water is used?

To get a picture of how much water your business is using you need to conduct a survey of water users in your business. These might include toilets, urinals, taps and washing machines including dishwasher:

Calculate water consumed by each of these users on a daily basis:

- Investigate how many litres per flush in each toilet. Some cisterns indicate the flush volume inside the cistern. If this is not available empty the cistern and fill from a measuring jug. Estimate how many times the cistern is flushed per day to estimate water consumed.

- Check if urinals are managed or just flow all day. Water consumed by urinals can be estimated by multiplying the number of flushes per day by the cistern size.

- Measure the flow rates (litres per minute) in kitchen and bathroom wash-basins (flow meters or bucket and stopwatch can be used to do this).

- Record volumes of water used by dishwashers and washing machines (if applicable).

Visual checks

Dripping/leaking taps cost you money and so all staff should be trained to report these. Sinks, toilets, urinals and staff showers should be checked regularly for leaks/drips.

Flowcups are a plastic vessel that offers a simple solution for checking water flow rates.

Flow Rates

Flow rates from taps, showers and hoses can be measured using the stopwatch and bucket method or using flow cups. This can identify how your fittings are performing compared to best practice.

You'll soon be able to identify what equipment is using the most water and where flow rates/flush volumes etc. need to be reduced. Recommended values are listed below.

Anything more than these and you are pouring money down the drain.

Type of equipment	Recommended flow rates/litres per flush
Toilet wash basins	2 litres per minute
Toilets	4.5-6 litres per flush (dual flush)
Showers	6-8 litres per minute
Urinals	Managed not flushing automatically
Pot wash/Kitchen	3-7 litres per minute

A HOT WATER TAP LEFT RUNNING UNNECESSARILY FOR 10 MINUTES IN EVERY HOUR OF A WORKING DAY WILL COST €6,000/ANNUM

WATER

Reducing Water Consumption

Water consumption can be reduced by improving the efficiency of your water users. Here are some examples of what can be done in your sector.

Toilets
- To reduce water used by large cisterns, place a water displacement device, such as bag or bottle to reduce flush volume.
- Retrofit old toilets with dual-flush cisterns.

Urinals
Many urinals are operated on an automatic flush, which will flush constantly regardless of whether they are needed or not!

To save water usage in urinals, consider installing shut off or solenoid valves or motion sensors to manage flush rates.

Alternatively, you could consider installing waterless urinals. Typically an unmanaged urinal uses 500m³/annum costing €1,000.

Sinks and showers
You can reduce water wastage from sinks and showers as follows:
- Retrofit existing taps with low flow aerators or replace existing taps with low flow aeration taps.
- Install a flow regulator on lines to taps
- Install self-closing or sensor operated taps to ensure taps are not left on unnecessarily
- Use mixer taps
- Install flow reducers and aerators in shower fixtures, or low flow shower heads.
- In canteen/deli/kitchen areas install trigger-operated hoses.

Dishwashers
- Only use dishwashers with a full load. A dishwasher can use between 10 and 40 litres of water per cycle, whether the load is full or not.
- Plumb dishwashers to hot water source, as heating water with electricity is expensive. Contact your supplier in advance of this change to ensure it does not affect your warranty

IN THE RETAIL SECTOR, ON AVERAGE, AN OUTLET USES HALF A TONNE OF WATER PER 1,000 VISITORS

Rainwater Harvesting

Rainwater harvesting can significantly reduce mains-water use. Potable, treated water is literally being flushed away in toilets!

Rainwater, although non-potable, is perfectly suitable for use in toilet flushing, urinals, machine wash downs and for outside use, such as gardening, car washing and general cleaning.

While installation of rainwater harvesting systems involves capital and installation costs there are many benefits including:

- Savings of up to 85% of mains-water usage for commercial buildings.
- Improved sustainable water use.
- Added value to the property (may improve BER rating).

How does it work?

Rainwater harvesting systems work by channelling rainwater from roofs to a storage tank through gutters and pipes. Filters in the system prevent debris such as leaves from getting into the storage tank. Storage tanks can be overground or underground. Water is then pumped to a 'header tank' for use in the system as needed. The system is equipped with a switch, which reverts to mains water use in the event of a low supply of rainwater.

The payback for replumbing exsisting buildings for rainwater harvesting can be 5 years or more.
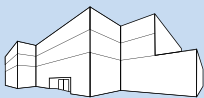
CASE STUDY
Stillorgan Village Centre, Dublin - Reducing Water Use.

A Dublin shopping centre analysed their total water consumption and water consumed by tenants and identified a significant amount of unexplained water consumption. The total water purchased was greater that recorded on the tenant's water meters.

Overnight meter readings were taken when the Centre was closed. This enabled the logging of the mains meter readings and provided flow analysis reports. These readings showed significant water flow outside normal trading hours and confirmed suspicions that there were one or more water leaks.

Sizeable general supply water leaks at various locations around the site and two further leaks within the premises of retail outlets were identified. These were repaired and a number of fittings were replaced as a preventative maintenance exercise.

They then looked more closely at the management company's water usage, notably in the public areas. Toilet cisterns were adjusted to optimise their performance.

The leak repairs, upgrades to the water infrastructure and water saving measures have combined to reduce water usage by an impressive 40%.

40% REDUCTION IN WATER USE

€24,000 ANNUAL SAVING IN WATER CHARGES

7 MONTH PAYBACK TIME
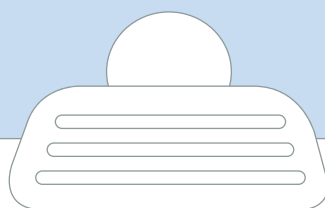
Water Checklist

	Yes	No
Measuring and monitoring – have you...		
Located your water meter and commenced daily or weekly to calculate water consumption?		
Reconciled meter readings with those on water bills?		
Created your water usage benchmark and compared benchmark for retail?		
Leak detection – have you...		
Measured water consumption when the business is closed to identify unaccounted water use, leaks?		
Carried out a visual check for leaks?		
Identification of water users – have you...		
Identified all water using equipment?		
Measured flow rates in wash-basins/sinks (and showers)?		
Measured water consumed by urinals and toilets?		
Measured water consumed by dishwashers?		
Water reduction , toilets and urinals – have you...		
Reduced flush volumes in toilets by installing displacement devices?		
Installed dual flush toilet cisterns?		
Taken measures to control the flush rate on urinals, e.g. installed occupancy sensors, push button controls etc.?		
Considered installing waterless urinals?		
Water reduction, taps and showers – have you...		
Retrofitted existing taps with low flow aerators?		
Installed a flow regulator on lines to taps?		
Installed low-flow self-closing or sensor operated taps?		
Installed flow restrictors/air assisted taps where necessary?		
Installed flow reducers and aerators in shower fittings?		
Installed trigger-operated hoses, in canteen/deli/kitchen areas?		
Rainwater harvesting – have you...		
Investigated the feasibility of rainwater harvesting?		
Procedures, staff awareness and training – have you...		
Communicated to staff the importance of conserving water?		
Ensured water using equipment (dishwashers, washing machines) are operated only when fully loaded?		
Set up regular visual checks for leaks?		
Have you put water conservation signage in place?		

⬡ ENERGY

Energy consumption and its associated costs can be substantial in any business, especially the retail sector. This section focuses on the following.

IN THIS SECTION...

Getting Started

This will depend on the type of retail business which your operate. If you are a non-food business your main energy consumption will be in lighting and HVAC (Heating, Ventilation and Air Conditioning). Retailers who sell food will use a lot of energy on refrigeration.

Energy use breakdown in retail outlets:

Non-food retail (e.g. clothes shop)

HVAC	50%
Lighting	40%
Other	10%

Food retail (e.g. supermarket)

Refrigeration	50%
HVAC	25%
Lighting	15%
Food Prep/ Offices	10%
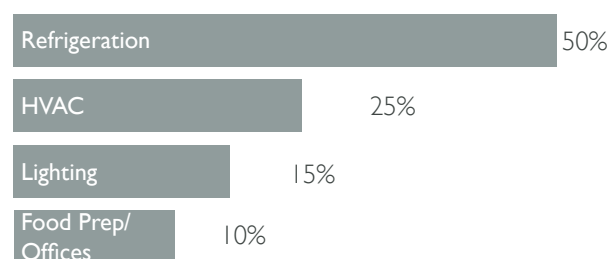
Are you more energy efficient than your competitors?

Take a look at your energy consumption per m^2, to see how much you use. Compare your figures against sectoral benchmarks.

Benchmarking is basically comparing yourself to other similar facilities.

Typical Retail Energy Benchmarks - how does your store compare?

Type	Typical annual energy consumption (kWh / m^2 / annum)
Non-Food Retailers	167 – 500
Food Retailers	695 - 945
Shopping Centres	333 – 390

There are two key approaches to reducing energy costs in your business: (1) reduce the price you are paying for electricity, gas and other fuels, and/or (2) reduce the quantity of energy consumed.

Two approaches on how to reduce energy costs

A. Reduce Energy Unit Price

1. Get a competitive price
2. Avoid penalties on bills
3. Change energy type used

B. Reduce Energy Use

1. Identify energy users
2. Raise staff awareness
3. Manage energy users
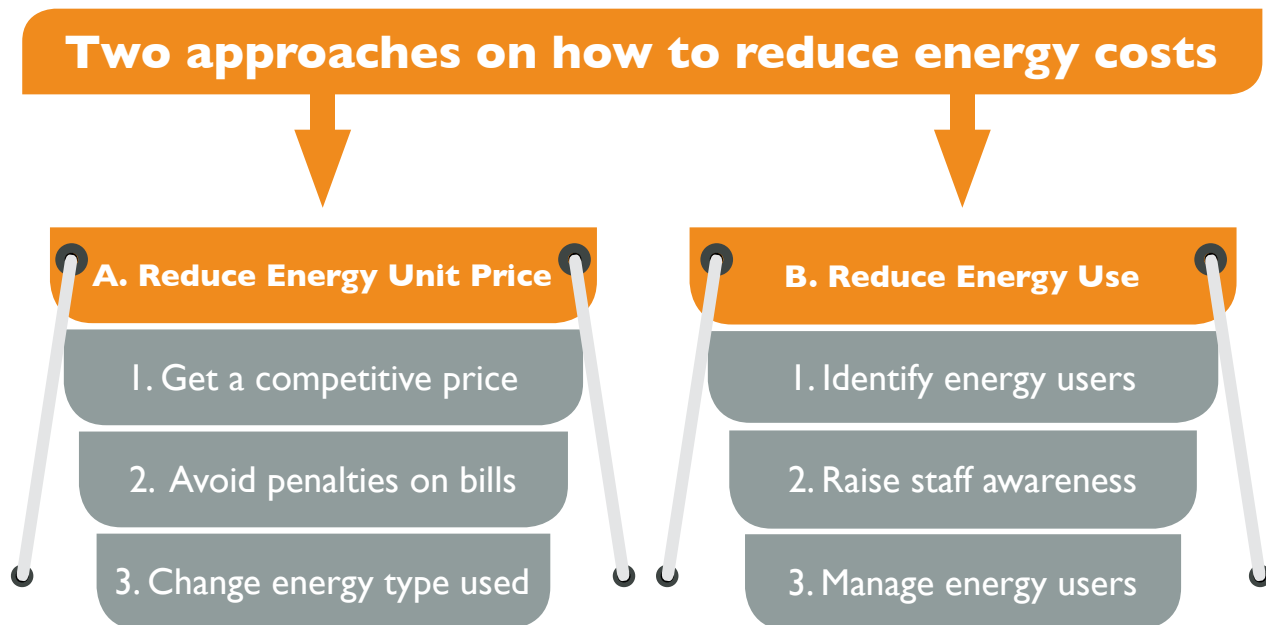
A. Reduce Energy Unit Price

1. Get a competitive electricity price

One of the easiest ways to reduce energy costs is to ensure that you are with a competitive supplier and that you are also on the correct tariff. On an annual basis it is worth going to the market to get competitive quotes for electricity and gas/oil. Get prices from a range of suppliers in the Irish market. Currently there are 5 suppliers of electricity in Ireland.

Be sure to compare the average unit prices (AUP) which includes standing charges.

It is also important to check with your supplier, if you have the most suitable tariff for your business.

There are a range of electricity tariffs, the three main categories being:

- **General purpose business tariffs** - best suited to small industrial or commercial type business premises with an electrical capacity connection (MIC) less than 50 kVA.

- **Maximum demand business tariffs** - best suited to large industrial or commercial type business premises with an electrical capacity connection (MIC) greater than 50 kVA.

- **Residential business tariffs** - These tariffs apply to small business premises where there is an attached residence and there is just one electricity metering point.

The General Purpose tariff allows you to use the Nightsaver option. Being on the Nightsaver tariff increases your standing charges and your day unit costs slightly, but significantly reduces the cost per unit of electricity consumed between 11pm and 8am (wintertime) and 12pm to 9am (summertime). It is generally recommended that if more than 15% of your electricity is consumed at night you should be on a nightsaver tariff. Similarly for natural gas, LPG, oil, etc. there will be different prices available depending on how much you use in a year.

IT IS GENERALLY RECOMMENDED THAT IF MORE THAN 15% OF YOUR ELECTRICITY IS CONSUMED AT NIGHT YOU SHOULD BE ON A NIGHTSAVER TARIFF

2. Avoid penalties on electricity-bills

How many times have you looked at your electricity bills, got a shock, and just paid it. Worse again, you may not even see the bills, they just get paid. Electricity bills can be confusing, but all contain the same general information and this can be broken into two main types: the charges related to consumption that you can reduce and the service based charges that you can't. For more information on all of the specific items on your bills go to your provider's website where they are explained in more detail.

The main costs on your bill that you can impact, and hopefully reduce, are:

– **The electricity used;** this is measured in kWh (kilowatt hours) and is usually broken into day and night units. Review consumption by day and by night and make sure it reflects activity in your premises. You might be surprised by the amount of electricity used at night when your premises is closed.

– **Wattless charges if present on your bill** (measured in kVAr). If your electricity bills show a 'wattless charge', 'low power factor charge' or 'reactive units' not all of the electricity entering your premises is producing useful work. This can be easily remedied by fitting an appropriate capacitor and this should be discussed with your electrician.

– **Maximum Import Capacity (MIC);** this is the maximum level of electrical capacity that you have set as being required by your business. Oftentimes these are set historically and haven't been reassessed in years. If your MIC is too high you will be paying more than you should be for your electricity service. If your MIC is too low, you will be paying excess capacity charges and these charges can be very high. Many Irish businesses have incorrect MIC settings so it is important to check these, especially in sites that have expanded over the years or improved the efficiency of electricity using equipment recently.

3. Change energy type used

Retailers use a range of energy sources, which include gas, oil and electricity. It is important to note that the unit cost of these energy sources varies considerably. The table below shows the average unit price (AUP) per kWh for a range of energy sources used in the retail sector.

TYPICAL COMMERCIAL 2013 PRICES

	Electricity	Natural Gas	LPG	Oil	Wood Chip	Wood Pellet
Cents per kWh	16	4	7	8	3	4

When choosing an energy source for your business, cost is obviously a key factor provided the energy source is practical and available. For example, oil is not a practical energy source for refrigeration, and natural gas is not always available.

SEAI provides regular updates on commercial average prices, go to

www.seai.ie/Publications/Statistics_Publications/Fuel_Cost_Comparison/

ⓘ Tips for choosing energy type:

• Where available use natural gas for space heating and generating hot water.

• Use liquid gas or oil for space heating and generating hot water, when natural gas is not available.

• Avoid use of electricity for heating water.

B. Reduce Energy Use

1. Identify energy users

The first step to identifying energy users in your business is to review information available on energy bills and from suppliers. Monthly bills will only show seasonal trends. However, many businesses can avail of detailed information, particularly with regard to electricity use, from their supplier.

Some businesses are provided with ¼ hour interval readings which show patterns in electricity use. This can be useful in identifying energy spikes. You should then match energy consumption with activities in the business and associated energy users.

8am 9am 10am 11am 12pm 1pm 2pm 3pm 4pm 5pm 6pm 7pm
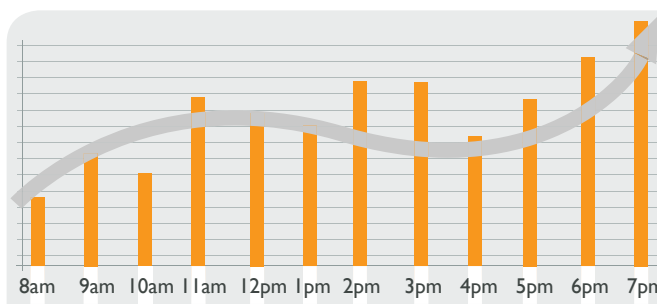
Retailers who are on a Maximum Demand tariff should avoid energy spikes as this can result in penalties for exceeding MIC thresholds. Energy using equipment needs to be managed to ensure all the big users are not switched on at the same time, which can result in spikes. This will require planning of activities and the switching off of certain equipment at peak times.

Example
15 minute interval data can be used to show daily use patterns. This can be useful in identifying if energy spikes occur when the shop opens, or at lunchtime etc., when you are cooking food or switching on a lot of equipment at the same time.

How do I find the big energy users?

Energy used by equipment on site is determined by 2 factors (a) the energy rating of the piece of equipment i.e. the amount of power it consumes in kW and (b) the length of time it is in use.

Use the table below to estimate the energy used by plant and equipment in your store. These estimates will identify your key energy users. These may include refrigeration systems, heating systems including boilers and air conditioning units, ovens, etc.

SIGNIFICANT ENERGY USERS CALCULATOR

| Item	Energy Rating (kW)	Load Factor	Hours in use/ annum	Average Electricity Unit Cost €/kWh	Annual Electricity Cost €
Chest Freezer (1.5 x1.0 m)	1.5 kW	50%	8760	€0.16	€1,051
1.5 x 0.5 x 8760 x 0.16 =					
Drinks Fridge	4 kW	50%	5840	€0.16	€1,869
Your Lamps					
Etc.					

How do I accurately measure where energy is used?

Electrical sub-meters can be used to accurately measure the amount of electricity used by a department or piece of equipment, over a set time period.

Sub-metering involves putting individual electricity meters on specific machines or distribution boards within a business. By doing this, the electricity load can be measured for a specific department or piece of equipment.

This will allow you to determine the running cost of individual pieces of equipment or departments. This in turn will allow you to identify the key energy users in your shop.

Air conditioners, lighting, ovens, hot food cabinets, deli counters, extraction fans, refrigeration, coffee machines and bain maries, amongst others, can all be large energy users in the retail sector.

Sub metering will focus your mind on the big users of electricity and raise questions as to why so much energy is used. This often leads to identification of solutions for energy reduction such as (a) by switching off equipment when not required, (b) replacing this equipment with more efficient technologies, and (c) training staff to use equipment with optimum efficiency, e.g setting refrigeration system, at recommended temperatures.
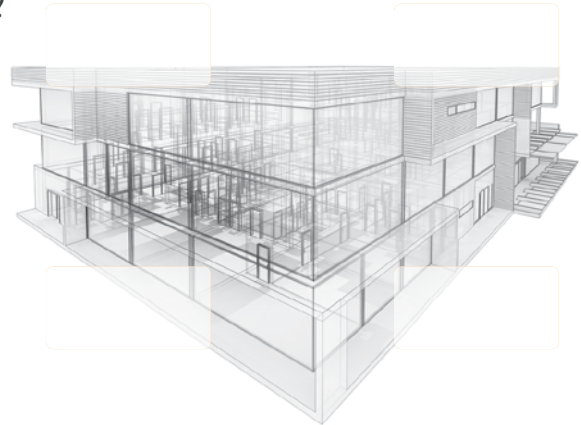
2. Raise staff awareness on energy management

Many studies suggest that a business can reduce its energy consumption by 10% by raising staff awareness on energy management. Regardless of how accurate this figure is, one can guarantee that improved energy awareness at home and in the workplace does reduce energy consumed.

Staff can dramatically affect energy consumption in a negative or positive way in your business. Poorly trained staff can cause energy to be wasted through no fault of their own, while well trained staff can ensure efficient energy use.

Examples of BAD practice by staff

✗ Leaving equipment turned on when not required or turning them on sooner that necessary e.g. ovens, fans, air conditioning systems, lights, etc.

✗ Leaving hot taps running while cleaning, washing, etc. and not using stoppers in sinks.

✗ Leaving cold room doors open.

✗ Blocking vents on fridge display cabinets with product.

✗ Putting on equipment before a full load has been gathered, e.g. dishwashers.

Examples of GOOD practice by staff

✓ Turning off equipment when not required: ovens, fans, air conditioning systems, lights etc.

✓ Ensuring refrigeration systems are set at recommended temperatures.

✓ Ensuring refrigeration system is defrosted when required.

✓ Using lower temperature washers where feasible.

✓ Knowing the heating up times of ovens etc., and only turning on for that time before using.

ENERGY

3. Manage energy users

The following sections of this booklet provide guidance and tips on the management of the key energy users in the retail trade. These include:

Lighting	Refrigeration	Heating	Ventilation and air conditioning	Hot water generation

Existing technologies need to be controlled, managed, and maintained to ensure optimum efficiency. This is generally achieved using (a) technology control such as sensors, timers thermostats or (b) staff training and awareness (see next section).

When existing technologies become outdated and can be replaced with newer more efficient technology, one needs to consider replacement options and cost benefit.

ENERGY USER – LIGHTING

Lighting is a significant cost for the retail sector, and is important for the general business function, and also for product display and back of house areas. On average 25% of electricity costs come from lighting. Lighting can account for up to 40% of energy costs in non-food retail.

Lights in the retail sector are often left on for the whole day. Improving light fittings can represent an opportunity for substantial cost savings. Changing your bulbs to more energy efficient fixtures is an easy way to make energy savings on your lighting, but, it is important to realise that this will require investment. In addition to bulbs, lighting controls can also help reduce the amount of electricity used in specific areas.

DID YOU KNOW THAT INCANDESCENT BULBS HAVE THE SHORTEST LIFE AT ONLY 2000 HOURS. FLUORESCENTS, METAL HALIDES AND OTHER ENERGY EFFICIENT BULBS OFTEN LAST BETWEEN 10,000 AND 30,000 HOURS, WHILE LEDs CAN LAST MORE THAN 40,000 HOURS!

Calculating your lighting costs

There are many different types of bulbs used in the retail sector. Depending on what you want to do (display vegetables, spotlights on jewellery, light thoroughfares, etc.), different bulbs will be required. Often the cheapest bulbs are installed, and while this saves money initially, it can be an expensive option as cheap bulbs are often inefficient and use more electricity than the newer technologies, such as LED bulbs.

So, when considering changing your bulbs, you will need to justify the initial costs to management by carrying out a cost benefit analysis. Generally new efficient lighting pays for itself within a year, leading to a substantial reduction in running costs. Use the lighting calculator below to estimate current running costs. Then use it to calculate future running costs to allow you to determine the savings which can be achieved and the payback period.

USE THIS TABLE TO CALCULATE ELECTRICITY RUNNING COSTS

	Wattage of lamp	Divide wattage by 1000 to get kW	Number of Lamps	Annual Hours in Use	Average Electricity Unit cost €/kWh	Annual Cost running cost
Example	35	0.035	100	3000	0.16	€1,680
	0.035 x 100 x 3000 x 0.16 =					
Your lamps						
Your lamps						

⬡ ENERGY
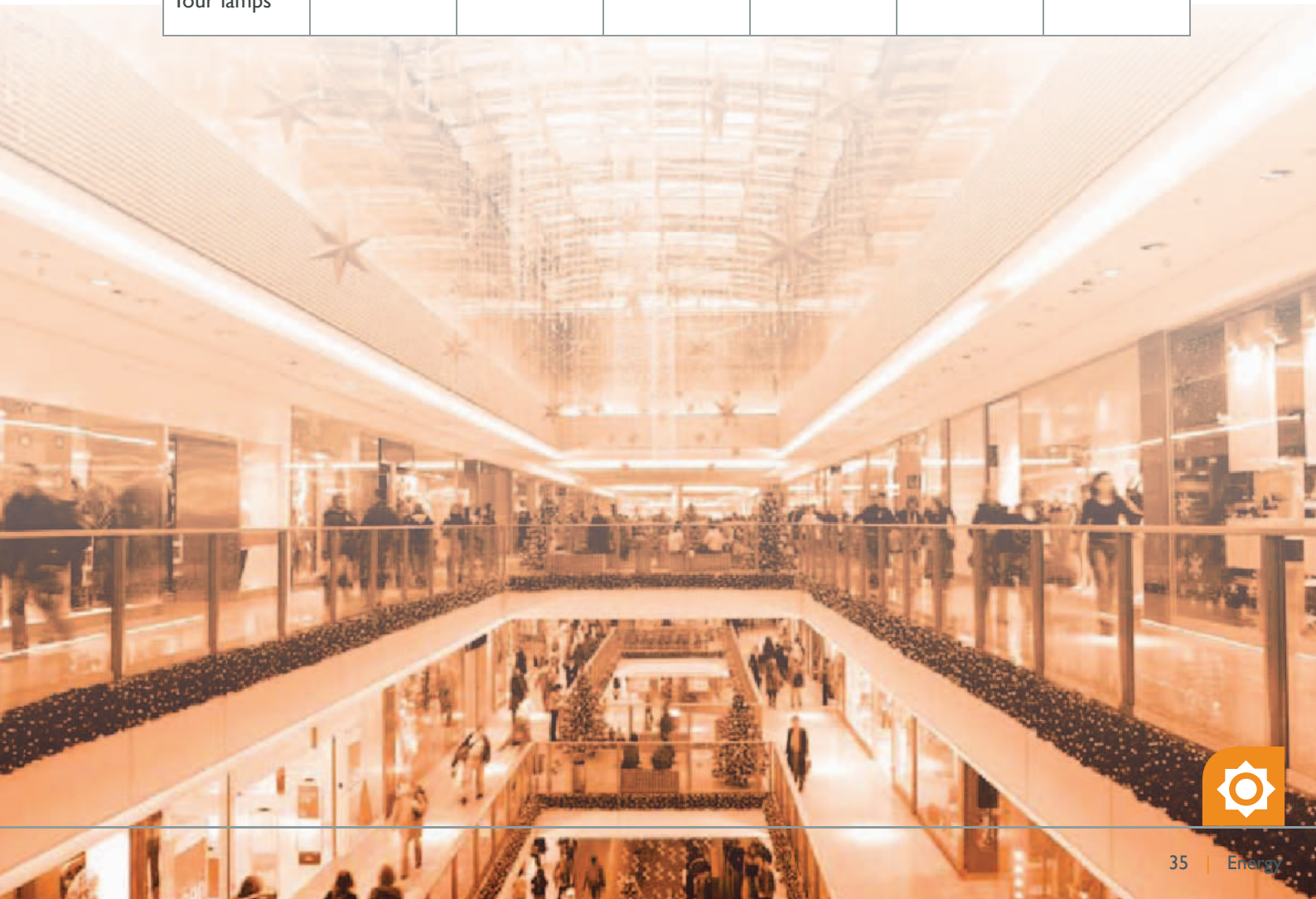
PLEASE NOTE: The lighting sector is rapidly changing in terms of technology, quality and price. Before you purchase your lighting, always check with your supplier to ensure you are getting the most up to date technology.

HERE IS A SUMMARY OF THE MAIN BULB TYPES AND ENERGY EFFICIENT ALTERNATIVES:

Commonly Used	The Alternative	The Savings
Incandescent or tungsten bulbs	Compact fluorescent lights (CFLs) & light emitting diodes (LEDs)	**SAVE UP TO** **€840*** PER 10 BULBS PER YEAR Changing a 100 W incandescent bulb to a 20 W equivalent CFL will save you €34 per bulb each year. Changing a 100 W incandescent bulb to an 8 W equivalent LED will save you €84 per bulb each year.
T8 fluorescent tube	T5 fluorescent or LED tubes	**SAVE UP TO** **€530*** PER 10 BULBS PER YEAR Changing a 58 W fluorescent T8 with a 29 W LED tube will save you €53/annum.
Halogen down-lighter	LED down-lighter	**SAVE UP TO** **€330*** PER 10 BULBS PER YEAR Changing a 100 W halogen down-lighter with an adjustable 36 W down-lighter will save €33 per bulb each year.
Halogen flood lights	LED flood lights or induction lighting	**SAVE UP TO** **€1000**** PER 10 BULBS PER YEAR Changing a 400 W halogen floodlight to an equivalent 90 W LED will save you €100 per bulb each year.

* Based on 16 hrs operation / day   ** Based on 8 hrs operation / day (AUP 16 cent per kWh)

✋ Be aware!
If your bulbs are giving off a lot of heat, then you could probably get a more efficient one. Bulbs should provide light – not heat! Lights that generate heat increase the cooling loads and waste even more energy in refrigerated areas.
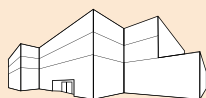
CASE STUDY Riverview Pharmacy - Bandon

Based in the Riverview Shopping Centre the Riverview pharmacy completed a lighting upgrade to include changing from recessed down-lights to LED down-lights and changing all fluorescent-based lighting behind glass shelving display units to LED tubes.

ENERGY REDUCTION: 68%

PAYBACK: 2.2 YEARS

Benefits of LED lighting

ENERGY SAVINGS
LED lighting generates up to 80% energy savings over traditional halogen lighting products.

LONG LIFE
LEDs operate for upwards of 50,000 hours, offering significant maintenance savings.

LUMEN OUTPUT
LEDs produce a high lumen output per W and give directional lighting.

CARBON REDUCTION
LED lighting will reduce your carbon emissions by lowering energy consumption.

INSTANT ON
LEDs reach their full brightness immediately unlike some fluorescents or CFLs.

NO UV EMISSIONS
LEDs produce no UV radiation (responsible for food spoilage) and relatively little heat.

CASE STUDY Supervalu - Longford

Supervalu Longford has engaged in an energy reduction programme over the past 2 years. Fluorescent lamps have been replaced in all refrigerated units and cove lighting replaced by LEDs. Adjustable LED lamps have replaced metal halide directional lighting and LED Panels have replaced existing lighting in offices & corridors. Traditional high-bay lighting has been replaced with LED highbay in the product storage areas.

ENERGY REDUCTION: 69%

PAYBACK: 1.9 YEARS

Lighting controls

There are a number of lighting controls which can be installed to optimise lighting use in your store. These include:

Motion sensors which can be used for back of house areas and corridors where lighting is only needed on an occasional basis. These sensors turn on light only when staff are present in these areas.

Daylight sensors set lighting to come on when daylight levels do not satisfy your needs. These sensors are typically used to control outdoor car park lighting, flood lights and internal light near windows and conservatories.

Timers can be used to turn on or off specific sets of lighting as required by activities in your store. For example, display lighting should only be switched on during trading hours. Ideally display lighting should not be used for cleaning, restocking, etc.

Zoning lighting switches should be organised for different zones in your store, so that lighting needs match activity. For example, in a supermarket; café area, bakery, toilets, off-licence, deli counter, fruit and veg section should all have their own light control, so that areas not in use can be switched off.

(i) Lighting efficiency tips:

Choose efficient bulbs. Choose bulbs that convert electricity into light, not heat. A halogen lamp only converts 20% of electricity input to produce light. An LED lamp converts more than 60% of electricity to produce light.

Don't turn on lights. Lights that are not turned on don't use any energy. Ensure lighting is necessary before turning on, and turn off when not required.

A HALOGEN LAMP ONLY CONVERTS 20% OF ELECTRICITY INPUT TO PRODUCE LIGHT

Natural light
Make the most of any natural light available.

Zoning lights
Only light areas when needed. This is very effective in large, open plan areas.

Timers
Automatically switch off lights when not required.

Sensors
Occupancy sensors may be useful in toilets, stockrooms, storerooms, back of house areas etc.

Daylight sensors
These sensors adjust the level of lighting depending on the amount of ambient light available.

Manual control
Whatever sensor system you use, a manual control is still important.

Number of lights
Do you need as many light fittings in one area?

Review display lights
Turn display lighting on only during trading hours.

Keep bulbs and fixtures clean
Dirty bulbs reduces light output by up to 35%.

Label all light switches
So everyone can tell which switch controls which area.

❄ ENERGY USER – REFRIGERATION

Refrigeration is an energy intensive technology primarily used in food retail. To reduce the costs of your refrigeration you need to ensure that your refrigeration system is operated in the most efficient way. Refrigeration can count for up to 50% of some retailers' energy bills. Therefore it is a very important area to manage efficiently. There are some generic best practices for refrigeration and also specific ways to manage the different systems such as:

ⓘ Refrigeration useful tips:

Set temperatures
Ensure temperature set to recommended settings.

Don't over stock
Don't block the cool air blower outlets. Allow air to circulate freely. This will avoid uneven cooling and higher electricity consumption.

Timers
Can be installed on fridges that contain non perishable items such as drinks cans, so that they are not running out of business hours.

Annual maintenance
Keep evaporator fins, doors seals etc. clean. Annual servicing will keep equipment in good condition.

Blinds
On open fridges at night blinds can help to trap cool air and reduce cooling requirements.

Back of house
Install clear plastic (PVC) strip curtains on cold rooms to reduce air loss.

Defrost
Ensure correct defrost procedures are followed.

Doors
Consider using refrigeration cabinets fitted with doors.

Lighting
It is also important to note that many fridges contain lights. Halogen and florescent lighting produce substantial heat – making the fridge work harder to keep temperatures cool. Replacement with LED will reduce the workload and reduce costs.

Energy recovery
Can you recover heat generated from refrigeration for space heating or heating water? Talk to your energy supplier.

'A' rated
Purchase energy efficient ('A' rated) appliances when replacing or purchasing new stock. Consider the design of fridges when replacing.

Keep doors shut
Placing reminders to close the door may be useful.

Sunlight
Do not place fridges in direct sunlight as they have to fight harder to keep temperatures low.

Ventilation
At the back of fridges is important to allow them to work optimally by not blocking vents.

Positioning
Do not place refrigeration equipment (especially open shelved equipment) near heat sources such as rotisseries, etc.
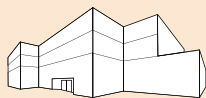
ENERGY

CASE STUDY Supervalu - Hacketstown

22 Musgrave SuperValu and Centra retailers undertook energy revamps as part of the SEAI Better Energy Community Project 2013. SuperValu Hacketstown undertook measures to improve the energy efficiency of their store. A new refrigeration pack system including cabinets with double glazed doors and mid floor refrigerated freezer units with sliding glass covers were installed. LED lighting was also installed throughout the store. These measures have resulted in a massive 43% reduction in energy consumption which has been monitored and verified. This equates to annual cost savings of €27,500 and reduced electricity consumption by 196,400kWh which delivered a payback of less than 3.5years.

ENERGY REDUCTION: 43%

ANNUAL SAVINGS: €27,500

PAYBACK: 3.5 YEARS

ENSURE REFRIGERATOR SYSTEMS ARE SET AT THE RECOMMENDED TEMPERATURES AND NOT BELOW.

THE OPTIMAL TEMPERATURE FOR A FREEZER UNIT IS -18ºC.

A FREEZER SET AT -22ºC WILL USE 10% MORE ENERGY THAN ONE SET AT OPTIMAL TEMPERATURE.

ENERGY USER – HEATING

Heating, ventilation and air conditioning are all separate items, but are part of an overall temperature and ventilation control system. By looking at each element, the system can be fine-tuned to achieve the best savings for your business. Shops that are too hot or too cold are not comfortable for customers to shop in, and difficult for staff to work in.

Simple energy saving opportunities can help save a lot on energy bills. Achieving appropriate comfortable temperatures for staff and customers in the most efficient way should be the main aim when heating your premises.

Heating useful tips:

Fuel switch
Consider options for switching to natural gas or other alternatives to oil.

Servicing
Have boilers serviced regularly.

Doors and windows
Keep doors and windows closed when the heating is on. Consider installing automatic doors where required.

Zoning heating
May be useful where heating requirements vary e.g. back of house, unoccupied area's, etc.

Insulation
Ensure boilers, pipes, tanks etc. are well insulated to prevent heat from escaping.

Temperatures
Ensure thermostats are working correctly and located away from draughts etc.

ENERGY USER – VENTILATION AND AIR CONDITIONING

Ventilation and air conditioning are important aspects of the retail sector. The more heat generated, the harder the air-conditioning system has to work to maintain the desired temperature.

Ventilation and air conditioning useful tips:

Natural
Make use of natural ventilation where possible.

Maintenance
Keep fans, air ducts etc. clean and in good repair.
Put them on a schedule for checking.

The dead zone
Ensure that heating and cooling are not used at the same time– set a 'dead zone' temperature – that is a gap at which neither heating or cooling will cut in.

Understanding
Ensure that you understand how to use ventilation and air conditioning in the most efficient way possible.

Controllers
For controllers of multiple air-con units – remember times of use could vary for each location, therefore multiple air con units should have multiple controllers. Make sure time of day and day of week are correctly set.

Staff
Make sure staff are aware that an air-con unit should not be on while windows are open. If they are going to open a window, turn off the air-con.

Do you have the user manuals for the system? Do your staff know how to use the system and change the settings? A few short, clear points pasted up near controls as to how to operate the system can be useful.

Maintenance
As with any other item of equipment, maintenance is always key – pay attention to the build up of dust on filters, which will increase operating costs – try not to just press the filter reset button too often!

Balance
Try to minimise the heat being gained by the building that requires the cooling in the first place - turn off equipment and lights when not in use, shade against solar gain through glazing where possible.

Large systems
There are standard packages available to provide heat recovery between incoming and exhaust air – this will reduce operating energy cost.

Is it needed?
In the case of each air-con unit providing cooling – do you really need artificial cooling to be provided? Consider if 'free cooling' could be used instead – using fresh air from outside when it is cooler than the inside air (frequently the case in Ireland!).
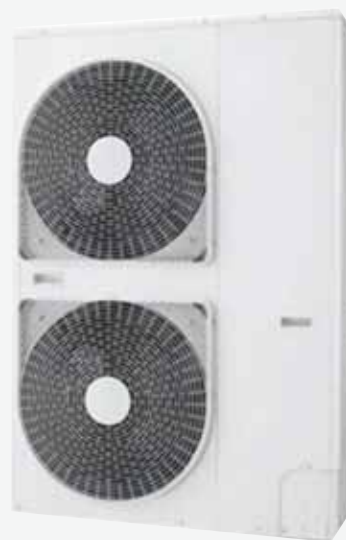
ENERGY USER – HOT WATER

Although hot water usage in the retail sector is often low, hot water can be a significant cost, especially when it's not used efficiently. Depending on how you heat your water, it is estimated that the cost of hot water is 4-7 times the cost of cold water. So remember, wasting hot water wastes water and energy. Usually hot water is heated separately from the heating system. It is important to have insulation on storage tanks. Timers are also useful to help optimise the energy usage for hot water.

Water is looked at in more detail in the Water section of this booklet.

ⓘ Hot water useful tips:

Temperatures
Maintain water at the optimum temperature of 55-60°C. Hot water should be stored at 55-60°C. Thermostatic valves can be used to reduce temperature locally to active temperature required.

Insulation
Ensure tanks and pipes are well insulated. This will reduce the amount of heat lost.

Immersion
If you are heating water with an immersion – do not leave it on constantly – rather, fit a timer and heat water during the night rate period when it is cheaper.

Thermostats
Ensure thermostats are set to the required temperatures and are working correctly.

Flow Rates
It is important to check your flow rates in kitchens and public areas. See if flow rates from your hot water taps can be reduced. Flow rates are discussed more in the Water section of this booklet.

Wasting Water
When cleaning with hot water, remember to use the plug in the sink and don't let hot water just flow constantly down the drain. Look at trigger hoses and also investigate if some washing/cleaning can be carried out with cold water.

Equipment
Dishwashers can be a significant cost – buy an energy and water efficient machine when purchasing if using it a lot.

ⓘ Bain Marie Tips:

- Fill with hot water rather than cold.
- Ensure the bain marie is well insulated.
- Ensure thermostat is working correctly.
- Ensure bain marie is only on when it really needs to be on. Work out how long it takes to reach set temperature.
- Hot water could be used for cleaning floors etc. later.
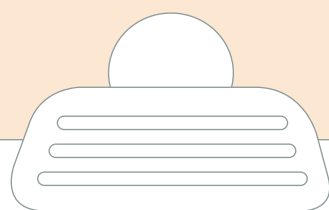
ENERGY CHECKLIST

	Yes	No
Reducing energy unit price – have you		
Gone to the market recently to see if your supplier is giving you the best price for electricity, gas and/or oil?		
Checked your electricity bill to see if you have a Maximum Import Capacity, and if so, do you (a) avoid excess capacity charges and (b) are you sure your MIC is at a suitable level for your business?		
Checked your electricity bill to ensure you do not pay for wattless charges?		
Checked the average unit prices for the various energy sources available to you to ensure you are using the most economical fuel/energy?		
Reviewed electricity consumption patterns within your business to identify times when most electricity is used?		
Monitoring and measuring – have you...		
Identified your largest energy users (based on energy consumption calculations)?		
Identified your largest energy users (based on sub meter readings)?		
Procedures, staff awareness and training – have you..		
Trained staff to turn off equipment when not required: ovens, fans, air conditioning systems, and lights?		
Trained staff on setting optimum temperatures on refrigeration systems?		
Lighting – have you...		
Considered energy efficient lighting now available for retail?		
Carried out a light audit survey to calculate current cost of lighting and to identify possible cost savings, which could be achieved by installation of more efficient lighting?		
Recently installed energy efficient lighting such as LED?		
Installed lighting controls such as motion sensors, day light sensors and timers?		
Zoned lighting so that lighting can be switched off in different zones when not required?		
Restricted display lighting to trading hours, when customers are on the premises?		
Trained staff on lighting controls, and optimal settings?		
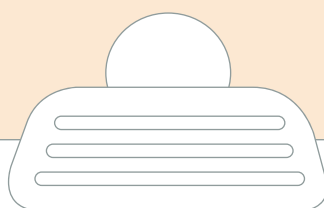
ENERGY CHECKLIST

	Yes	No
Refrigeration – have you...		
Procedures to ensure fridges and freezers are set on optimal temperature settings?		
A plan to fit open freezer displays with glass doors, or replace with doored units.?		
Procedures to ensure fridges and freezers are not over stocked?		
Effective night time blinds on fridge display units and night time covers/doors on freezers?		
Timers to switch off fridges when not required (e.g. beer fridges)?		
LED lighting in fridges and freezers to reduce heat gain?		
Heating – have you...		
Considered cheaper alternatives to the energy source that you use for space heating and hot water generation? (e.g. natural gas instead of electricity, natural gas instead of oil)		
Measures in place to ensure doors and windows closed when the heating is on?		
Considered installing automatic doors?		
Ensured that thermostats are working correctly?		
Ensured hot water tanks and pipes are well insulated?		
Stoppers in the sinks to prevent staff running hot water down the drain?		
Plumbed your bain maries and dishwasher with hot water?		
HVAC- have you...		
A schedule in place to ensure, air filters fans, and air conditioning systems are maintained on a regular basis?		
Controls in place to ensure heating and cooling are not used at the same time?		
Trained staffs to close windows and ensure doors are kept closed (as much as practical) when air conditioning is switched on?		
Zoned your premises so that HVAC can be delivered to areas where it is needed and not to areas where not needed?		
Considered using 'free cooling' instead of air conditioning? (Is you HVAC designed to use fresh air first before switched to chilled air?)		

Resources

LIST OF USEFUL PUBLICATIONS AND LINKS

GENERAL INFORMATION

- GreenBusiness Programme
  www.greenbusiness.ie

- How to green your campus or workplace - a step by step guide
  www.greencampuscit.ie/index.php?menu=&id=9&nid=86

- Smart Garage Guide. A guide for resource efficiency in garages.
  www.epa.ie/downloads/pubs/waste/wastepreventionprojectoutputs/name,30512,en.html

- Calling time on waste - a guide for publicans
  www.epa.ie/downloads/pubs/waste/wastepreventionprojectoutputs/name,28073,en.html

ENERGY

- Retail-Energy Management - the new profit centre for retail businesses. A guide from the Carbon Trust, UK (2006).
  www.carbontrust.com/media/39228/ctv001_retail.pdf

- Guide to energy efficiency and cost effective lighting for the retail sector. SEAI guidance on lighting
  www.seai.ie/Your_Business/Technology/Buildings/Lighting.html

WATER

- Water Conservation for Businesses, Cork County Council guide to water conservation.
  www.corkcoco.ie/co/web/Cork%20County%20Council/Departments/Divisional%20Services/Water%20Services/Water%20Conservation

FOOD WASTE

- For information on food waste prevention
  www.stopfoodwaste.ie

- For information on the food waste regulations
  www.foodwaste.ie

- Less Food Waste More Profit: A guide to minimising food waste in the catering sector
  www.epa.ie/downloads/pubs/waste/wastepreventionprojectoutputs/name,28077,en.html

PACKAGING WASTE

- Minimising packaging waste
  www.preventandsave.ie

- Repak
  www.repak.ie

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