MAKING THE SWITCH: WHY AND HOW TO ELECTRIFY YOUR COMMERCIAL KITCHEN

THE SUSTAINABLE RESTAURANT ASSOCIATION

GLOBAL COOKSAFE COALITION

HOSPITALITY ENERGY SAVING & SUSTAINABILITY

This guide has been written by The Sustainable Restaurant Association in collaboration with the Global Cooksafe Coalition and Hospitality Energy Saving & Sustainability for foodservice businesses in the UK and across the world.

About The Sustainable Restaurant Association

Since 2010, The Sustainable Restaurant Association (The SRA) has set the standard for sustainable hospitality, connecting businesses across the globe to accelerate change toward a sector that is socially progressive and environmentally restorative. They do this through the world's leading sustainability certification tailored for the sector, the Food Made Good Standard.

About the Global Cooksafe Coalition

The Global Cooksafe Coalition (GCC) exists to promote universal access to safe and sustainable cooking. That means affordable, fossil-fuel-free cooking, using energy-efficient appliances, powered by rapidly decarbonising grids or distributed renewable energy. The GCC's member organisations are leaders in the spheres of: public health; property and the built environment; aid and development; renewable energy; and climate-change science and advocacy.

About Hospitality Energy Savings and Sustainability

Hospitality Energy Saving & Sustainability (HESS) is the UK's leading strategic partner for energy reduction and decarbonisation in the hospitality sector. With deep operational expertise, HESS helps operators cut costs, emissions and complexity through data-driven insight, behaviour change, equipment replacement, technology and practical implementation. From pubs and restaurants to hotels and leisure venues, HESS delivers measurable savings and long-term resilience, turning sustainability ambition into action.

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Electric cooking is a great way to work in the kitchen for several reasons. It's easier to control the temperature when you're cooking, better for the environment, and so much easier to clean, keeping the kitchen neat and organised. Above all, and most importantly, knowing my team and I can work in a cleaner, safer kitchen, free from gas fumes during service, makes induction a no-brainer.

SANTIAGO LASTRA, CHEF FOUNDER, KOL, LONDON, UK

INTRODUCTION

This guide by The SRA, the GCC and HESS is designed for those working in and with the food and beverage industry, including restaurant groups, chains, independent operators, chefs and kitchen teams, hospitality consultants, facility managers, kitchen designers, industry bodies and sustainability professionals.

The guide is split into two parts:

- **Why electrify?** explains why it is vital restaurants move from gas to electric cooking equipment, and sets out the many benefits of doing so for staff and for sustainability.
- **How to electrify** your restaurant is a step-by-step guide to moving from gas to electric in professional kitchens.

John Chantarasak, Chef Owner of AngloThai, London © Owen Billcliffe

WHY ELECTRIFY?

WHAT'S THE ISSUE?

Gas cooking harms health by polluting indoor air and harms the planet by releasing greenhouse gases.

Health

Almost 4 billion people globally rely primarily on gas for cooking, according to the WHO. In recent years, a growing body of evidence has shown that cooking with gas can create indoor air pollution harmful to health.

Indoor air pollution is created through combustion – the burning of gas. This releases a range of chemicals into the air, including nitrogen dioxide, carbon monoxide, methane, formaldehyde and benzene.

During cooking, nitrogen dioxide emissions can exceed national safe limits – even surpassing levels considered unsafe outdoors. Homes with gas stoves can have nitrogen dioxide concentrations between 50% and 400% higher than homes with electric stoves.

Studies have shown that gas hobs also leak dangerous chemicals, even when they are turned off. These include methane – a potent greenhouse gas – and benzene, a known carcinogen that increases the risk of developing leukaemia.

Evidence shows how exposure to many of these chemicals can have dangerous side effects, including an increased risk of respiratory issues and of developing illnesses including asthma, chronic lung disease and cancer.

With greater knowledge about the potential risks to health, states across the US, including Massachusetts and New York are attempting to pass bills to make health warning labels on gas cookers mandatory. The state of Colorado, also previously introduced legislation making these labels mandatory, although this was later blocked by a federal judge.

While studies have explored the risks of residential gas cooking, there are gaps in the data about whether these risks also apply to commercial kitchens using gas hobs. Studies to determine the level of risk to chefs and other restaurant staff are ongoing at the time of writing.

Sustainability

Reducing greenhouse gas emissions is essential to averting the catastrophic impacts of climate change.

Global energy-related carbon dioxide (CO_2) emissions reached an all-time high of 37.8 gigatonnes (Gt) in 2024, according to the IEA. Natural gas was the largest contributor to this increase in CO_2 emissions, followed by coal.

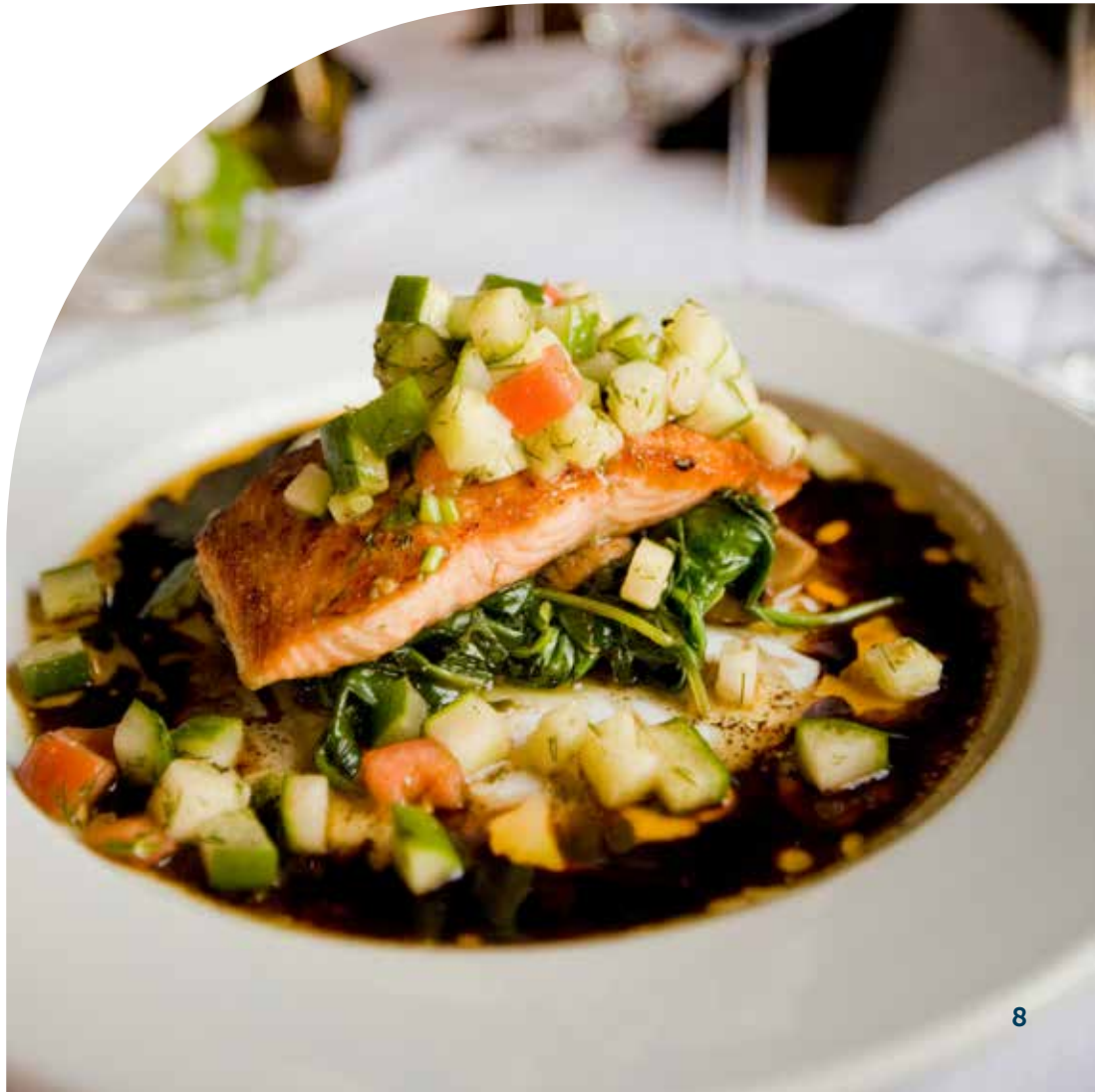
Fossil fuels such as oil and natural gas are also a major contributor to emissions of methane – a greenhouse gas more than 80 times more potent than CO_2 in the short term.

Methane is the main component of natural gas (gas used for cooking), and is estimated to account for 30% of global warming since pre-industrial times.

Large quantities of methane are emitted along the entire gas supply chain. According to one study in the US, methane leakage from more than 40 million gas stoves is comparable to the climate pollution from half a million cars on the road.

Cooking remains heavily reliant on fossil fuels globally, with widespread gas cooking contributing to greenhouse gas emissions. Removing fossil fuels from our kitchens therefore supports the urgent global clean energy transition crucial for mitigating the climate crisis.

Electric cooking technology has become popular around the world. With superior performance, safety and efficiency, it is now the preference for many chefs. They not only benefit from a healthier working environment, but one that is safer, cleaner, more sustainable and cheaper to run.



THE GLOBAL CONTEXT:
WHAT'S HAPPENING AROUND THE WORLD?

Globally, the United Nations has devoted Sustainable Development Goal (SDG) 7 to transitioning to affordable, reliable, sustainable and modern energy. The success of many other global development goals depends on us achieving this target – including tackling climate change (SDG13) and air pollution (covered in SDGs 3.9, 7.2 and 11.6). Electrifying kitchens contributes to these goals.

Countries are now starting to introduce laws, policies and initiatives to accelerate this switch to electrical power.

In Australia, several states have initiatives to promote electrification, including requiring that most new developments in Victoria, Australian Capital Territory and a growing number of council areas – including the City of Sydney – are built to be gas free, or are provisioned to be all-electric. The federal government periodically offers energy-efficiency grants for businesses, which encompass electrifying commercial kitchens.

The European Union's Green Deal focuses on energy efficiency, improving building performance, and promoting renewable energy. The European Commission has a set of regulations around energy regulations and labelling for ovens, cooktops and range hoods, with reviews of the policy ongoing. The European Union's Energy Performance for Buildings Directive will also help catalyse the move to electric cooking. It aims to achieve a net-zero building stock by 2050 by accelerating energy renovations and setting new standards for energy performance in both new and existing buildings. This means new buildings need to be zero-emissions from 2030, and EU member states are required to create national renovation plans for existing buildings.

In the US, cities including Seattle, San Francisco and Denver, and states including New York and California are moving to restrict gas use in new buildings, despite facing political pushback.

In Latin America, Ecuador has launched a nationwide programme to subsidise the adoption of induction stoves. Colombia plans to support the switch from firewood to LPG (liquid petroleum gas) or electric cooking stoves. And Chile aims to ensure households in urban centres have access to low-emissions energy for heating and cooking by 2040.

In Tanzania, GCC member Modern Energy Cooking Services is helping the government implement national clean-cooking strategies, raising awareness of electric cooking and setting up electric kitchens in schools.

In 2022, Indonesia initiated a pilot project to transition households from liquid petroleum gas stoves to induction stoves.

Increasingly, companies across the world are also introducing electrification and emission-reduction commitments. For example, IKEA Netherlands stopped selling gas stoves from January 2024, in line with the Dutch government's goal to disconnect 1.5 million homes and buildings from gas by 2030.

To meet global sustainability targets, enhance people's wellbeing and future-proof buildings, transitioning to electric cooking is vital.

THE BENEFITS OF ELECTRIFICATION

Electrification benefits almost every facet of your business – from creating healthier working environments to reducing energy costs and more.

STAFF SAFETY AND WELLBEING

Installing induction cooktops makes your kitchen safer for staff, decreasing the risk of getting burned on a hot stove or open flame and reducing air pollution. It also lowers the temperature in the kitchen, making your staff more comfortable.

EFFICIENCY

Induction cooktops provide fast and even heat, allowing chefs to set temperatures more precisely, and adjust them quickly to much higher and lower temperatures than gas equivalents. They can also significantly cut cooking time – with induction appliances three times more efficient than gas stoves.

SUSTAINABILITY

The industry is increasingly aware of the environmental impact of how food is grown, processed, packaged and transported, and how much of it goes to waste. However, the type of energy used to cook food is often an afterthought.

To avoid exceeding the 1.5°C warming limit set by the UN, the world must urgently transition away from using fossil fuels – the biggest global contributor to climate change – in our buildings and businesses.

Gas cooking – while not a major contributor to climate change – is the leading source of emissions from buildings. And the gas we use for cooking is a fossil fuel – primarily methane – which has disastrous effects on our global climate.

Phasing out fossil gas in our kitchens is an important step toward a cleaner, safer future for everyone. For environmentally-conscious chefs, making the switch to electric appliances powered by renewables is a core part of the sustainability journey.

COST SAVINGS

Cooking with electricity can help reduce your running costs: it's more energy efficient, and equipment like induction stoves are much easier to clean, saving you time at the end of service. They also emit less heat and fumes, reducing cooling and ventilation costs. As they're easier and safer to use, training new chefs is quicker too.

The cost benefits of investing in electric appliances are significant, particularly over time. Electric equipment is far more advanced than gas equivalents, with faster cooking times, increased cooking power and efficiency, and improved energy saving features.

There are often large reductions in running costs across most equipment categories, even when electricity has a higher unit price than gas. Up-front equipment costs might be higher for electric equipment in some models, but this is more than offset by the reduced costs of:

- kitchen ventilation.
- labour for cleaning appliances and the chemicals used (which are estimated to be 50% cheaper than for gas appliances).
- maintenance.

Switching to renewables may also deliver longer term savings as renewable energy projects develop, the grid moves towards more renewable sources of energy, and the cost of electricity goes down.

At my own restaurant, cleaning time was reduced from 24 minutes for a gas cooktop to just 21 seconds to wipe down an induction cooktop, which saved over AU$30,000 in wages in cleaning alone in one year.

LUKE BURGESS, CHEF AND OWNER OF SCHOLÉ, AUSTRALIA

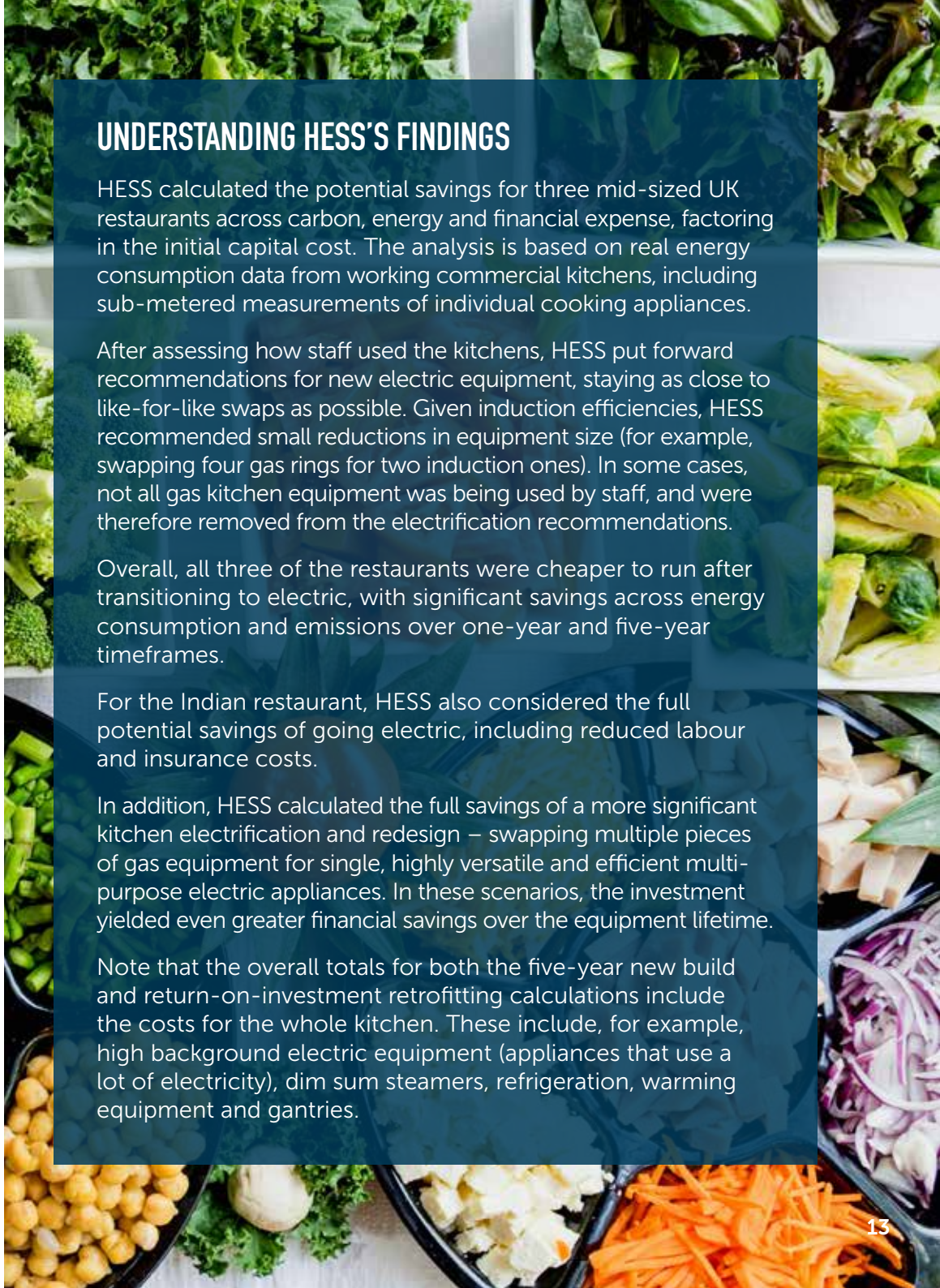
HOW MUCH COULD GOING ELECTRIC SAVE YOU?

The type and size of your restaurant and the equipment you choose can determine the time it takes to get a return on your investment. However, in many cases, going electric can save you money straight away, with the cost of the electrofit made back in the first few years.

While some costs are fixed, there are things you can do to make sure you get a rapid return on your investment. It's also important to consider the bigger picture when it comes to savings, and factor in the additional cost reductions of going electric beyond energy bills.

Hospitality Energy Saving & Sustainability (HESS) looked into the return on investment (ROI) of going electric for three food and beverage businesses in the UK: a Hall & Woodhouse gastropub, a Chinese takeaway and an Indian restaurant. It also ran a scenario showcasing savings for a fully customised kitchen designed to minimise energy and maximise space.

As commercial kitchens around the world use very similar types of cooking equipment, the performance improvements from electrification are broadly comparable. While energy prices and carbon intensities of energy vary between countries, the underlying efficiency gains of electric cooking technologies remain consistent.



UNDERSTANDING HESS'S FINDINGS

HESS calculated the potential savings for three mid-sized UK restaurants across carbon, energy and financial expense, factoring in the initial capital cost. The analysis is based on real energy consumption data from working commercial kitchens, including sub-metered measurements of individual cooking appliances.

After assessing how staff used the kitchens, HESS put forward recommendations for new electric equipment, staying as close to like-for-like swaps as possible. Given induction efficiencies, HESS recommended small reductions in equipment size (for example, swapping four gas rings for two induction ones). In some cases, not all gas kitchen equipment was being used by staff, and were therefore removed from the electrification recommendations.

Overall, all three of the restaurants were cheaper to run after transitioning to electric, with significant savings across energy consumption and emissions over one-year and five-year timeframes.

For the Indian restaurant, HESS also considered the full potential savings of going electric, including reduced labour and insurance costs.

In addition, HESS calculated the full savings of a more significant kitchen electrification and redesign – swapping multiple pieces of gas equipment for single, highly versatile and efficient multi-purpose electric appliances. In these scenarios, the investment yielded even greater financial savings over the equipment lifetime.

Note that the overall totals for both the five-year new build and return-on-investment retrofitting calculations include the costs for the whole kitchen. These include, for example, high background electric equipment (appliances that use a lot of electricity), dim sum steamers, refrigeration, warming equipment and gantries.

GASTROPUB

HESS calculated the ROI of electrification for a Hall & Woodhouse gastropub serving 180 covers a day. The pub is open for 12 hours a day, 365 days a year – a typical scenario for a pub or grill, including the majority of HESS clients.

While this retrofit involves replacing gas equipment with more efficient and sophisticated electric alternatives, the electric equipment chosen represents like-for-like swaps as closely as possible. In this example, unused equipment was removed but not replaced.

EQUIPMENT RECOMMENDATIONS

Based on usage analysis in the gas kitchen, HESS recommended:

- Swapping the twin-tank gas fryers for electric equivalents
- Replacing the salamander grill with a much more sophisticated electric unit featuring a plate sensor with adjustable height
- Swapping the gas chargrill for an electric model of the same surface area
- Replacing the 6x burner range with twin induction hob-top
- Not replacing the gas oven capacity due to lack of use and having spare capacity in the small electric combi-oven.

POTENTIAL SAVINGS

The energy consumption, carbon emissions and energy savings of the electrification are shown in the table below:

BASELINE	ELECTRIFICATION	ENERGY CONSUMPTION (KWH/YEAR)	CARBON EMISSIONS ($KGCO_2E$/YEAR)	ENERGY COST (£/YEAR)
3x twin-tank gas fryers	3x twin-tank electric fryers	-70,299 (-64%)	-13,097 (-65%)	+£2,175 (+28%)
1x gas salamander grill	1x electric salamander grill	-14,058 (-87%)	-2,585 (-87%)	-£590 (-52%)
1x gas 900mm chargrill	1x electric 900mm chargrill	-26,981 (-40%)	-5,181 (-42%)	+£5,507 (+116%)
6x burner range-oven	1x induction twin-ring hob-top	-190,749 (-99%)	-34,911 (-99%)	-£12,998 (-96%)
Ventilation required dropped from 2.75 m^3/s to 1.82 m^3/s		-11,731 (-34%)	-2,076 (-34%)	-£2,933 (-34%)
Totals		**-313,817 (-64%)**	**-57,851 (-65%)**	**-£8,839 (-17%)**

While there are slight increases in energy costs for some pieces of equipment, these are offset by the significant savings from replacing the burner range-oven with an induction twin-ring hob-top.

The benefits of this newly electrified kitchen are:

£8,839
saved in energy costs per year - a 17% reduction

64%
fall in energy consumption

65%
cut in carbon emissions

34%
reduction in ventilation required

HESS also analysed costs in a new building over five years for a 'business as usual' fit-out with gas appliances compared to an electrified set-up, showing the following savings:

	ENERGY CONSUMPTION (KWH/5-YEAR)	CARBON EMISSIONS ($KGCO_2E$/5-YEAR)	EQUIPMENT CAPITAL COST	ENERGY COST + CAPEX (£/5-YEAR)
Baseline (gas)	2,432,869	442,143	£66,903	£327,043
Electrified	863,783	152,890	£63,949	£279,894
% Change	-65%	-65%	-4%	-14%
Difference (actual)	**-1,569,087**	**-289,254**	**-£2,954**	**-£47,149**

The monetary savings of choosing electric are enormous compared to gas – nearly £50,000 over five years.

When considering investment in new electric equipment as part of a retrofit (the baseline has only running costs and no initial capital expenditure – CAPEX – as it already exists, but the proposed includes running costs and the investment in new equipment), we see the capital costs paid back in year three:

YEAR	BASELINE RUNNING COST (£)	PROPOSED RUNNING COSTS + 1ST YEAR CAPEX	DIFFERENCE (£)
1	£52,028	£65,344	+£13,316
2	£104,056	£108,533	+£4,477
3	**£156,084**	**£151,722**	**-£4,362**
4	**£208,113**	**£194,911**	**-£13,201**
5	**£260,141**	**£238,101**	**-£22,040**
6	**£312,169**	**£281,290**	**-£30,879**
7	**£364,197**	**£324,479**	**-£39,718**
8	**£416,225**	**£367,668**	**-£48,557**
9	**£468,253**	**£410,857**	**-£57,396**
10	**£520,281**	**£454,046**	**-£66,235**

CHINESE RESTAURANT

This second site HESS analysed is a Chinese takeaway, with a small space for in-house dining, handling around 150 covers a day. It is open for five and a half hours a day (from 5pm to 10.30pm), plus two hours pre-opening for preparation, 363 days a year. Overall, these shorter operating hours mean slightly smaller but still significant potential financial and emissions savings compared to the gastropub.

These calculations are based on an electrification guided and analysed by HESS in 2022, brought up to date with September 2025 prices.

As before, this retrofit includes replacing gas equipment with more efficient but still like-for-like electric options, without substantial changes to equipment or kitchen design.

EQUIPMENT RECOMMENDATIONS

Based on usage analysis in the gas kitchen, HESS recommended:

- Swapping the twin-tank gas fryers for electric equivalents
- Replacing the gas wok range with induction wok rings
- Moving from a gas griddle to an induction griddle
- Reducing hobs/boiling tops from 4x burners to 2x induction rings (capacity/demand found them to be over-specified – or more than necessary). HESS noted that this change is quite common, with 60-70% of sites able to make it without drawbacks.

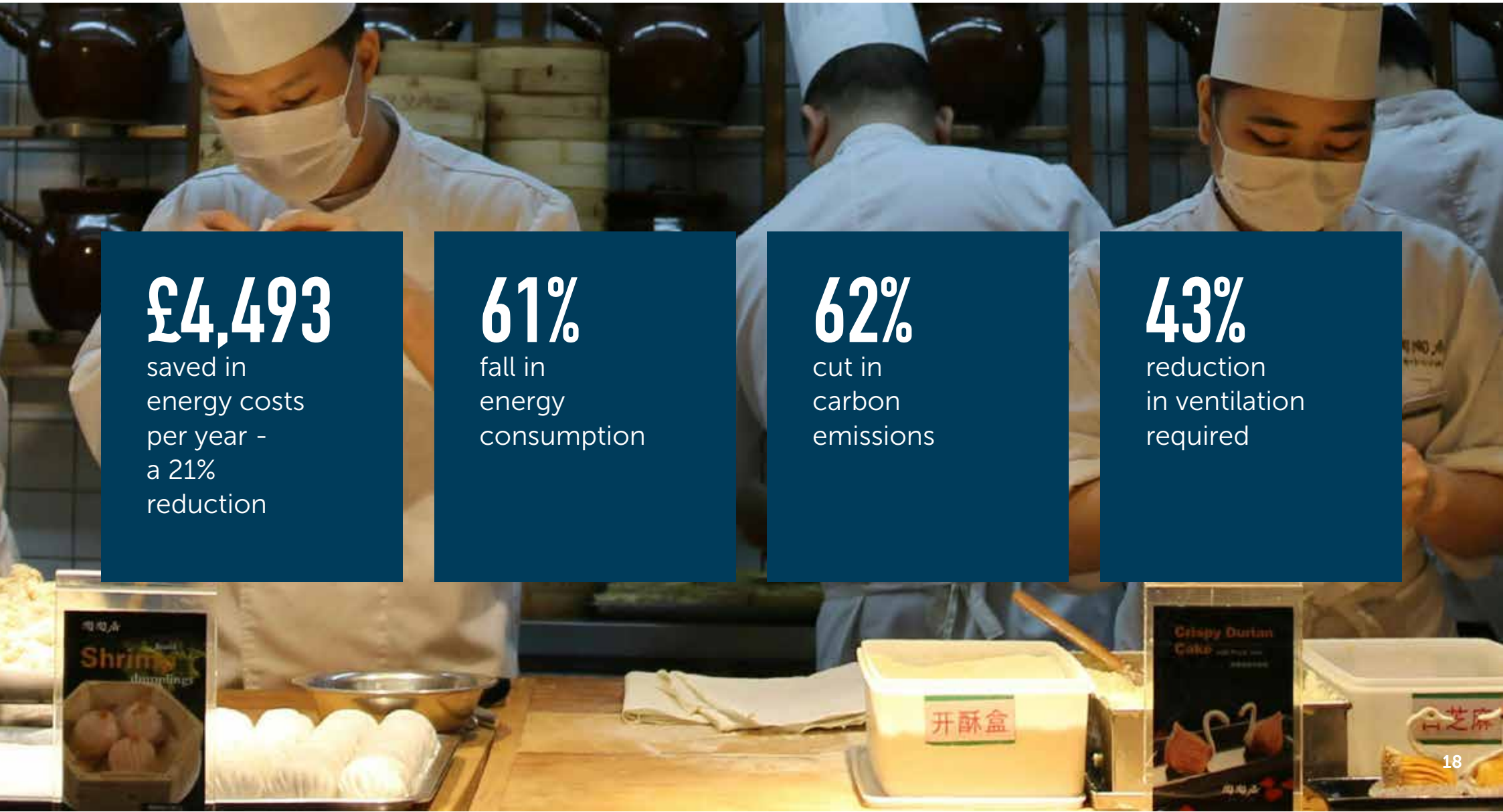
POTENTIAL SAVINGS

The energy consumption, carbon emissions and energy savings of the electrification are shown in the table below:

BASELINE	ELECTRIFICATION	ENERGY CONSUMPTION (KWH/YEAR)	CARBON EMISSIONS ($KGCO_2E$/YEAR)	ENERGY COST (£/YEAR)
3x twin-tank gas fryers	3x twin-tank electric fryers	-17,288 (-59%)	-3,236 (-60%)	+£995 (+48%)
Chinese gas wok range (3x burners)	3x induction wok rings	-70,437 (-92%)	-12,926 (-92%)	-£3,754 (-70%)
1x gas griddle	1x induction griddle	-2,087 (-43%)	-398 (-45%)	+£344 (+102%)
4x burner hob-top	2x induction hob-top	-12,705 (-92%)	-2,331 (-92%)	-£693 (-72%)
Ventilation required dropped from 2.45 m^3/s to 1.39 m^3/s		-5,537 (-43%)	-980 (-43%)	-£1,384 (-43%)
Totals		**-108,054 (-61%)**	**-19,871 (-62%)**	**-£4,493.11 (-21%)**

While there is a slight increase in energy costs from the fryers and griddle, there are large energy savings made through the induction wok rings and hobs.

The benefits of this newly electrified kitchen are:



£4,493
saved in energy costs per year - a 21% reduction

61%
fall in energy consumption

62%
cut in carbon emissions

43%
reduction in ventilation required

In terms of initial capital expenditure (CAPEX) and operational expenditure (OPEX) for this restaurant type, choosing electric is cheaper from day one. The year-five costs are:

	ENERGY CONSUMPTION (KWH/5-YEAR)	CARBON EMISSIONS ($KGCO_2E$/5-YEAR)	EQUIPMENT CAPITAL COST	ENERGY COST + CAPEX (£/5-YEAR)
Baseline (gas)	886,822	160,696	£70,253	£179,357
Electrified	346,552	61,340	£68,554	£155,120
% Change	-61%	-62%	-2%	-14%
Difference (actual)	**-540,270**	**-99,356**	**-£1,699**	**-£24,237**

When considering investment in new electric equipment as part of a retrofit, we see the capital costs paid back in year four.

YEAR	BASELINE RUNNING COST	PROPOSED RUNNING COSTS + 1ST YEAR CAPEX	DIFFERENCE
1	£21,821	£32,117	+£10,297
2	£43,641	£49,445	+£5,804
3	£65,462	£66,773	+£1,311
4	**£87,283**	**£84,100**	**-£3,183**
5	**£109,103**	**£101,428**	**-£7,676**
6	**£130,924**	**£118,755**	**-£12,169**
7	**£152,745**	**£136,083**	**-£16,662**
8	**£174,566**	**£153,411**	**-£21,155**
9	**£196,386**	**£170,738**	**-£25,648**
10	**£218,207**	**£188,066**	**-£30,141**

INDIAN RESTAURANT

Thirdly, HESS looked at an Indian restaurant serving around 90 covers a day. It is open for seven hours a day, plus two and a half hours preparation time (2.30pm to midnight), 363 days per year.

Overall, this case proved the least valuable in terms of ROI of the three case studies. HESS considers it the 'worst-case scenario' of all kitchens looking to transition to electric. Even so, there are still substantial savings to be made, especially when looking beyond energy costs and including the full savings associated with going electric.

EQUIPMENT RECOMMENDATIONS

Based on usage analysis in the gas kitchen, HESS recommended:

- Swapping the twin-tank gas fryers for electric equivalents
- Replacing the salamander grill with an electric unit
- Moving from a gas griddle to an induction griddle
- Replacing the 4x burner gas hob-top with a 2x induction hob-top
- Replacing the gas bratt pan with an electric equivalent.

POTENTIAL SAVINGS

The energy consumption, carbon emissions and energy savings of the electrification are shown in the table below:

BASELINE	ELECTRIFICATION	ENERGY CONSUMPTION (KWH/YEAR)	CARBON EMISSIONS ($KGCO_2E$/YEAR)	ENERGY COST (£/YEAR)
2x twin-tank gas fryers	2x twin-tank electric fryers	-27,189 (-64%)	-5,065 (-65%)	+£841.07 (+28%)
1x gas salamander grill	1x electric salamander grill	-8,155 (-87%)	-1,500 (-87%)	-£342.19 (-52%)
1x gas griddle	1x induction griddle	-32,194 (-92%)	-5,906 (-93%)	-£1,773.36 (-73%)
4x burner hob-top	2x induction hob-top	-18,524 (-87%)	-3,406 (-87%)	-£788.98 (-53%)
1x 80l gas bratt pan	1x 80l electric bratt pan	-16,351 (-59%)	-3,059 (-60%)	+£893.05 (+46%)
Ventilation required dropped from 2.76 m^3/s to 1.97 m^3/s		-5,759 (-29%)	-1,019 (-29%)	-£1,439.78 (-29%)
Totals		**-108,173 (-49%)**	**-19,956 (-50%)**	**-£2,610 (-8%)**

The benefits of this newly electrified kitchen are:

£2,610
saved in energy costs per year - an 8% reduction

49%
fall in energy consumption

50%
cut in carbon emissions

29%
reduction in ventilation required

In terms of initial CAPEX and OPEX for this restaurant type, the costs comparison (gas vs electric) for year five are:

	ENERGY CONSUMPTION (KWH/5-YEAR)	CARBON EMISSIONS ($KGCO_2E$/ 5-YEAR)	EQUIPMENT CAPITAL COST	ENERGY COST + CAPEX (£/5-YEAR)
Baseline (gas)	1,108,442	200,239	£67,843	£222,788
Electrified	567,579	100,461	£72,284	£214,178
% Change	-49%	-50%	+7%	-4%
Difference (actual)	**-540,863**	**-99,778**	**+£4,441**	**-£8,610**

In this example, the electric equipment costs around £4,440 more than its gas equivalents. However, due to reduced energy costs, we still see a £8,610 saving by year five.

One of the main issues with this site is that the bratt pan and fryer aren't as efficient as other equipment such as induction hobs, wok rings or griddles. This results in higher energy costs and smaller financial gains.

Overall, this restaurant is still cheaper to run when converted to electric (saving £2,610 per year in energy costs – an 8% reduction). But combining this modest annual energy cost saving with the expense of specialist electric equipment, we don't see a ROI until year 10 for a retrofit looking only at energy costs and equipment CAPEX. These comparative savings would, however, improve with possible gas energy price rises.

YEAR	BASELINE RUNNING COST	PROPOSED RUNNING COSTS + 1ST YEAR CAPEX	DIFFERENCE
1	£30,989	£53,299	+£22,310
2	£61,978	£81,678	+£19,700
3	£92,967	£110,057	+£17,089
4	£123,957	£138,436	+£14,479
5	£154,946	£166,815	+£11,869
6	£185,935	£195,194	+£9,259
7	£216,924	£223,573	+£6,649
8	£247,913	£251,951	+£4,038
9	£278,902	£280,330	+£1,428
10	**£309,891**	**£308,709**	**-£1,182**

While electrifying the Indian restaurant may appear less lucrative at first, there are still substantial savings to be made when looking at the full picture of a gas-free kitchen.

CATEGORY	ANNUAL SAVING
Cleaning time: Cleaner, combustion-free cooking means fewer combustion products. Gas equipment burners, flame channels, drip trays and burner grates all collect grease, carbon and soot deposits with gas/flame cooking. In an electric kitchen, staff save hours per week on cleaning, surfaces stay cleaner and ventilation systems work less hard.	£5,104.68
Chemical costs: With fewer volatilised fats in the air, electric cooking leads to reduced greasy deposits on every kitchen surface, reducing the need for cleaning chemicals.	£344
Equipment durability: Electrification cuts service disruption. With no gas lines or flues, maintenance is reduced, gas checks are eliminated, and kitchens are less likely to shut down from gas interlock failures (a type of safety system). While electric-only doesn't completely avoid disruption from power cuts, it minimises the chances. Over time, electric equipment lasts longer and supports more consistent product delivery.	£1,742
Insurance and administrative costs: Electric kitchens remove the risk of gas leaks, open flames and carbon monoxide poisoning – and many insurers now reward this with lower premiums. Just as importantly, electrification aligns with compliance frameworks like CSRD, SECR, CBAM, and upcoming gas bans, helping operators avoid stranded assets and simplifying ESG reporting.	£262.50
Energy pricing: By eliminating gas, this kitchen avoids exposure to volatile fossil fuel prices. It can take advantage of flexible electricity tariffs and grid flexibility, with even more value to come from solar, storage or demand-side response participation – where businesses are paid to shift electricity use during peak demand (these incentives are not included in this calculation).	£1,033
Total additional savings	**£8,486.18**

When looking at the full picture, we see a total saving of £11,100 per year. Despite the modest energy savings and initial equipment costs, the restaurant could have saved almost £60,000 by year five.

	ENERGY COSTS (£/YEAR)	ADDITIONAL GAS-RELATED COSTS (£/YEAR)	ENERGY + CAPEX + ADDITIONAL GAS-COSTS (£/5-YEAR)
Baseline (gas)	£30,989	£8,486.18	£273,706
Electrified	£28,379	£0	£214,178
% Change	-8%	-100%	-22%
Difference (actual)	**-£2,610**	**-£8,486.18**	**-£59,527**

CUSTOMISED KITCHENS

In all the previous examples, HESS calculated the costs of swapping gas equipment to electric equivalents as close to like-for-like as possible, recommending efficiencies or downsizing where appropriate. However, advances in electrical kitchen equipment mean that further space and energy savings can be made by switching from multiple pieces of gas equipment to single, highly versatile and efficient multi-purpose electric appliances.

In this final example, a quick-service restaurant, exactly such swaps – from multiple gas appliances to a single piece of electric equipment – were made. These included:

Multi-function cooking stations

Oven + Hobs | Twin basket fryer | Griddle | Multi-function cooking station

Rapid cook ovens

Salamander | Microwave | Clamshell grill | Rapid cook oven

HESS recommended:

- Replacing the salamander, microwave and clamshell grill with a rapid-cook oven, which performs all three functions.
- Swapping the deep fryer and griddle for a multi-function cooking station which can fry, steam, grill and boil.
- Changing the wide gas-fired 10-grid combi oven to a double-stack 2x6 tray electric combi-oven, which provides more functions, a more consistent product and better temperature control. This setup also provides more oven space to absorb the capacity from the gas range-oven, yet takes up less bench space.
- Switching the additional hob capacity from the range-oven with an induction cooktop.
- Reducing the extract canopy from 4.4 metres in length to 3.6 metres, through the more efficient kitchen design, with an associated flow-rate reduction of 29%.

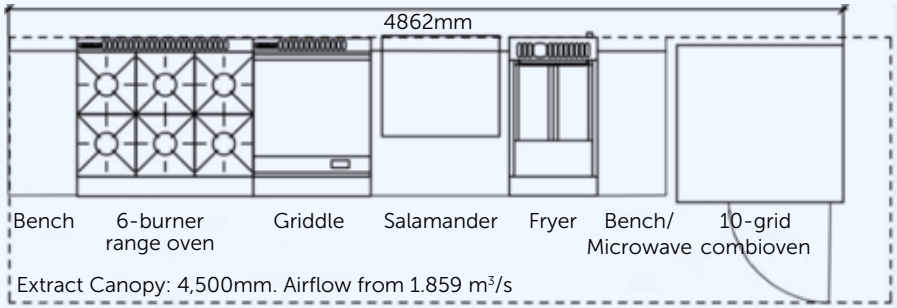
This approach is tailored specifically to quick service restaurants (QSRs), where menus are consistent, cooking processes are streamlined, and peak demand periods are predictable.

For example, replacing the salamander, microwave and clamshell grill with a rapid-cook oven (such as a high-speed convection-microwave-hybrid TurboChef) increases cooking throughput (meals per hour) for the typical QSR menu. Many of these ovens can deliver faster and more consistent results than conventional equipment, especially when pre-programmed for common items. While the salamander might only be able to cook between two and four grilled products in five minutes, the TurboChef could cook 10 items in three minutes. They also take up less space, improve energy efficiency and consolidate cooking steps.

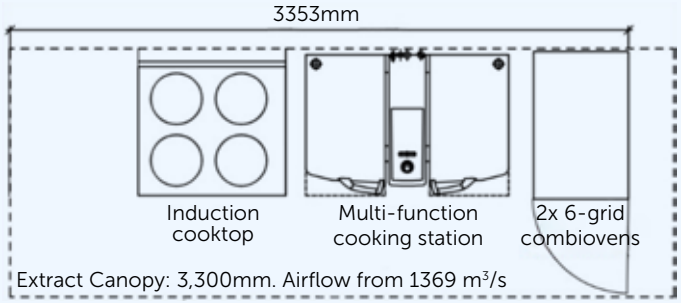
Similarly, replacing the griddle and fryer with a multi-function cooking station enables operators to handle a diverse set of cooking tasks simultaneously – frying, boiling, pan-grilling and even low-temperature cooking – all from a single unit if they have the right model. These units are designed with batch cooking and fast recovery times in mind, making them well suited to high-volume operations with limited menus. They also self-clean with a water connection, so swapping modes every hour isn't a challenge.

By selecting the right configuration of modular, programmable electric equipment, it is possible to maintain or even improve production efficiency while significantly reducing total energy use, equipment footprint, and cleaning burden. That makes it an ideal 'energy-minimised' strategy for QSRs.

Gas set up



Electric set up

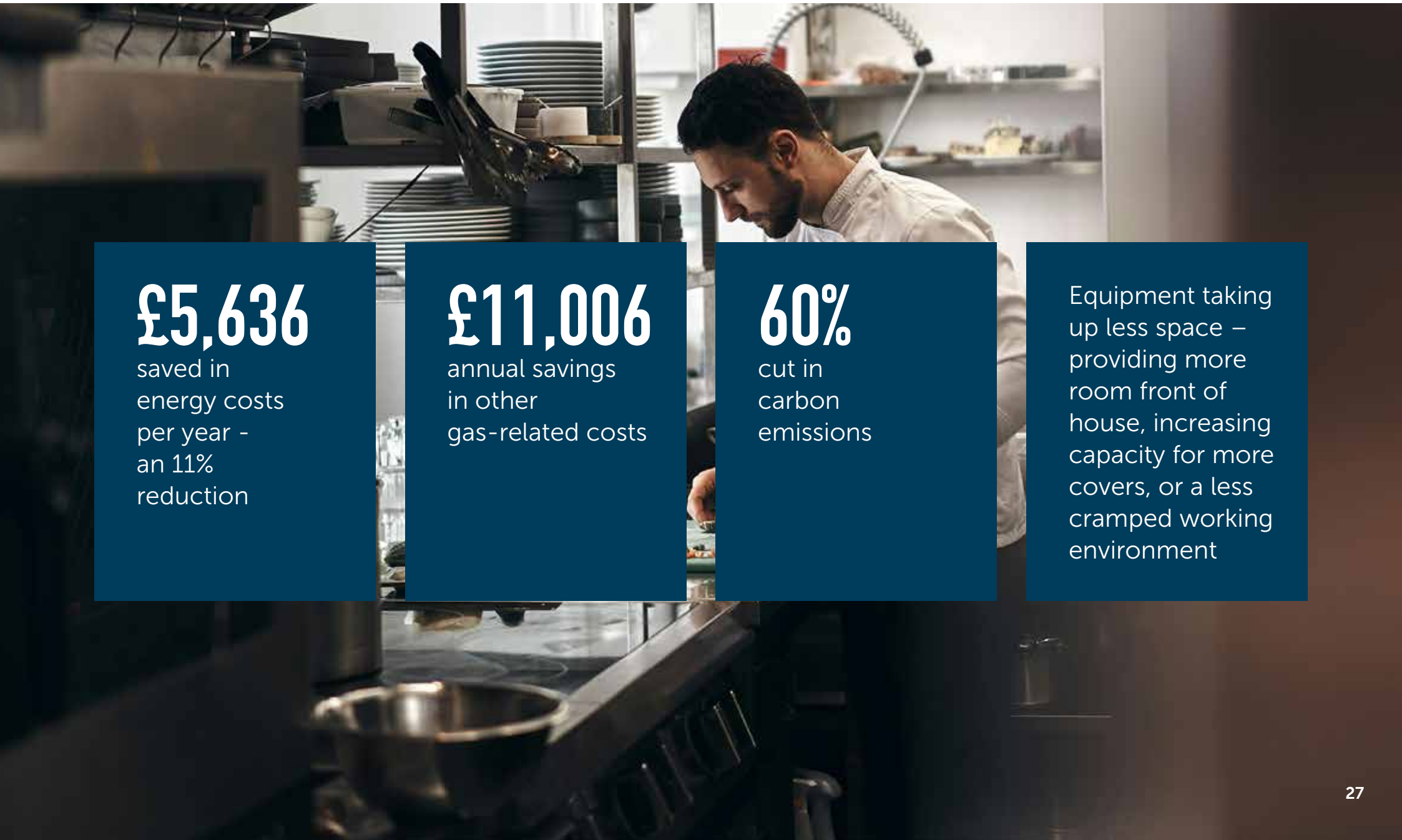


Estimated costs for this equipment are:

CAPITAL COSTS	BASELINE	ELECTRIFICATION
Twin-basket deep-fat fryer	£3,799.99	-
6x burner range-oven	£1,749.99	-
Griddle	£3,489.99	-
Salamander	£2,519.00	-
Microwave	£1,829.99	-
Clamshell grill	£229.99	-
Combi-oven(s)	£7,099.99	£11,139.98
Rapid-cook oven	-	£11,849.99
Induction cooktop	-	£1,409.99
Multi-function cooking station	-	£10,359.99
Total	**£20,718.94**	**£34,759.95**

HESS calculated the full savings that can be made by a QSR switching to a customised electric kitchen – which go well beyond energy costs alone. This includes reductions in equipment cleaning costs and time, cuts in insurance premiums and space-saving efficiencies, allowing the business to handle more covers.

The benefits of this newly electrified kitchen are:



£5,636
saved in energy costs per year - an 11% reduction

£11,006
annual savings in other gas-related costs

60%
cut in carbon emissions

Equipment taking up less space – providing more room front of house, increasing capacity for more covers, or a less cramped working environment

Overall, while the electric equipment is around £14,040 more expensive (+68%) than gas equivalents, this initial increase is saved within the first year of operation. By year five, almost the entire additional expense of the electric equipment is saved through reductions in gas-related costs alone.

	ENERGY CONSUMPTION (KWH/5-YEAR)	CARBON EMISSIONS ($KGCO_2E$/5-YEAR)	ENERGY COST (£/5-YEAR)	CAPITAL COSTS	OTHER GAS-RELATED COSTS	TOTAL COSTS (£/5-YEAR)
Baseline (gas)	2,127,926	386,183	£243,870	£20,719	£11,007	£319,622
Electrified	866,205	153,318	£216,551	£34,760	£0	£251,311
% Change	-59%	-60%	-11%	+68%	-100%	-21%
Difference (actual)	**-1,261,721**	**-232,864**	**-£27,319**	**+£14,041**	**-£11,007**	**-£68,311**

In total, by implementing these efficiencies and eliminating gas-related costs, the site could save around £68,300 over five years. This is on top of the many other less quantifiable benefits of installing a customised electric kitchen – including a more comfortable and healthy working environment for staff, as well as a building that complies with future regulation.

© Luke Burgess

If cooking is about control of heat, induction is the ultimate control of heat. I was very skeptical, and the more I used it, the more I liked it. That control. The cleanliness of it, and most importantly, no one likes to work in a hot kitchen. I've never looked back.

RODNEY DUNN, CO-FOUNDER AND EXECUTIVE CHEF, THE AGRARIAN KITCHEN, AUSTRALIA

CASE STUDY

GOING ELECTRIC AT WAHACA

Wahaca is a UK restaurant group selling Mexican-inspired street food, and is a three-star Food Made Good-certified business. Wahaca embarked on the journey to electrification several years ago, after its first full-scope carbon-footprint analysis revealed that switching to electric cooking equipment could reduce its carbon emissions. In 2025, it opened its first fully electric site in London and is now working to retrofit its existing sites, replacing gas-powered equipment with electric alternatives. Carolyn Lum, Head of Sustainability, told us how the company is transitioning to electricity.

GETTING STARTED

Carolyn's first step was to consult Wahaca's kitchen equipment suppliers, who knew the business's needs well. Then, working with Wahaca's executive chef and maintenance manager, they drew up a list of necessary new equipment and calculated the expected return on investment. This involved estimating costs based on kitchen operating times, capacity and running costs, and comparing the energy use of existing gas equipment with the new electric alternatives.

Crucially, Carolyn made sure key stakeholders – from the executive chef and maintenance manager to the kitchen team and Wahaca's co-founder – were on board from the start. To get buy-in from the board, Carolyn set out how the switch would reduce emissions, promote renewable energy use and keep the company competitive.

CHALLENGES AND SOLUTIONS

Carolyn and the team had to overcome several challenges along the way. The first was the lack of energy monitoring for individual equipment. To get round this, they made cost estimates based on informed assumptions rather than exact data.

THE BENEFITS

Wahaca's chefs have found the electric ovens more reliable than gas ones, reducing maintenance costs and increasing cooking capacity. Removing gas at the new fully electric site has also eliminated standing charges, adding to the savings.

Wahaca's transition to cooking with electricity has required careful planning, collaboration and persistence. Despite challenges, the company expects positive results for the environment and their bottom line.

It's adaptable to most cooking methods. We have found our induction stoves help us cook better as they're capable of consistently applying heat and allow us to better control the temperature and manage cooking time.

MASAKAZU IWASAWA, REPRESENTATIVE AND CHEF-OWNER OF PIZZERIA GITALIA FILIPPO, TOKYO, JAPAN

HOW TO ELECTRIFY YOUR KITCHEN

BEFORE YOU GET STARTED

Sometimes replacing gas equipment with electric alternatives can be relatively simple because all the infrastructure is already in place and your electrical supply has enough capacity.

However, this isn't always the case. Before getting started, check with your landlord, maintenance manager and energy supplier to determine what can be achieved on your site.

PRE-TRANSITION CHECKLIST

- Get permission from your landlord to remove the gas infrastructure and switch to fully electrical kitchen equipment.
- Check what equipment your landlord is happy for you to leave in place if you vacate the site in future.
- Find out whether your landlord is willing to contribute financially to the project, even partially.
- Check with your kitchen consultant, landlord or equipment supplier what financial rebates may be available to help fund the transition
- If there are other tenants on the site, check whether they would be interested in getting involved with the project.

RENEWABLE ENERGY CHECKLIST

- Check whether your energy is coming from a renewable source. If not, explore the option to switch to cleaner energy. Don't worry if it's not possible now – you're still setting yourself up for a fossil-fuel-free future by electrifying your kitchen.

EIGHT STEPS TO ELECTRIC

STEP 1:
ASSEMBLE YOUR TRANSITION TEAM

Ensuring all the right people are involved from the beginning is key to successfully going electric. This is likely to include your senior management team, your executive chef, your property or maintenance manager, your sustainability manager (if you have one) and your landlord.

Talk to your kitchen equipment suppliers. They'll know how your business works and will be able to suggest appliances that suit your needs. Consider getting additional expert advice from a kitchen designer or architect.

STEP 2:
RESEARCH EQUIPMENT OPTIONS

There are lots of equipment options for foodservice businesses looking to transition to electric cooking – from induction stoves, electric ovens and griddles to deep fryers, induction woks, rice cookers and tandoors.

Work with your key stakeholders to identify what you require for your new kitchen. Think about the cooking techniques you'll need to cater for (for example, grilling, roasting or frying), the amount of covers you need to produce each service and the layout of the space.

As electrical appliances are more energy-efficient than gas versions, focus on your output needs, rather than simply doing a like-for-like equipment swap (see page 24 for details on how multi-function equipment can save space). For example, work out how many induction hotplates are equivalent to the number of gas burners you currently use – not how many you have. This will be fairly easy to do if you have meters on your existing appliances. If not, you'll need to estimate your use.

Talk to your kitchen supplier, kitchen designer or architect and visit trade fairs to research specific equipment options. To fight waste, consider buying your equipment second hand or leasing it from your supplier.

If choosing induction stoves, you'll also need to look into induction-compatible cookware. Induction cooking works by creating a magnetic field, so you'll need magnetic cookware. Cast iron, steel or stainless-steel pans with an iron base or iron core will work, while glass, copper or aluminium pans typically will not.

Increasingly, there is energy-monitoring technology that can be integrated into your equipment choices to help manage your electricity demand. Make sure you ask your suppliers about these.

Check your site has enough electrical capacity for the equipment you're thinking of installing. If not, explore practical options first – such as reviewing equipment sizing, phasing upgrades, improving load management, or installing demand-control systems (see step 6-7). In some cases, particularly for large new-build sites, infrastructure upgrades such as increasing your incoming supply or installing a substation may be required, but these are typically last-resort solutions due to cost and timescales.

Contractors often overestimate the energy requirements of electric kitchens, so working with designers or manufacturers who specialise in electric kitchens may be a game-changer in determining your anticipated demand.

EQUIPMENT TIPS

The cheapest product is not necessarily the best choice. Its total long-term cost will also depend on things like electricity use, water consumption, durability and reparability, so try and take these factors into account.

Look out for the equipment's energy-efficiency rating. Many countries have energy labelling requirements, such as Energy Star in the USA, or the Energy Label in the EU.

If possible, test equipment before installing it permanently. A quick way of doing this is by testing equipment in a restaurant already using it – ask your kitchen supplier if they can organise this for you. Alternatively, you may be able to install the appliance temporarily on your site to test it over the course of a few months.

If you're looking at new suppliers, make sure they are reputable and their values match your own. Check what guarantees, warranties and after-sales service they offer.

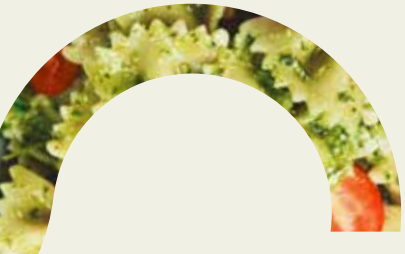
STEP 3:
DECIDE ON YOUR BUDGET AND TIMELINE

Drawing on your research into equipment and exchanges with your project team and landlord, set your budget.

If your landlord is open to this option, collaborate with them to share expenses. Make sure to cover costs like removing existing gas infrastructure in your planned budget.

Check if there are any public or private grants available to help you finance your project. For example, some countries offer rebates on purchases of electrical items.

It may not be possible for you to fully electrify all at once. If this is the case, try to focus on changing the most used or energy-hungry items first and plan to tackle the rest over the following few years.



STEP 4:
DESIGN YOUR KITCHEN LAYOUT

Getting expert advice from an architect or kitchen designer can help manage the overall design and ensure the kitchen will work how you want.

Work with a licensed electrician with experience in electric kitchens to determine your chosen equipment's energy requirements – including calculating if there are potential upgrades to the supply or infrastructure you might need.

Finalise the kitchen layout and equipment selection early in the process before you move to detailed technical design and construction drawings. You will need your list of equipment and associated mechanical and electrical engineering proposals to make sure you comply with all relevant regulations. An architect or kitchen designer can help ensure your design meets these requirements.

Get your design signed off by your landlord, senior management and, if relevant, your local authority. Once you have this approval, construction can commence.

STEP 5:
OVERSEE CONSTRUCTION AND INSTALLATION

If you're retrofitting a restaurant that uses gas, all the gas equipment and hardware will need to be removed. The gas line may also need to be decommissioned, meaning you no longer have to pay standing charges, saving you even more money. This could take some time, so make sure you factor it in.

Oversee the installation of your new electric kitchen. Extras like substations, phasers and additional sockets may also need to be installed.

STEP 6:
TRAIN YOUR TEAM

Get your team up to speed on how to use the new equipment, including tweaks to cooking techniques. Changing from gas to electric often involves new timings, techniques and habits, so it's vital staff feel informed and empowered.

Their buy-in helps maximise the savings associated with the transition to cooking with electricity.

Effective behaviour-change initiatives can include: building energy savings into staff KPIs and bonuses; focusing on just the top 10 areas of energy waste to avoid overwhelm; and encouraging teams to take 10 small actions for a 10% saving. Campaigns that speak to your staff's motivations, pride and ownership can make all the difference. Make sure your employees understand your sustainability goals and how the new equipment fits into your commitment.

STEP 7:
GET SMART ON ENERGY CONSUMPTION

Set goals on energy use with your team. Monitor your use over time to ensure you're on track and share your progress with staff.

Check whether your supplier can provide any additional support to improve your energy efficiency and reduce your costs. For example, ask whether they have tools to help you track your energy consumption, and if they offer guidance about how to reduce your energy use or provide alerts about unusual peaks in your usage.

Make sure you and your team are managing your energy load – it's key to recovering your costs faster.

Top tips for load management

- Train your team to:
  - stagger startup times to avoid switching on all major appliances at once
  - use 'eco' or standby modes where available
  - switch off idle kit between services
- Install power-optimisation systems to smooth peak demand and avoid unnecessary upgrades
- Consider an energy audit from an experienced professional; you may be able to reduce your consumption by 10-20% without further investment

MANAGING ENERGY SPIKES WITH KITCHEN LOAD-BALANCING SYSTEMS

Every business has a 'maximum capacity' of electrical load. A key barrier to moving from gas to electric cooking is whether your calculated kitchen energy demand is close to your theoretical maximum load. But electrifying your kitchen often doesn't have to mean upgrading your site's power supply.

In fact, most commercial kitchens operate well below their theoretical maximum loads. In a recent review of hundreds of UK kitchens, over 70% had no issues with capacity versus demand, with plenty of headroom for increased electrical load for decarbonisation. The key is not more power, but smarter use of what you already have.

The real challenge isn't always your total energy use. It's short bursts of high demand – or energy spikes – with poor timing and behaviours causing unnecessary peaks. Load curve data from UK restaurant kitchens shows clear spikes during preparation and service periods – especially when fryers, hobs and combi-ovens are first switched on and/or switched on at the same time.

These spikes can exceed the site's available electrical capacity – even if usually only for a few minutes – triggering supply issues or costly infrastructure upgrades. This is where power optimisation systems like Sicotronic can help. These systems use a combination of smart hardware and software to monitor when appliances are calling for power. They delay or stagger peak delivery by just a few seconds when needed, keeping kitchens below their electrical threshold without affecting service.

Sicotronic data can also reveal if any kit has been left on standby for hours, helping prompt changes in staff behaviour that can cut energy use dramatically.

In Australia, Germany and parts of the US, exceeding your site's maximum demand, even for just a few minutes, can lock you into a higher tariff for weeks, months or even a year. These demand-based pricing systems penalise spikes harshly, meaning load management isn't just smart – it's essential. Power-optimisation systems help avoid this by keeping peak loads within limits, protecting operators from costly surprises on their utility bills.

STEP 8:
TELL YOUR CUSTOMERS

Now you have a new electric kitchen, it's time to tell your customers! Add it to the sustainability section of your menu, website or other promotional materials. The GCC has suggested language on this – so get in touch to request the promotion pack.

CASE STUDY

GOING ELECTRIC AT ORIGAMI

We talked to Chef Yoshihiro Sakuma at All Day Dining ORIGAMI about this journey towards electrification and the benefits he's seen for ORIGAMI, based in The Capitol Hotel Tokyu, Tokyu, Japan. It is also a three-star Food Made Good-certified business.

HOW DID THEY DO IT?

In 2010, during a major hotel renovation, ORIGAMI replaced gas-powered kitchen appliances with electric induction stoves. This decision was driven by several factors: reducing carbon dioxide emissions, improving heat management for a more comfortable work environment, lowering operational costs, and enhancing cooking precision through precise temperature control.

The electric stoves also allowed for simpler, more efficient cooking processes and smaller exhaust ducts, contributing to energy conservation.

CHALLENGES AND SOLUTIONS

The transition required careful planning, focusing on both human welfare and operational efficiency. While the initial cost of the new equipment posed a challenge, the long-term benefits of reduced running costs and improved kitchen productivity made it a worthwhile investment. Chef Sakuma and his team had to adapt to the different dynamics of electric cooking, but they quickly appreciated the reduced risk of burns and injuries.

THE BENEFITS

The switch to electric cooking brought significant benefits, including shorter heating times and more efficient heat conduction.

WANT TO GO FURTHER?

Get a 360° understanding of your impact

Sign up to the Food Made Good Standard – the global sustainability certification designed to help you measure the sustainable impact of your restaurant and take practical action. Based on a set of rigorous, measurable criteria, the Standard takes a big-picture, holistic view of what sustainability should mean for the food and beverage industry, across three focus areas: Sourcing, Society and Environment.

Undertaking this work means a restaurant is not only minimising water use, food waste and carbon emissions, but also implementing sustainable sourcing policies, designing menus that are good for both people and planet, getting involved in the local community and treating staff with compassion and dignity. The Food Made Good Standard aims to encourage, support and recognise sustainability practices across the hospitality industry worldwide. To learn more about how the Standard can benefit your business, get in touch with The SRA at standard@thesra.org.

Learn more from the Global Cooksafe Coalition

If you're looking for more information on the benefits of electric cooking, as well as advice from chefs from around the world, visit the Global Cooksafe Coalition's website, sign up to the newsletter, or get in touch to find out more contact@cooksafecoalition.org.

Earl Stoneham Wagyu, Sunflower Seed Satay & Wild Garlic by John Chantarasak of AngloThai

THE SUSTAINABLE RESTAURANT ASSOCIATION

GLOBAL COOKSAFE COALITION

HOSPITALITY ENERGY SAVING & SUSTAINABILITY