



HOSPITALITY  
ENERGY SAVING  
& SUSTAINABILITY



# Managing Scope 1 & 2 Emissions: Saving the NHS £Millions

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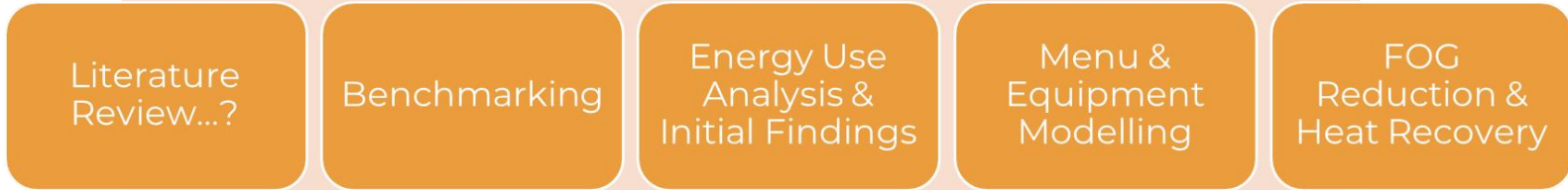
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# Why Am I Here?



**NET ZERO & SUSTAINABILITY**  
Whether it's understanding your baseline, science-based target setting or developing a credible net zero strategy, HESS's experienced team can provide a complete service or specialist help to complement your expertise across emissions reduction, water and waste.

**ENERGY MANAGEMENT**  
HESS offers a comprehensive range of services to assist you in understanding, managing and reducing your energy consumption and costs. From site audits, data analysis to bespoke reporting, and ongoing support - we measure, target and reduce.

**COMPLIANCE**  
HESS will keep you on the right side of compliance while helping you to reduce energy, carbon emissions and costs. We keep on top of all developments for you, ensuring you fulfil your mandatory requirements and also help towards your corporate environmental and sustainability goals through voluntary legislation.

**CONSULTANCY**  
HESS help you understand how electrification and decarbonisation may benefit your business. We can model your food offer energy demands, complete comprehensive operational impact analysis and act as sustainability champions in the design, planning and construction phase of your developments.

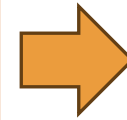
**PROJECT MANAGEMENT**  
We all come from a hospitality background, both operational and property. We know our glycol from our gastronomy, what works and what doesn't. We have decades of experience delivering utilities reduction projects from behaviour change to innovative technology roll outs.

- Energy benchmarking in UK commercial kitchens
- Electricity use in the commercial kitchen
- Low energy catering strategy: insights from a novel carbon-energy calculator
- Water Management
- Big, oil and grease reduction in commercial kitchen dishwashers: A novel biological approach



# Foodservice Energy & Carbon – Big Picture

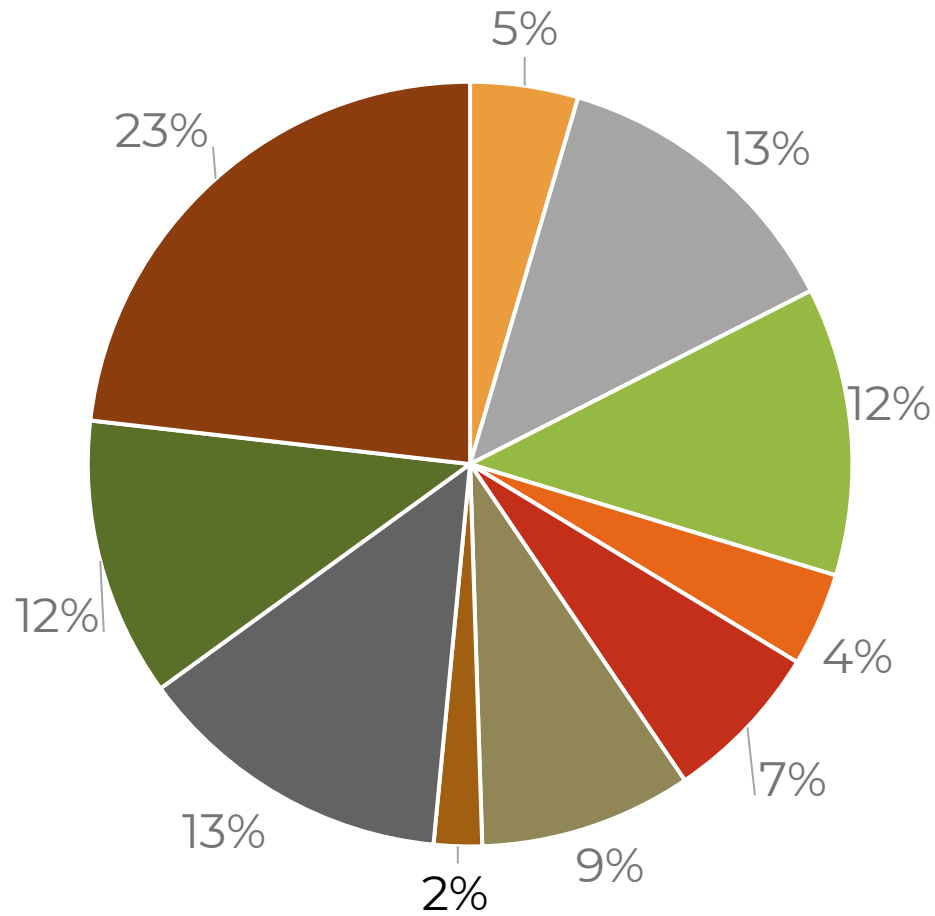
	Energy Consumption (kWh)	Annual Costs (£)*	Carbon Emissions (kgCO <sub>2</sub> e)
Cooking and warming	97,000,000,000	£26,190,000,000	21,858,950,000
Warewashing	7,430,000,000	£2,006,100,000	1,674,350,500
Refrigeration	9,280,000,000	£2,505,600,000	2,091,248,000
Total	113,710,000,000	£30,701,700,000	25,624,548,500



- More than the entire domestic energy use of the UK's 28 million houses combined
- An average casual dining restaurant uses more than **10x the energy of a supermarket (kWh/m<sup>2</sup>)**
- Foodservice energy is more than agriculture and food retail energy combined across the UK food sector
- Equivalent to around 8% of the UK's carbon footprint
- Doesn't even include any ventilation, building heating, lighting, cooling, hot water generation, bar, cellar or front of house equipment – **this is just the catering kit!**

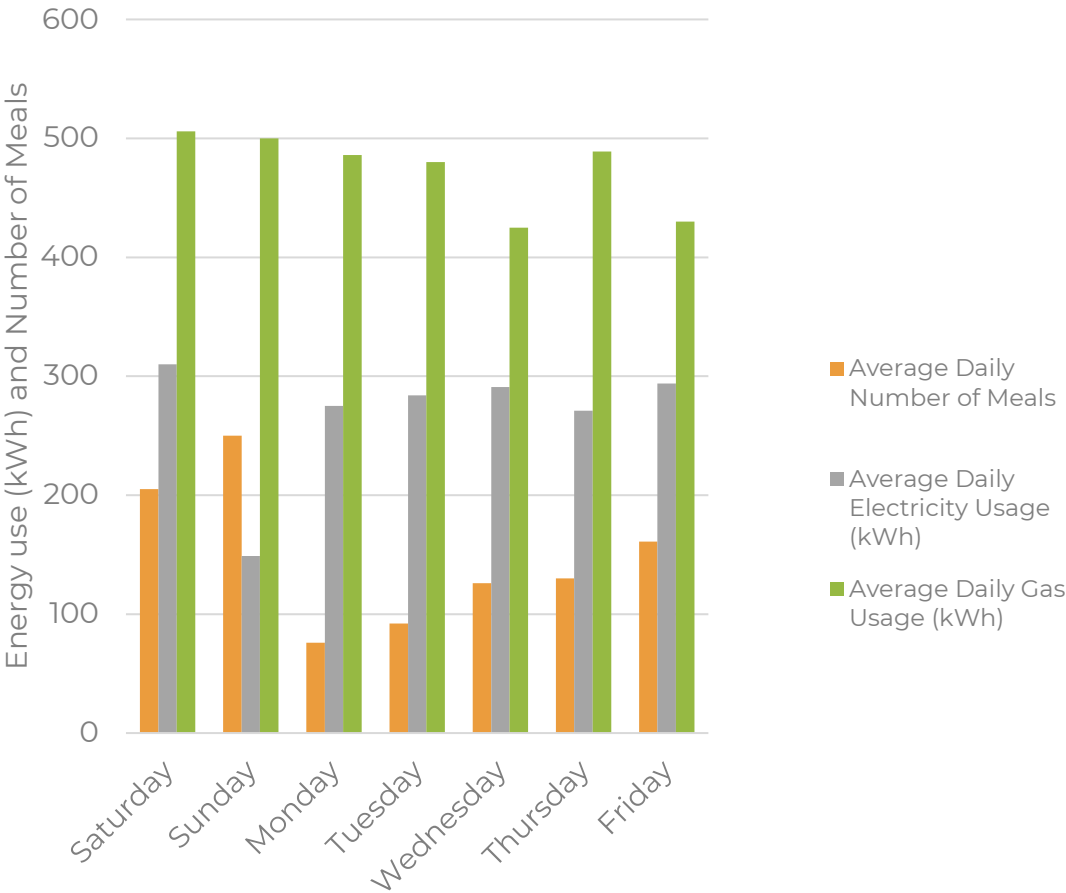
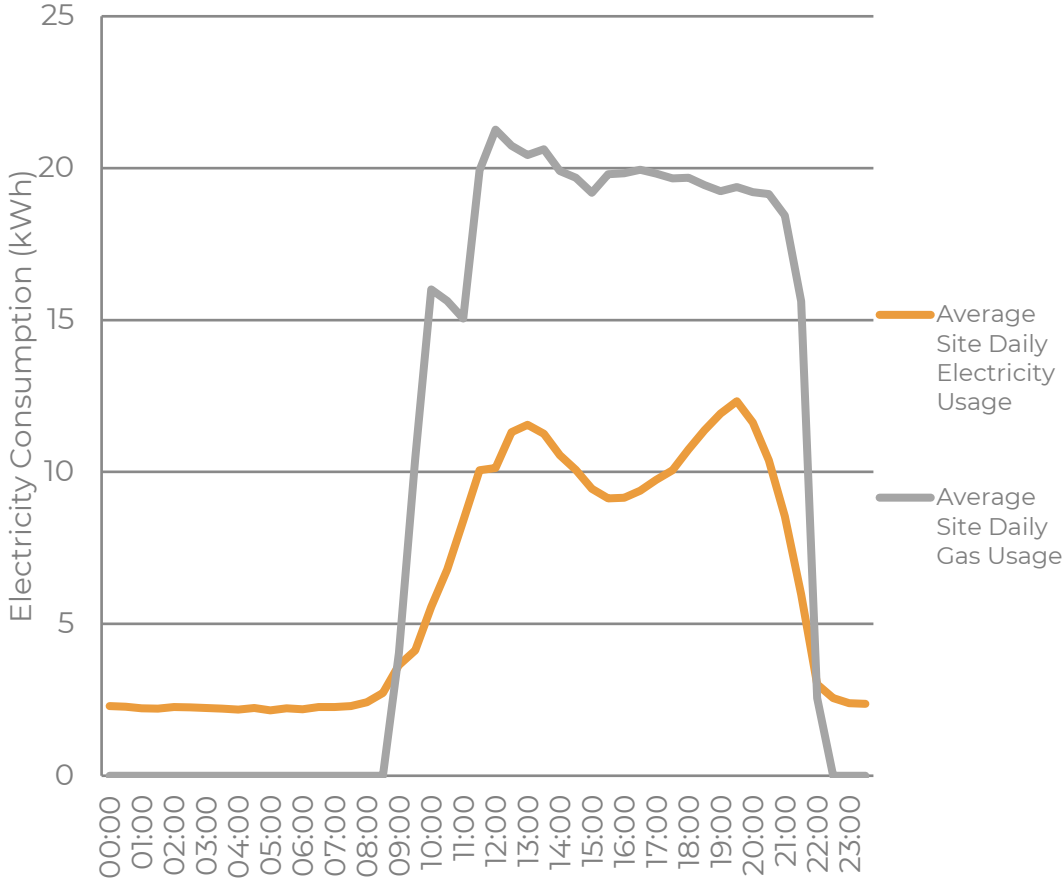
\*Based on £0.275 per kWh

# Energy Use Data – Where is it Used?



Equipment Category	Average total daily consumption (kWh)	Daily Carbon (kg CO <sub>2</sub> )	Daily Cost (£)
Walk in Fridge	14	7.2	4.90
Walk in Freezer	39	20.2	13.65
Grill	37	19.1	12.95
Steamer	12	6.2	4.20
Heat Lamps	21	10.9	7.35
Bain Marie	27	14.0	9.45
Other Cooking Appliances	5	2.6	1.75
Fryers	41	21.2	14.35
Combi-Ovens	36	18.6	12.60
Other Refrigeration	70	36.2	24.50
<b>Total kitchen consumption</b>	<b>294</b>	<b>152.2</b>	<b>102.90</b>

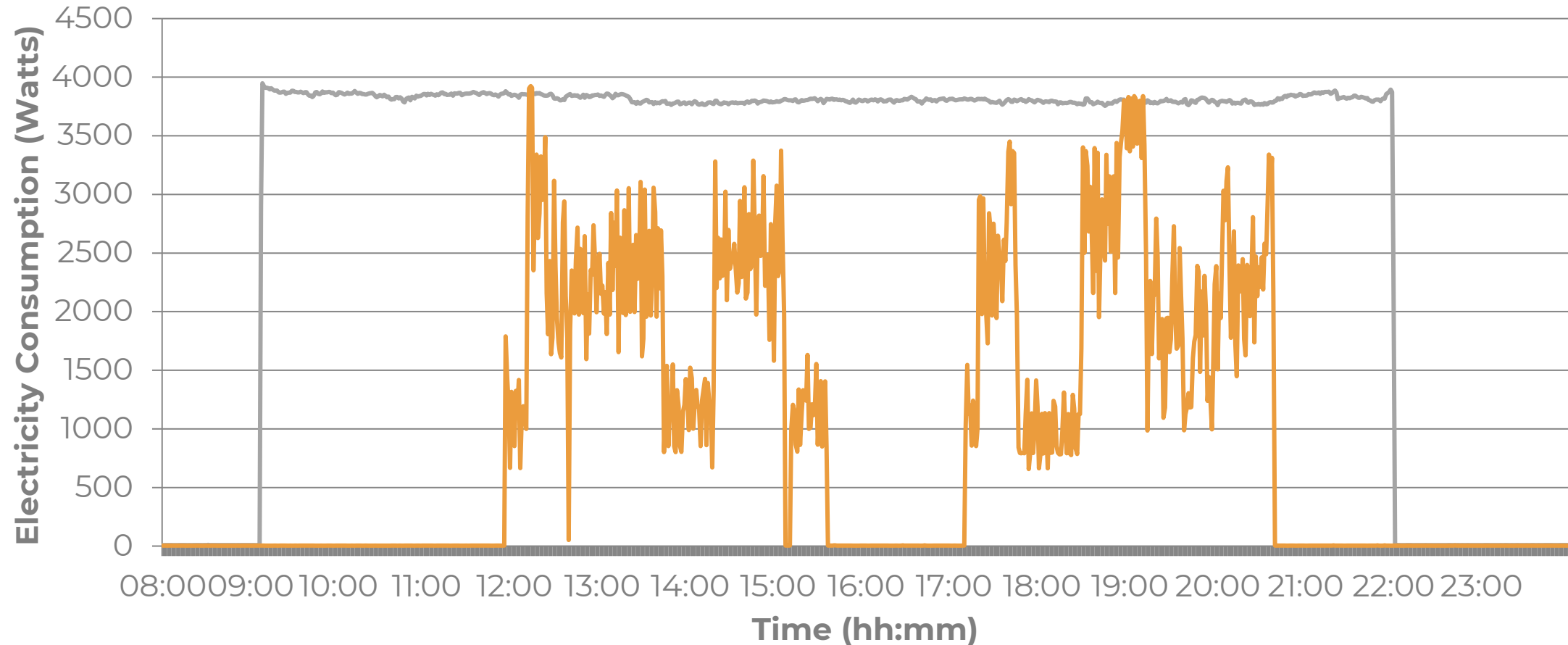
# Energy Use Profiles and Meals



# 71% Reduction from improved behaviour in Salamander/rise and fall grills

**Kitchen 10 = 49 kWh**

**Kitchen 6 = 14 kWh**



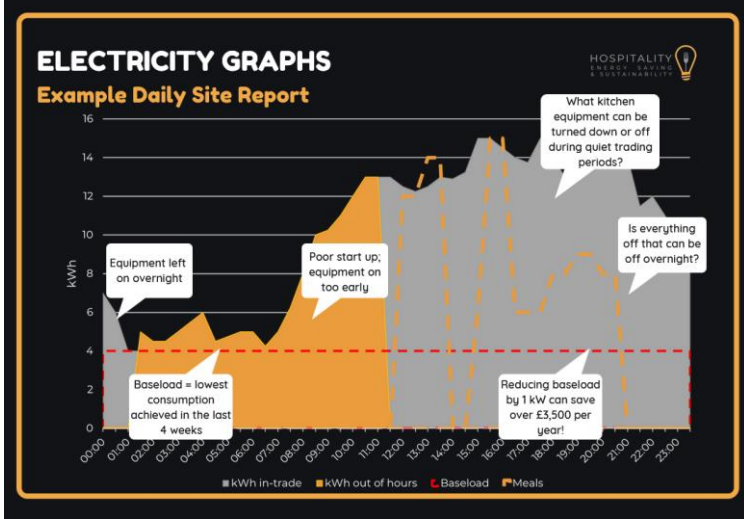
# Training & Engagement

ALREADY 80% OF CHEFS TURN DOWN THE CHARGRILL DURING QUIET PERIODS

## Delicious BEST PRACTICE FRYER TIPS

- ✓ FRYERS CAN COST £7 PER HOUR! THATS £25,000 A YEAR YOU SHOULD ONLY TURN THEM ON 15 MINUTES BEFORE OPENING.
- ✓ STAGGER THE SWITCH ON TIME: DO WE NEED THEM ALL ON?
- ✓ OIL STARTS TO BREAK DOWN AT TEMPERATURES ABOVE 130 C. CAN A FRYER/S BE TURNED DOWN TO A LOWER HOLDING TEMP (120°C) IN QUIETER PERIODS?
- ✓ CAN A FRYER/S BE TURNED OFF COMPLETELY IN QUIETER PERIODS?
- ✓ TURN FRYERS OFF AS SOON AS THE LAST ORDER OF THE DAY HAS BEEN COMPLETED

**HOSPITALITY ENERGY SAVING & SUSTAINABILITY** SAVE WHILE YOU FRY



## Save while you toast

Can you turn it down/off during quieter periods? Turn off as soon as it is not required

Is there an "eco mode"? If so, use it during quieter periods.

Toasters can use almost £1 per hour in electricity - thats £1,200 a year!

**HOSPITALITY ENERGY SAVING & SUSTAINABILITY**

72% of Managers always :-  
Set heating to "TIMED" not "constant"

**MERRYCHEF MEALSTREAMS:**  
These can be turned down to 125 C in quiet times. They will recover to 225 C in 2 minutes.

## Attic and Loft Spaces

Noisy extract/ventilation ductwork? This could be a sign of a dodgy fan that could be inefficient - consider reporting this to your building manager/head office

Regularly check for leaks and draughts and call any in to be resolved

Is your loft or attic space well insulated? If not, consider reporting this to your building manager/head office

Regularly check any loft tanks to ensure they're not constantly draining and re-filling

**HOSPITALITY ENERGY SAVING & SUSTAINABILITY**

28% of Managers are losing big amounts of profit

## SAVE WHILE YOU BREW

SWITCH COFFEE MACHINE ON 30 MINUTES BEFORE OPENING

IF MACHINE HAS AN "ECO" MODE - USE IT!

TURN OFF COFFEE MACHINE(S) OVERNIGHT

THESE MEASURES CAN SAVE £500 A YEAR.. AS MUCH PROFIT AS SELLING 1,800 COFFEES!

SWITCH ON & OPEN STEAM WANDS

AFTER 10 MINS. STEAM WANDS WILL START HISSING. THEN CLOSE THEM

MACHINE IS READY FOR USE 5 MINS LATER

OPEN STEAM WANDS WHEN STEAM WANDS STOP HISSING. CLOSE THEM AGAIN

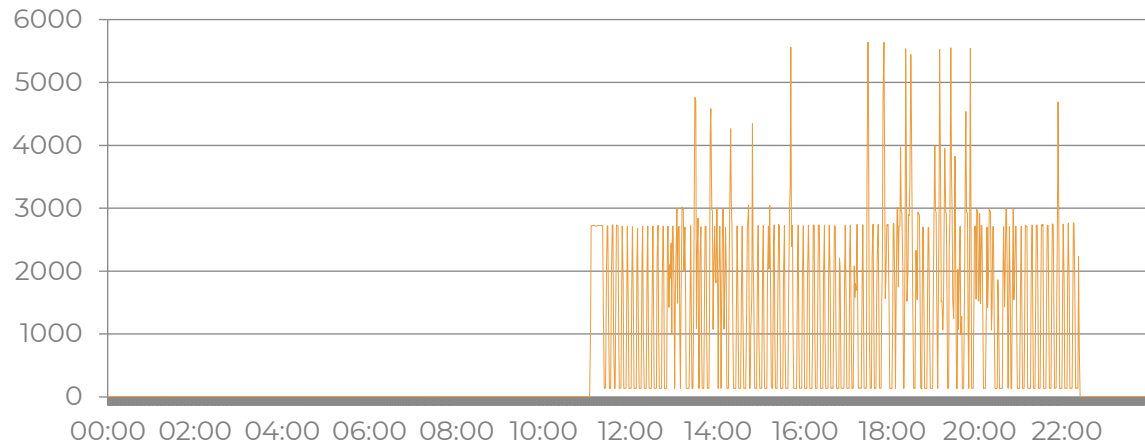
SWITCH OFF

**HOSPITALITY ENERGY SAVING & SUSTAINABILITY**

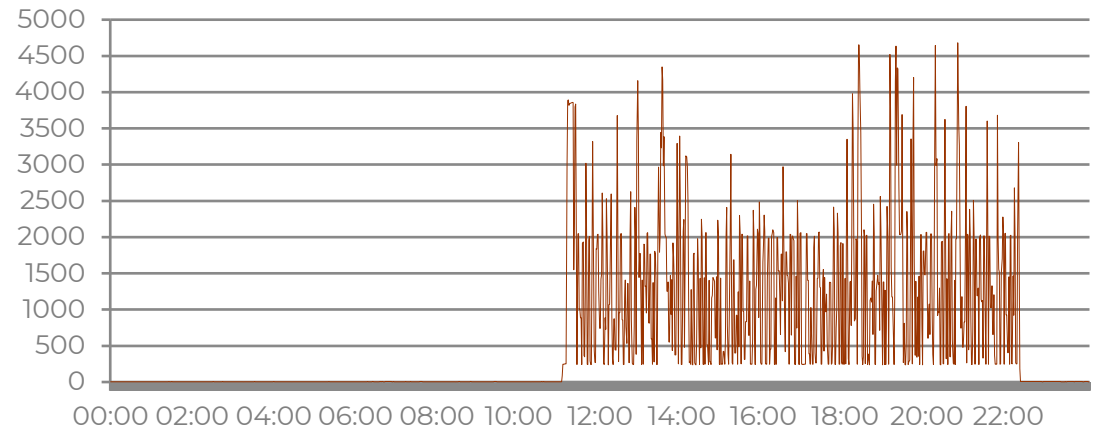
Our Best Staff always pack the back bar fridges with COLD product from the cellar

# 29% Reduction from Improved Specification

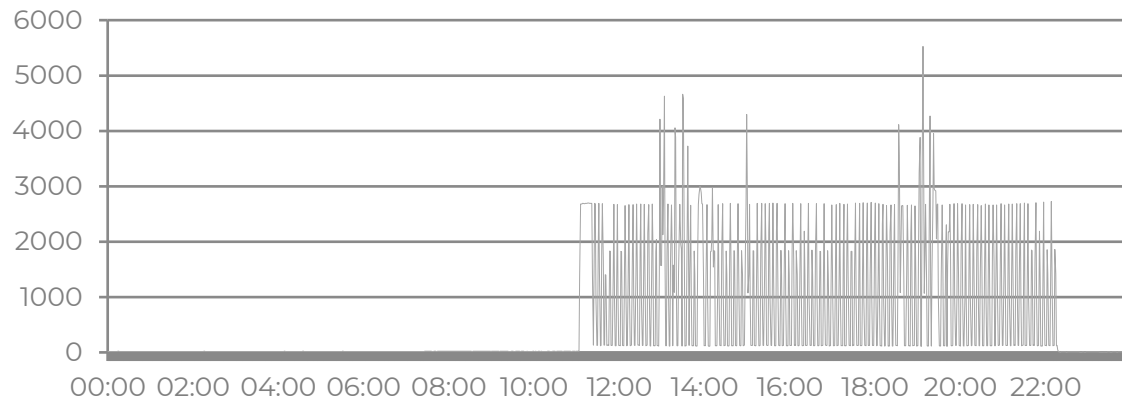
## Combi-Oven 1



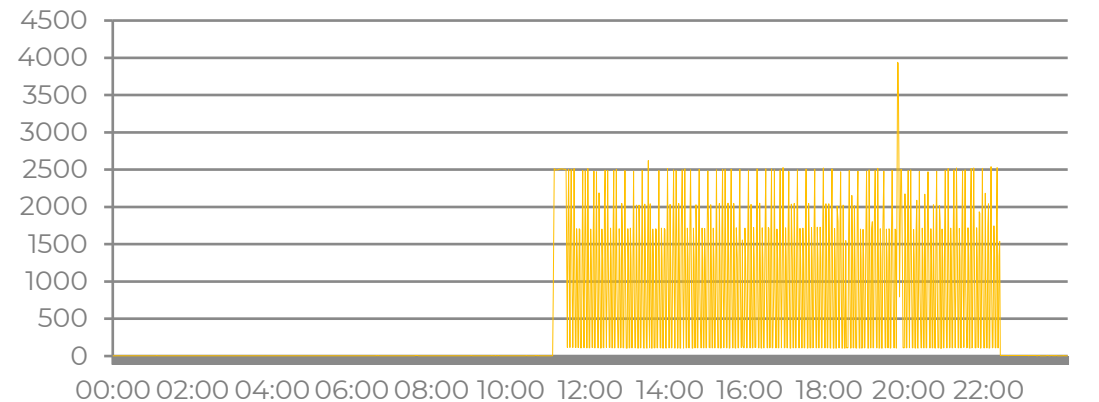
## Combi-Oven 2



## Combi-Oven 3



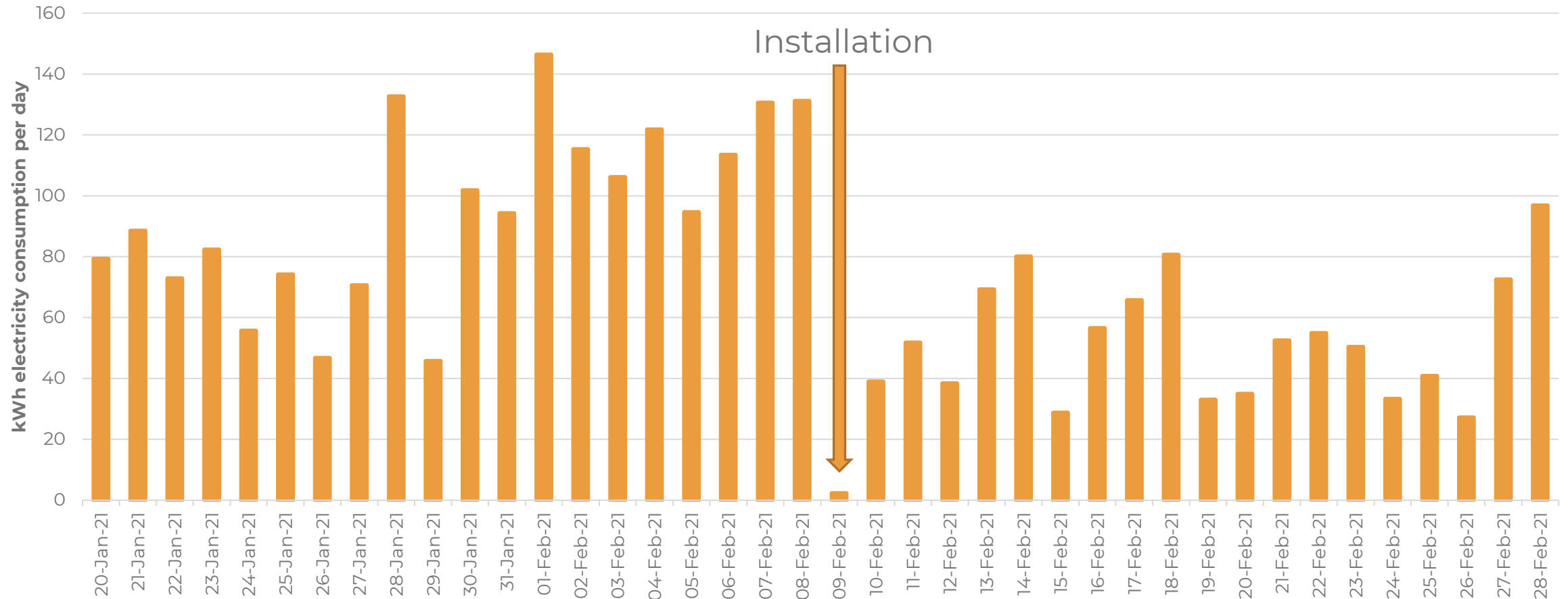
## Combi-Oven 4





# Measured Like-For-Like Replacement Example

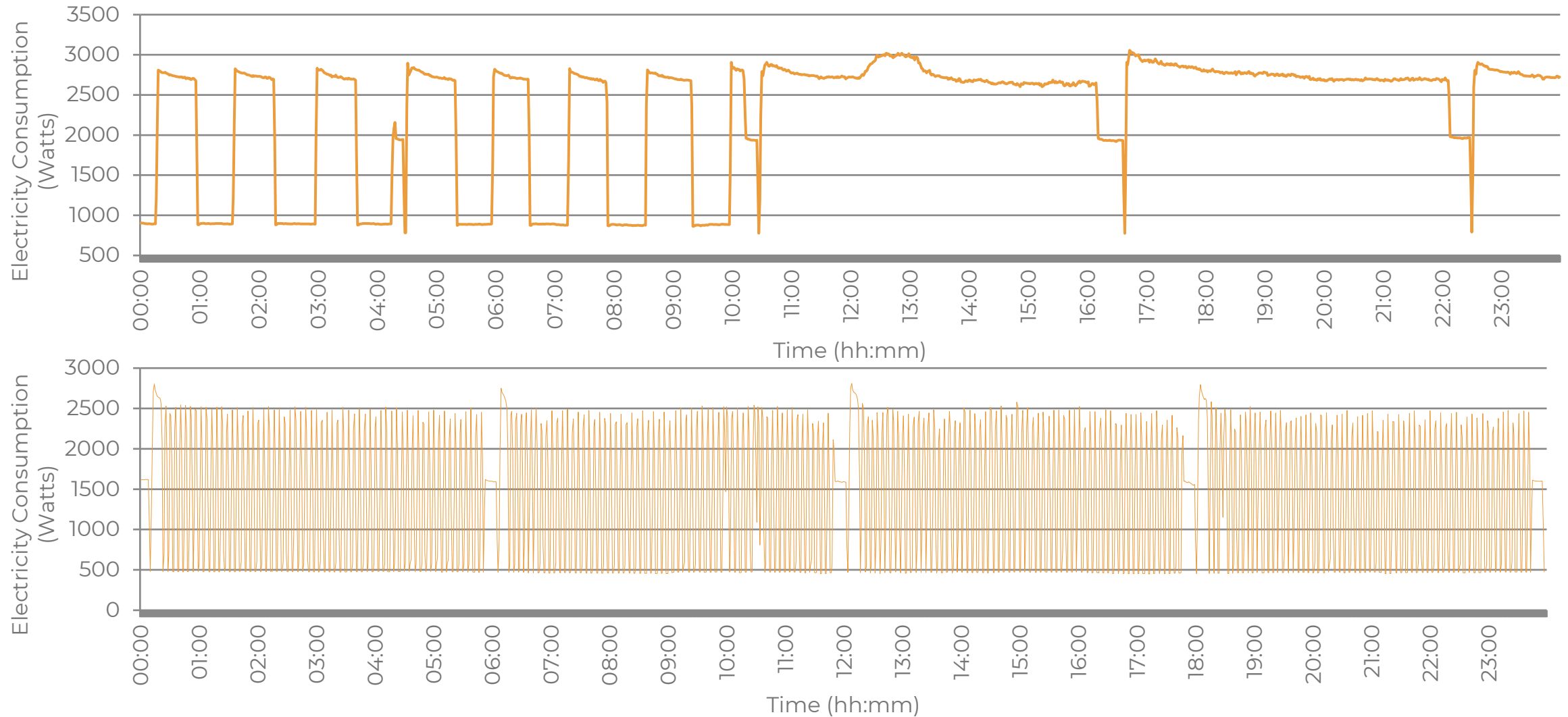
63.79% kWh, kgCO<sub>2</sub> and £ measured and verified energy savings from recent care home project



# Technology Roll Outs and Trials



# 45% Reduction from Improved Maintenance



# Linking Menus with Equipment

- It is one thing to buy a more efficient hob or grill, it is another to consider

***“Do we need a hob at all?”***

- Diverse range and volume of food served
- Different appliance configurations and capacities
- Variable behaviour and training
- Range of maintenance strategies
- Various operational choices (batch cooking vs cook to order, fresh vs frozen)



- No previous work examining the energy impacts of these variables
- Two years of development to create a Catering Carbon & Cost Calculator
- Huge stakeholder consultation across industry and academia
- Validated against monitored data



Insulation



Advanced Air Circulation



Energy Saving Fan Motors



Electronic Controllers



Door Switches



Self-Closing Doors and seals



Moisture Controls



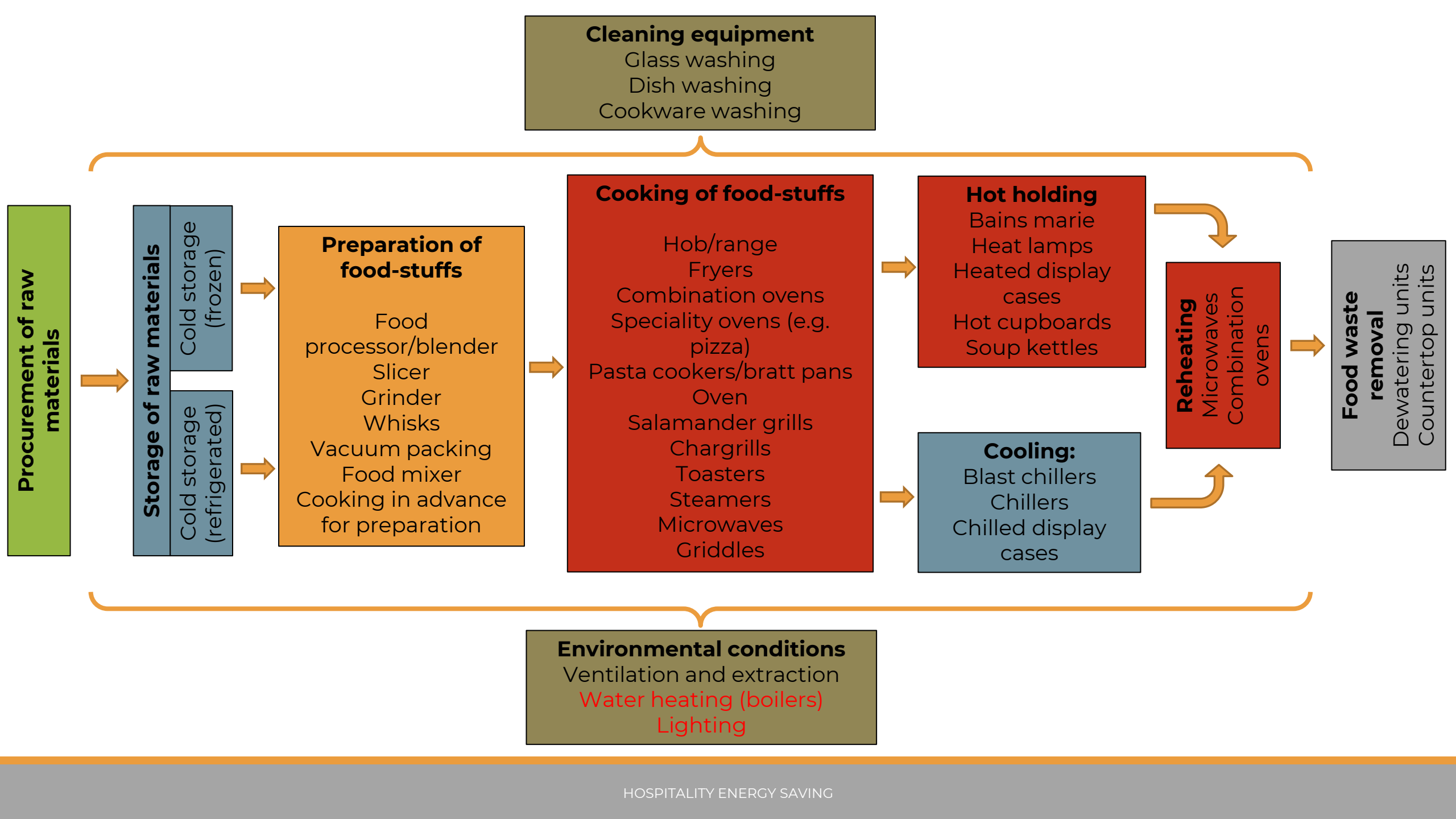
Connectivity

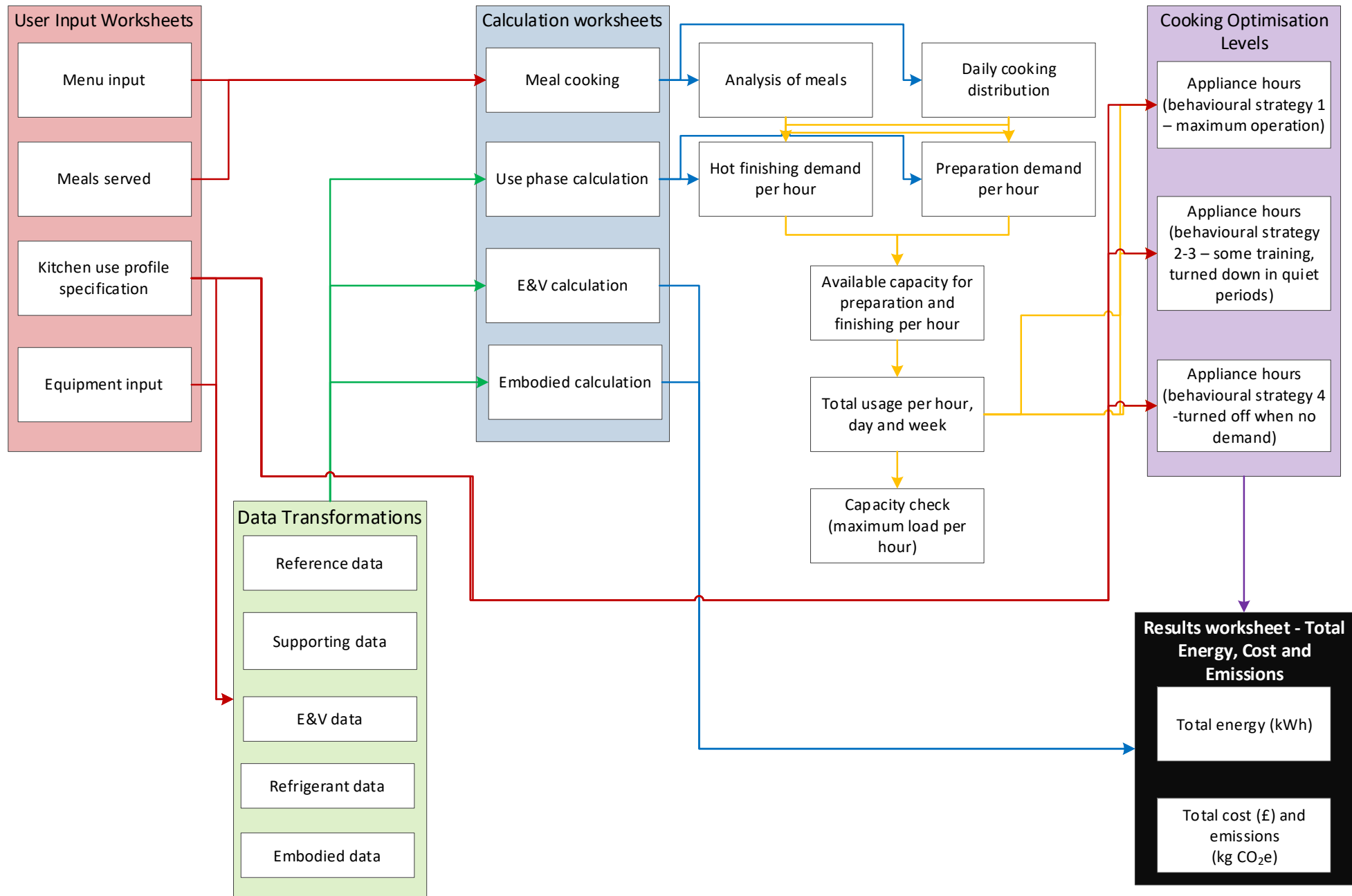


Lids



Sensors

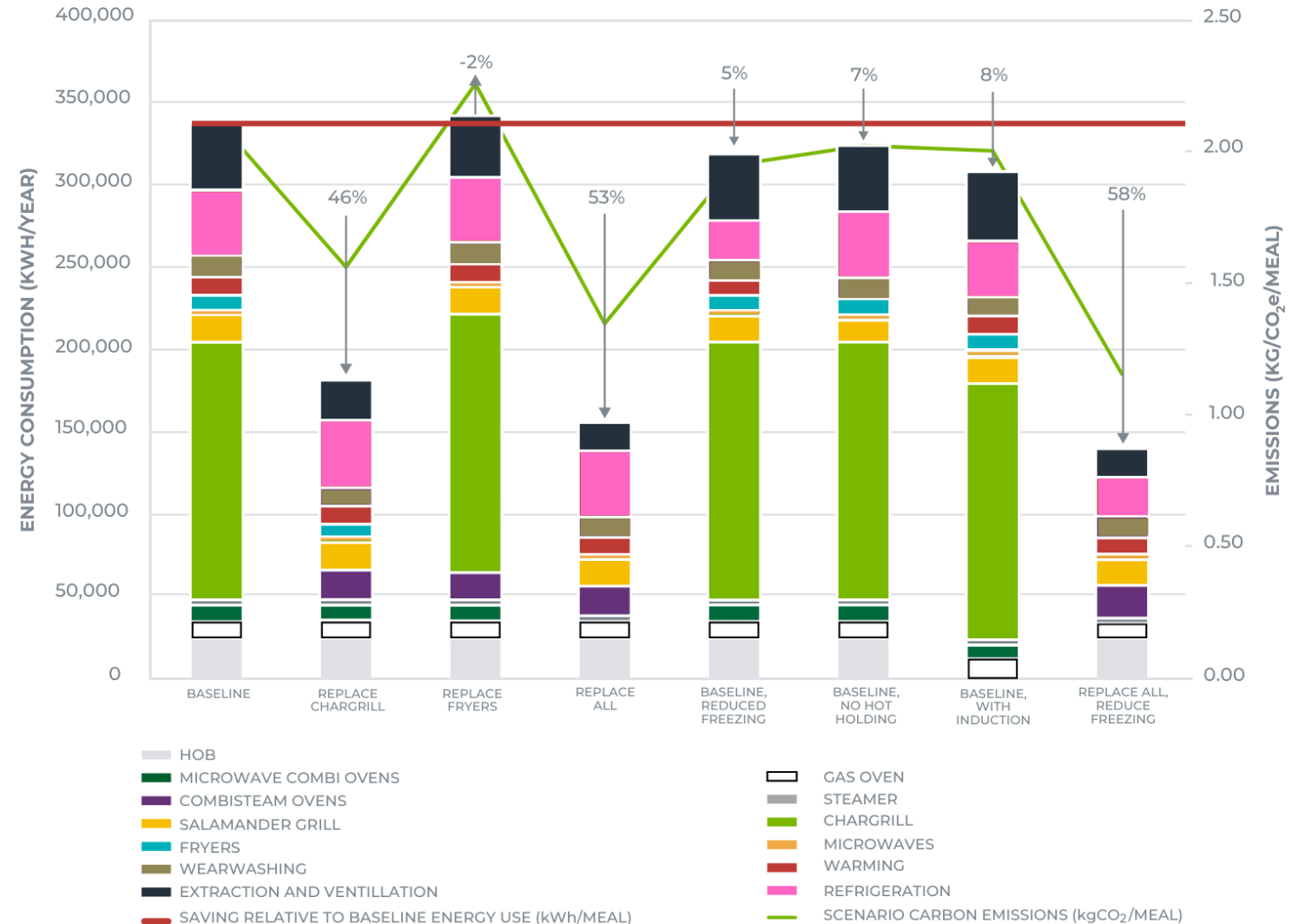




# The Results

Savings of 58%; **37.77 million kWh**, **10.71 million kgCO<sub>2</sub>e** and **£13.2 million per year** achievable without further staff training to minimise wastage through

- **Space saving established, uniformity and consistency of product improved, training needs improved**
- **£121.2 million per year savings for the operator if rolled out across all brands**
- **£6 billion per savings across the sector**



# Electrification – Benefits



Doing the right thing



Reputation



Health



Wellbeing



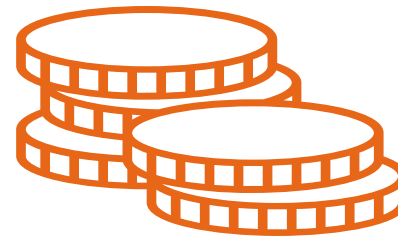
Regulatory benefits



Improved cleanliness



Improved consistency of product



Gas price uncertainty



Reduced Operational Issues



# Electrification – Asian Restaurant (like for like)

Baseline	Electrification
3x twin well gas fryers	3x twin well electric fryers
1x 3 burner gas wok	1x 3.5kW induction wok
1x 4-burner hob	1x induction hob
1x griddle	2x induction griddle

Baseline		
kWh per annum	£ per annum	Carbon (kgCO <sub>2</sub> e)
295,549	£67,061	55,506

Electrification		
kWh per annum	£ per annum	Carbon (kgCO <sub>2</sub> e)
173,411	£60,694	33,449



40% EMISSIONS  
REDUCTION  
9% COST SAVINGS  
41% REDUCED  
ENERGY

Category (Item & Utility)	Savings (actual)			Savings (%)		
	kWh per annum	£ per annum	Carbon (kgCO <sub>2</sub> e)	kWh per annum	£ per annum	Carbon (kgCO <sub>2</sub> e)
Fryers - Gas	-17,328	£755	-3,060	-61	24	-59
Griddle - Electric	-19,863	£944	-3,505	-60	26	-58
Hobs - Electric	-24,684	-£2,105	-4,492	-91	-70	-90
Wok - Electric	-49,707	-£2,266	-8,963	-79	-33	-78
Ventilation	-10,556	-£3,694	-2,037	-40	-40	-40
<b>Totals</b>	<b>-122,138</b>	<b>-£6,367</b>	<b>-22,057</b>	<b>-41</b>	<b>-9</b>	<b>-40</b>

# Electrification - Lendlease

## REALISING THE BENEFITS



### Overall Cost Savings

The table below summarises the financial benefits to an electric kitchen (and doesn't even include maintenance costs reductions, callouts for gas shut off valves or the time spent complying with gas-safe compliance requirements!). Even considering the 23% additional spend upfront, over a 5-year lease term £96,000 are possible with an electrified operation.

	Gas	Electric	Saving (actual)	Saving (%)
Capital costs	£44,214	£54,369	-£10,155	-23
Energy	£33,446	£21,054	£12,392	37
Cleaning - staff	£9,673	£5,616	£4,057	42
Cleaning - chemicals	£11,660	£6,890	£4,770	41
Total yearly running costs	£54,778	£33,559	£21,219	39
5-year running costs	£273,892	£167,797	£106,095	39
Total 5-year costs	£318,106	£222,166	£95,940	30



### A Safer Environment

Induction equipment generates less radiant heat and heats and cools down faster resulting in much less heat in the kitchen and an improved working environment that is less stressful for your staff. The calmer, cooler and cleaner environment mean less extraction is required.

Induction stoves need to be treated more carefully so there is less banging and crashing of pans resulting in a much calmer and quieter kitchen and happier chefs. The calmer environment is more respectful and much better for the team's mental health.

Induction stoves cool down faster making them much safer. No flames resulting in fewer burns and accidents in the kitchen.

### A Healthier Environment

The recent focus on indoor air quality has given rise to alarming new findings in terms of negative health implications from indoor cooking using natural gas. There is significant evidence that gas grills and hobs emit dangerous levels of harmful gases and particulates, including nitrogen oxides, nitrogen dioxide and formaldehyde.

These chemicals are typically found in car exhaust fumes, and can cause heart and lung problems, aggravate asthma and can contribute to early death. These health impacts in fact pose a more immediate risk to long term human health than climate change.



Capital Costs	Baseline	Electrification
Combioven	£17,490	£15,370
Twin deep Fryer	£2,756	-
6x burner hob and oven	£5,035	-
Griddle	£4,399	-
Salamander	£2,120	-
Microwave	£1,625	-
Toaster	£189	-
Extract Canopy	£10,600	£6,360
Turbo Chef	-	£12,720
Induction cooktop	-	£2,429
iVario cook station	-	£17,490
Total cookline	£44,214	£54,369

# NHS Catering

Interventions:	Energy savings %	New energy consumption following intervention	Energy savings (GWh/year)	Cost savings (£ million)	Emissions savings (kT)
Improved monitoring and targeting - audits with sub-metered data	12	466.75	63.65	£15.91	13.18
Improved behaviour	10	420.08	46.68	£11.67	9.66
Menu modelling / Equipment replacement	30	294.05	126.02	£32.77	26.09
<b>Total savings</b>	<b>45%</b>	<b>1180.88</b>	<b>236.35</b>	<b>61.45</b>	<b>48.94</b>

Metric	Healthcare
Number of sites	884
Meals served (million)	272
kWh/meal	1.95
GWh/year	530
Cost/meal	£0.51
Cost £m/year	£138
kg CO <sub>2</sub> e/meal	0.40
kT CO <sub>2</sub> e/year	109.82

	Healthcare
Cost savings per sub-sector (£Millions)	£61.45
Savings in terms of nurses	2,032
Starting salary	£29,969
Reference and notes	Newly qualified, NMC registered nurses starting salary at Band 5 <a href="https://www.nurses.co.uk/careers-hub/nursing-pay-guide/">https://www.nurses.co.uk/careers-hub/nursing-pay-guide/</a>

\*Based on 884 foodservice facilities as detailed in the NHS Digital Estates Returns Information Collection (ERIC) 2022/2023

# Thank you!

## Any Questions?

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