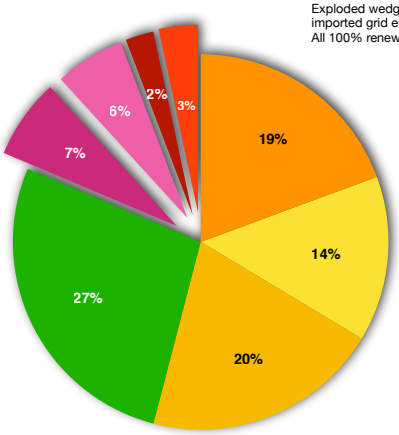
June 2020 How To Electrify Your Life Performance Report

Overall performance and benefits of our generation, storage and EV charging system for the CURRENT month.

SUMMARY ENERGY RESULTS	kWh
Solar energy generated and used for domestic consumption.	265.2
Solar energy generated and used for EV charging	195.2
Solar energy generated and used for Powerwall charging	279.8
Powerwall stored energy used during peak hours. Charged 279.8 kWh solar + 94.2 kWh off-peak grid.	374.0
Paid To Consume grid energy (100% renewable sourced)	0.0
Off-peak grid to charge Powerwall (100% renewable sourced)	94.2
Off-peak grid to charge EVs (100% renewable sourced)	81.9
Off-peak grid for any other use (100% renewable sourced)	33.1
Peak grid consumption for any use (100% renewable sourced)	46.1



Exploded wedges are imported grid energy. All 100% renewable-sourced.

Powerwall Breakdown	kWh		GBP
Charge from off-peak grid electricity import	94.2	25.2%	£4.71
Charge from solar	279.8	74.8%	£0.00
Total charge to Powerwall	**374.0**	**Cost Incurred**	**£4.71**
Powerwall discharge during peak hours	374.0	Cost Avoided	£48.36
Net benefit of Powerwall peak-shifting			**£43.65**

SUMMARY COST SAVING RESULTS (all electricity use, incl. EV charge)	
Total energy consumed (kWh)	**995.7**
Total cost, grid electricity incl. standing charge & VAT	£23.93
Government payments for solar generation	-£36.12
Payments to consume (Demand Side Response)	£0.00
Net total electricity bill, net of payments made to us	-£12.19
Actual average cost of kWh used (-£12.19÷995.7)	-£0.0122
UK average electricity cost per kWh	£0.1550
Cost of 995.7 kWh at UK average cost	£154.33
Total saving on 995.7 kWh vs UK average cost	**£166.52**

SUMMARY OF CLIMATE BENEFITS	
Total electricity used (kWh)	**995.7**
All solar and grid energy used is from 100% renewable generation.	
Avg UK emissions (g/kWh): "For all sources of electricity, the average amount of carbon dioxide emitted in 2018 amounted to 180 tonnes per GWh of electricity supplied." [Source]	180
Total grams CO2 emissions avoided by using 100% renewables versus UK average	179,223
kg CO2 avoided by using 100% renewables versus UK average	**179.2**

MOTORING BENEFITS RESULTS (593.0 miles gained from charging EVs)	
Total energy charged to EVs (kWh)	**277.2**
Miles range gained from charging 277.2 kWh	593.0
Actual cost of all grid energy used (solar is £0)	£4.10
Fuel costs to drive a petrol/diesel car 593.0 miles	£164.49
Total saving on motor fuel versus petrol/diesel	**£160.40**
Total financial benefits in month	**£326.92**

Grid Energy Prices	
UK average grid price	£0.1550
Off-peak 00:30 – 04:30	£0.0500
Peak (all other times)	£0.1293
Grid pays us to use	-£0.0500
Average per kWh on this month's energy mix	**-£0.0122**

Total EV miles fuelled with 100% renewable electricity	**593.0**
Kilometre equivalent	954.3
Average UK CO2 emissions g/km (2018 most recent data)	125.1
Total grams CO2 emissions avoided by using EVs vs UK average	119,386
kg CO2 avoided by using EVs charged with 100% renewables	**119.4**
Total kilograms CO2 emissions avoided	**298.6**

Current Month detailed data

Variables & Key Inputs

CORE VARIABLES	
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Number of days in month	30
Number of solar panels in operation in period	24
Peak generating capacity of each panel (kWp)	0.31
Peak generating capacity of all panels combined (kWp)	**7.44**
Off-peak grid electricity (Octopus Go tariff), cost per kWh, including VAT	£0.0500
Peak grid electricity (Octopus Go tariff), cost per kWh, including VAT	£0.1293
PAY TO CONSUME rate PAID to use to grid electricity during Demand Side Response period, per kWh, including VAT	-£0.0500
Saving for every kWh charged into Powerwall at off-peak but used at peak time	£0.0793
Average energy consumption (kWh per mile) per mile of both Tesla Model X and Nissan Leaf EVs.	0.289
Assumed average mpg of internal combustion engine cars for motoring benefit calculations	35
Gallons to Litres conversion	4.54
Assumed price per litre of fuels for motoring benefit calculations	1.32

Energy Cost Saving Benefits

Energy Performance and related Financial Benefits in month	Energy (kWh)	Financial (GBP)
Solar energy generated in peak hours by solar panels and used immediately on site	265.2	
Financial benefit of solar generation. (Purchase cost of 265.2 kWh peak grid electricity avoided.)		£34.29
Financial benefit of Government payments for solar generation (applies to 16 panels only, other panels too late for subsidy).		£36.12
Energy discharged from Powerwall battery during peak hours. (Energy charged to battery using off-peak grid and solar only).	374.0	
Financial benefit of Powerwall discharging stored energy during peak hours. (Cost of 374.0 kWh peak electricity avoided.)		£48.36
Energy charged to EV batteries using off-peak grid electricity.	81.9	
Cost which would have been incurred if 81.9 kWh of peak grid electricity had been used to charge EVs.		£10.59
Cost actually incurred to charge 81.9 kWh to EVs, using off-peak grid electricity only.		£4.10
Financial benefit of using off-peak energy (Octopus Go tariff) to charge EVs – peak cost avoided minus off-peak cost paid		£6.50
Energy charged to EV batteries using energy from solar generation	195.2	
Financial benefit of charging EVs with solar-generated energy (cost of 195.2 kWh peak hours grid electricity avoided).		£25.24
Energy used during PAY TO CONSUME Demand Side Response period	0.0	
Per kWh rate PAID to us by Octopus for consuming energy during Demand Side Response Period		£0.05
Financial benefit of Octopus PAY TO CONSUME. (Payment for 0.0 kWh used during Demand Side Response Period.)		£0.00
Total direct energy-related financial benefits in month		**£150.51**

Motor Fuel Cost Saving Benefits

Motor fuel saving benefits in month	Energy (kWh)	Financial (GBP)	Calcs
Total energy charged to EVs from off-peak grid electricity: (29.6% of EV charging at home)	81.9		
Range gained by EVs with 81.9 kWh off-peak charging, assuming 0.289 kWh per mile consumption. (Miles)			284.0
Total gallons required to cover 284.0 miles at assumed internal combustion car average mpg			8.1
Litres equivalent of 8.1 gallons			36.8
Total cost of petrol/diesel fuel that would be payable to purchase 36.8 litres, at 1.32 per litre.		£48.63	
Off peak grid energy cost actually incurred to charge 81.9 kWh into EVs.		£4.10	
Financial benefit of charging EVs with off peak electricity versus the cost of petrol/diesel fuel to cover the same distance.		£44.53	
Total energy charged to EVs from PAID TO CONSUME (Demand Side Response) grid electricity: (0.0% of EV home charging)	0.0		
Range gained by EVs with 0.0 kWh off-peak charging, assuming 0.289 kWh per mile consumption. (Miles)			0.0
Total gallons required to cover 0.0 miles at assumed internal combustion car average mpg			0.0
Litres equivalent of 0.0 gallons			0.0
Total cost of petrol/diesel fuel that would be payable to purchase 0.0 litres, at 1.32 per litre.		£0.00	
per kWh rate PAID to us by Octopus to consume this energy during Demand Side Response period		-£0.05	
Off peak grid energy cost actually incurred to charge 0.0 kWh into EVs.		£0.00	
Financial benefit of charging EVs with PAY TO CONSUME electricity vs the cost of petrol/diesel to cover the same distance.		£0.00	
Total energy charged to EVs from solar: (70.4% of EV charging at home)	195.2		
Range gained by EVs with 195.2 kWh solar charging, assuming 0.289 kWh per mile consumption. (Miles)			676.7
Total gallons required to cover 676.7 miles at assumed internal combustion car average mpg			19.3
Litres equivalent of 19.3 gallons			87.8
Total cost of petrol/diesel fuel that would be payable to purchase 87.8 litres, at 1.32 per litre.		£115.87	
Cost of solar energy to charge 195.2 kWh into EVs.		£0.00	
Financial benefit of charging EVs with solar electricity versus the cost of petrol/diesel fuel to cover the same distance.		£115.87	
Total motor fuel savings: 593.0 miles charged by a total of 277.2 kWh.		**£160.40**	
Mix: Solar 195.2 kWh; Off-peak grid 81.9 kWh; Paid To Use grid 0.0 kWh.			

Monthly Performance Report: June 2020

Energy flows may not add to precisely 100% due to input rounding

Total energy CONSUMPTION in month (kWh): 995.68

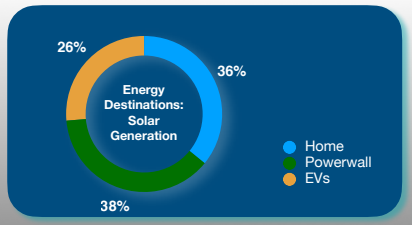
CO_2 avoided in month, all domestic use and all home-charged EV miles (kg): 298.61

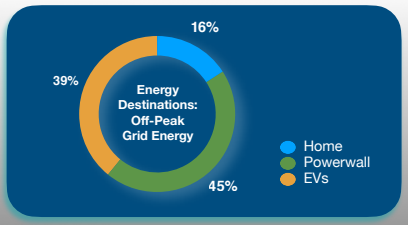
- Solar incl via Powerwall (Free) 74.3%
- Grid incl via Powerwall (We Pay To Use) 25.7%
- Grid (Pays Us To Use) 0.0%

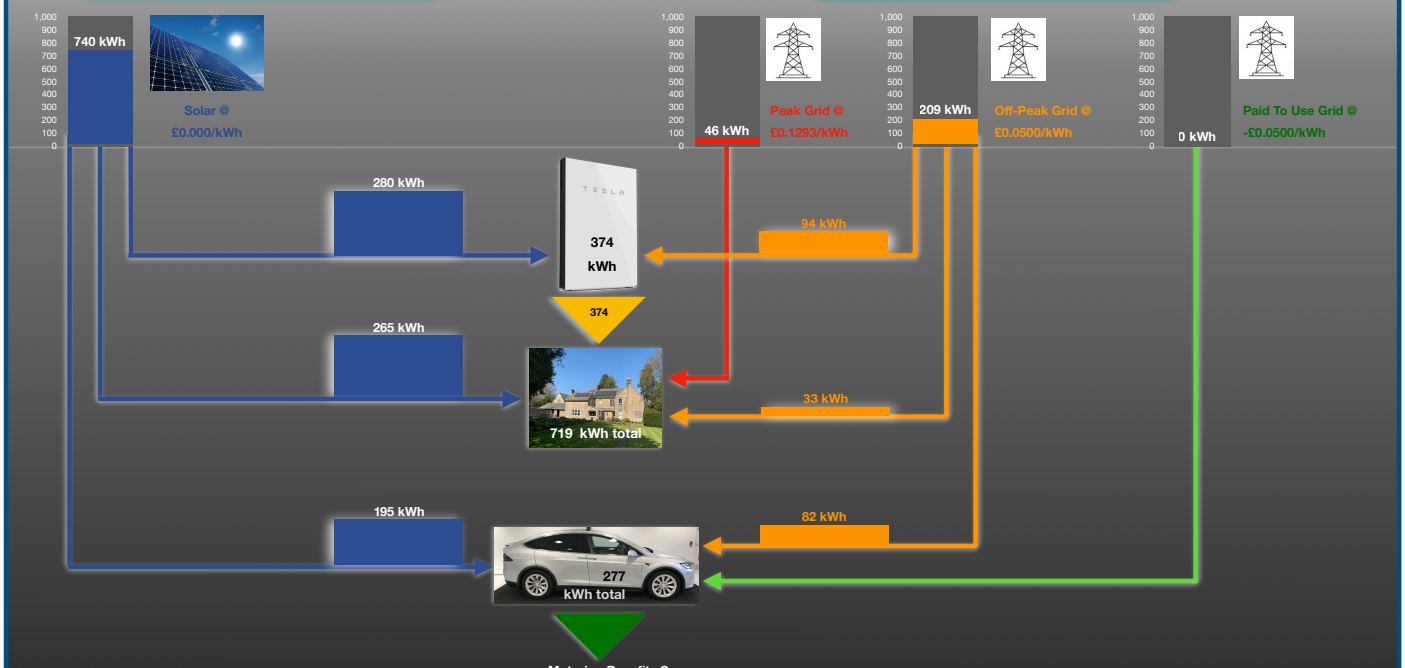
Net electricity COST in month: -£12.19

Total BENEFIT (net electric cost vs UK avg + petrol savings): £283.96

- Government Payment for Solar Generation & Grid Payments to Us
- Total Cost Of Grid Energy & Standing Charge







Motoring Benefits Summary

Miles Range Gained @ avg Tesla + Leaf kWh/m	Total cost of 593 miles on actual energy mix.	Actual Cost Per Mile (pence)	Petrol cost of 593 miles @ 35 mpg and £1.32 per litre.	Net Financial Benefit	CO2 Emissions Avoided
593	£4.10	0.007	£164.49	£160.40	119.4 kg

£283.96 SAVINGS 298.6 kg

Domestic Consumption Benefits Summary

719	-£12.19	-1.697	£111.37	£123.56	179.2 kg
Total Energy Consumed kWh	Total cost of 719 kWh on actual energy mix incl Govt subsidies.	Actual Cost Per kWh (pence)	Cost of 719 kWh @ UK Average cost per kWh	Net Financial Benefit	CO2 Emissions Avoided vs UK avg Grid Mix