



# immersa

Balancing your energy trilemma

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Immersa Limited is the solution to balancing your Energy Trilemma – helping you to ensure secure, sustainable and affordable energy.

Offering consultancy and delivery of Energy Efficiency, Demand Side Response (DSR), Distributed Generation (DG) and Energy Storage Systems (ESS), which is revolutionizing the way we view and use our energy.

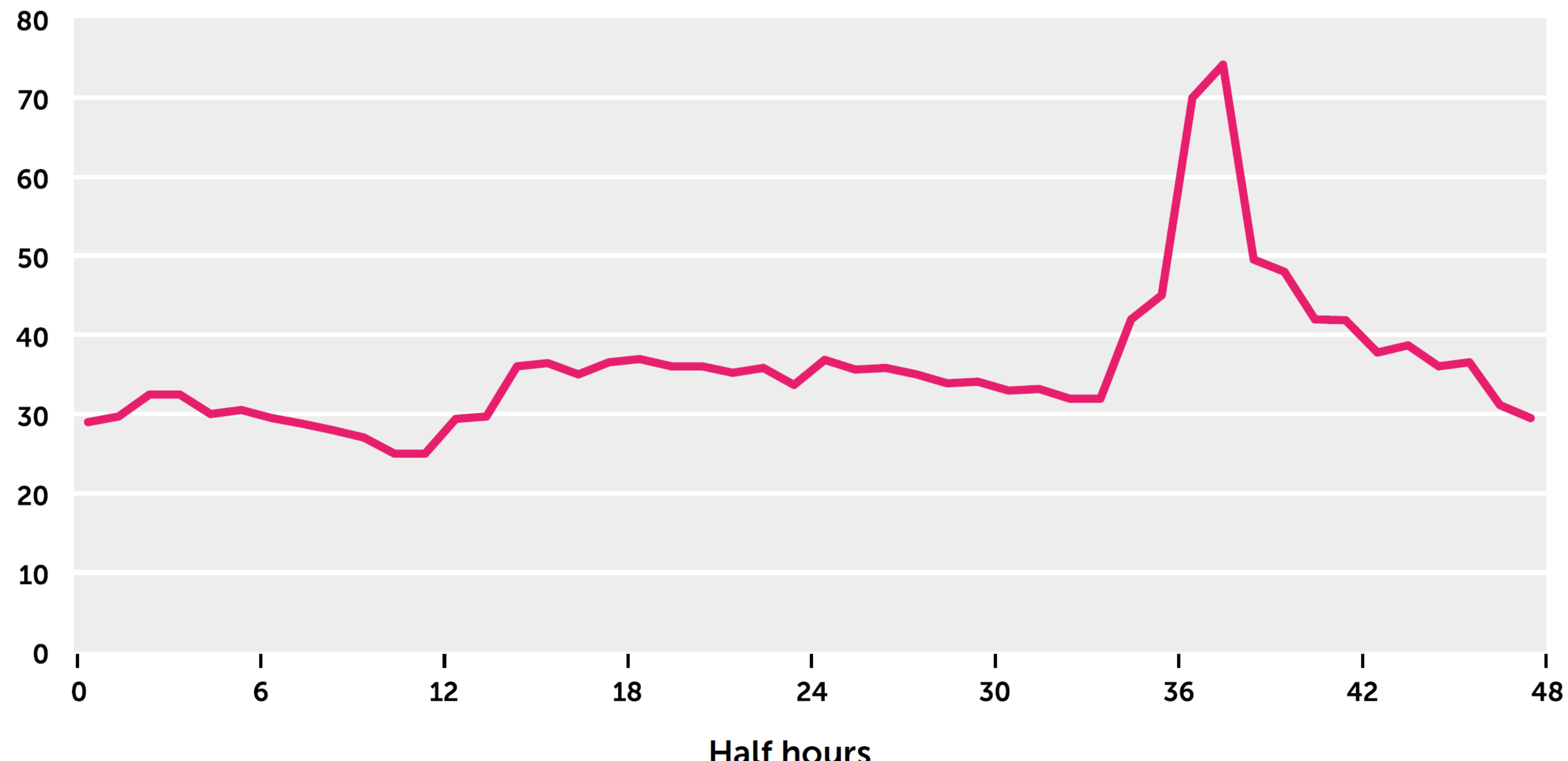
From advisory project structure and development of business proposals and commercial models, through to full turn-key delivery of complex new infrastructures that are energy efficient, predictable and future proofed against the hostile background of energy pricing whilst also concentrating on Carbon reduction.

# Less Exposure to Intraday pricing can justify additional CAPEX for Storage when considering Time of Use Commodity Tariffs



The cost of electricity during the peak times is on average more than double the cost of the remainder of the day. If the demand during these periods can be reduced further savings may be available through negotiations with the supplier for time of use supply tariffs.

Figure 1.3: How Wholesale Power Prices Can Fluctuate during 24 hours (£/MWh)



# The cost of Storage can be offset against the Reduction in Distribution and Transmission System Charges

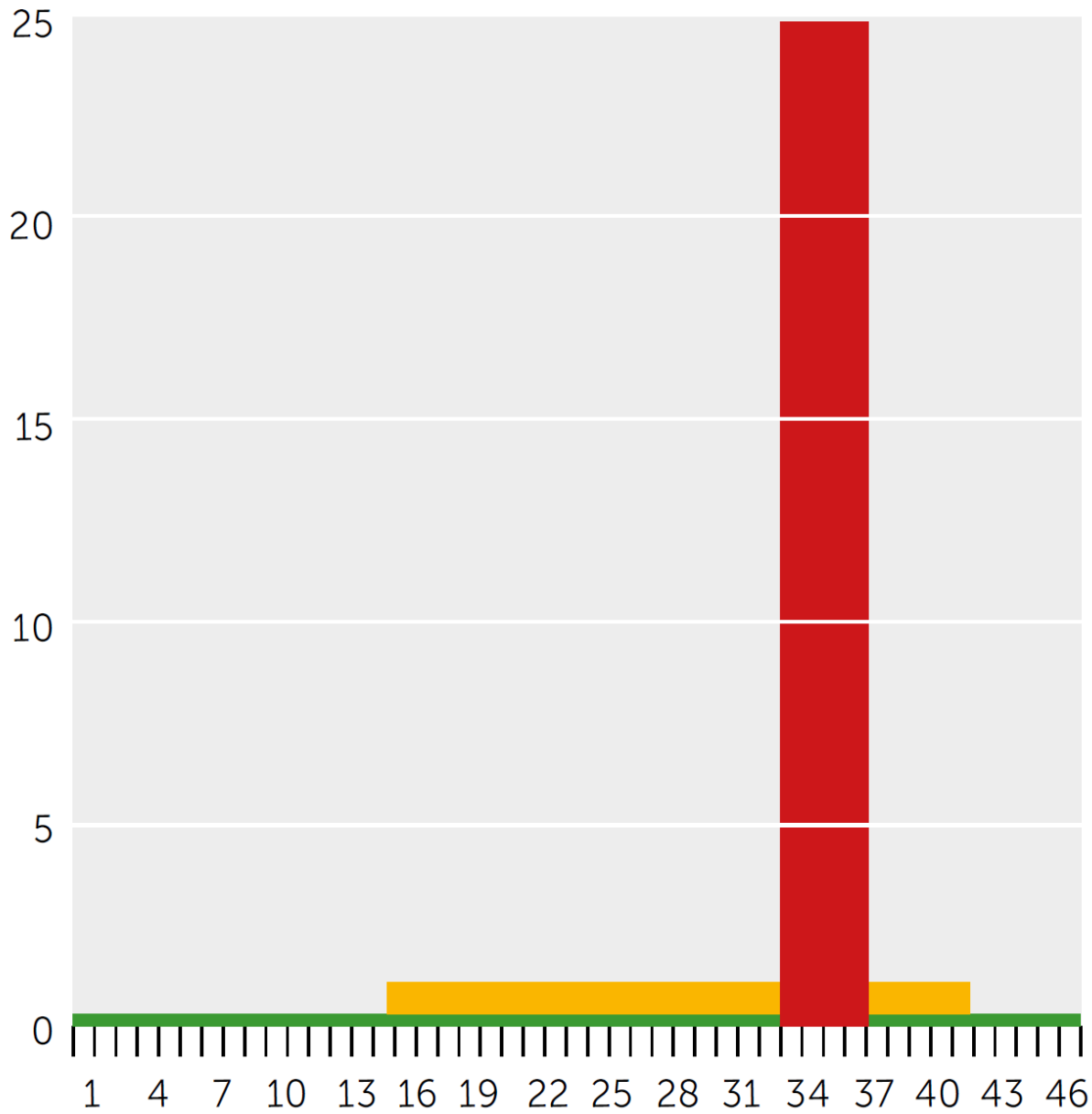


Transmission zone charges 2016/17 (January 2016)

Zone	Zone Name	HH Demand Tariff (£/kW)	NHH Demand Tariff (p/kWh)
1	Northern Scotland	40.966038	5.767784
2	Southern Scotland	40.244453	6.206960
3	Northern	42.927953	6.765895
4	North West	42.828015	5.688026
5	Yorkshire	42.493827	6.543088
6	N Wales & Mersey	42.678395	6.479380
7	East Midlands	44.724594	6.375320
8	Midlands	45.738925	6.354311
9	Eastern	46.543113	6.352770
10	South Wales	42.306722	6.403050
11	South East	49.204313	6.652677
12	London	51.870233	6.508025
13	Southern	50.078028	6.485453
14	South Western	48.580421	6.877890

Time Bands for Half Hourly Metered Properties			
Time periods	Red Time Band	Amber Time Band	Green Time Band
Monday to Friday	17:00 to 19:00	07:30 to 17:00 19:00 to 21:30	00:00 to 07:30 21:30 to 24:00
Weekends		16:30 to 19:30	00:00 to 16:30 19:30 to 24:00
LV HH Metered	24.792	0.345	0.098
LV Sub HH Metered	22.260	0.212	0.069
HV HH Metered	19.196	0.113	0.044

Table of red, amber, green charges and times



Graph of weekday LV HH metered charges p/kWh

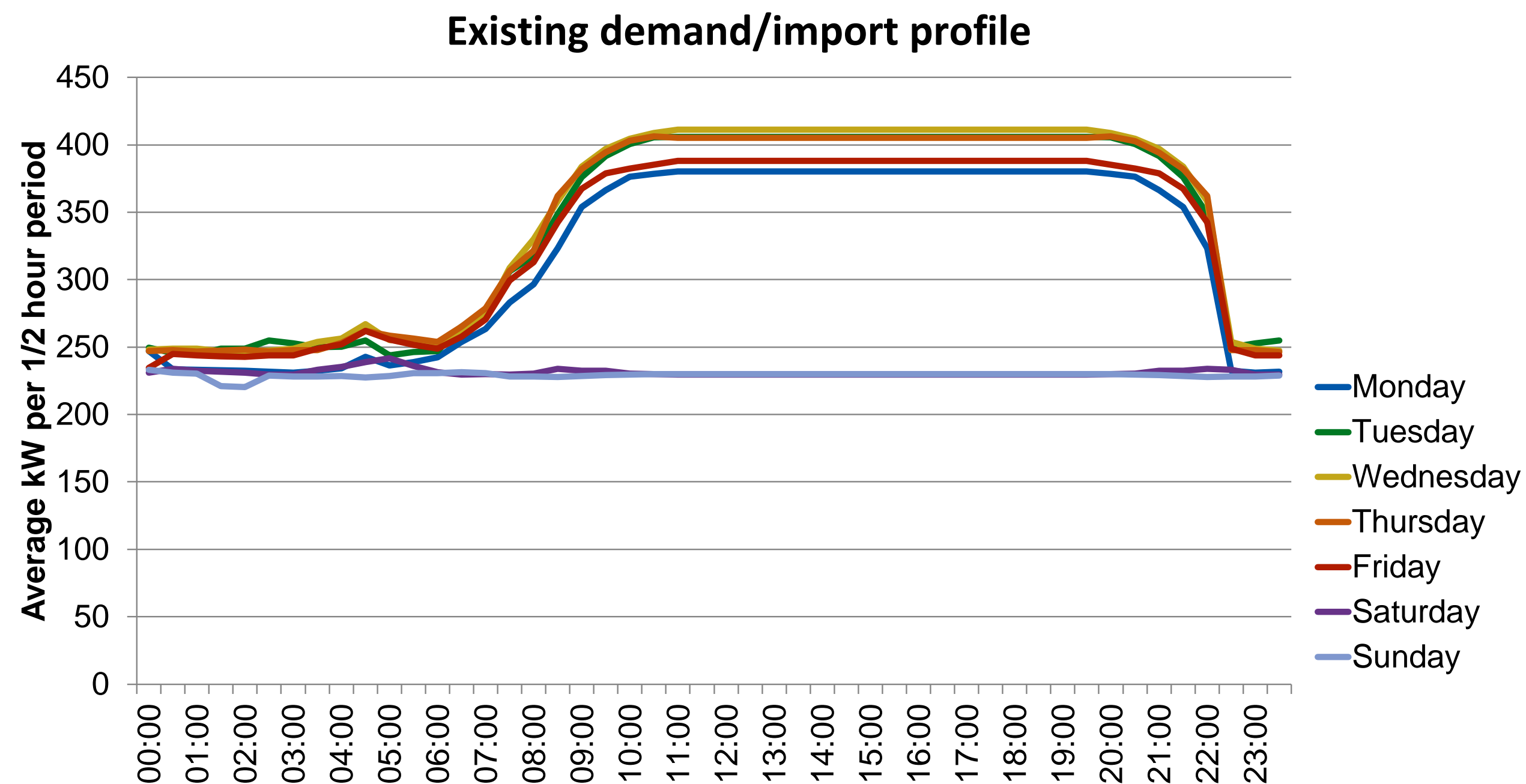
The cost of Distribution charges is reduced by £222.60MWh for electricity that is not imported during the Red Time Band. Also if these periods coincide with the TRIADS there can be an additional saving of £48,580 PA for every MWh reduction of imported power.



# Example of the Benefits Immersa can Deliver



The following slides are based on a load profile that has a half hour base load of 250kW and with a daily peak of around 400 kW. Total energy usage is 2, 700 MWh per year.



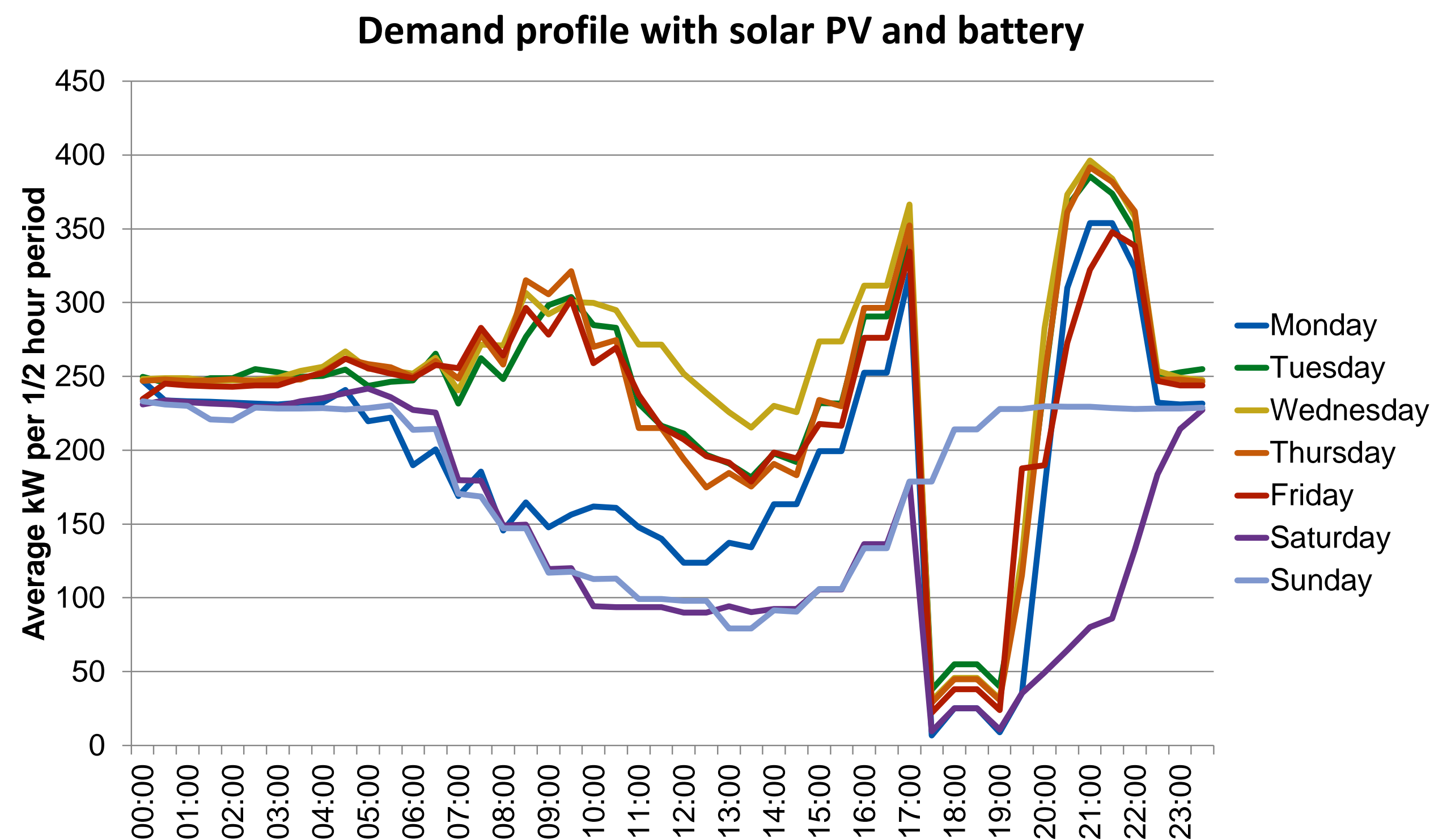
Like most unaltered load profiles, this has exposure both to the Red Time Period (17h00-19h00 – WPD South West) and TRIAD charging periods.

# Solar PV and battery impact



In this example, we have introduced a 900kWp solar PV system and a 1.2 MW battery system. The resulting effect is a reduction of almost 90% of the imported electricity during the Red Time Periods.

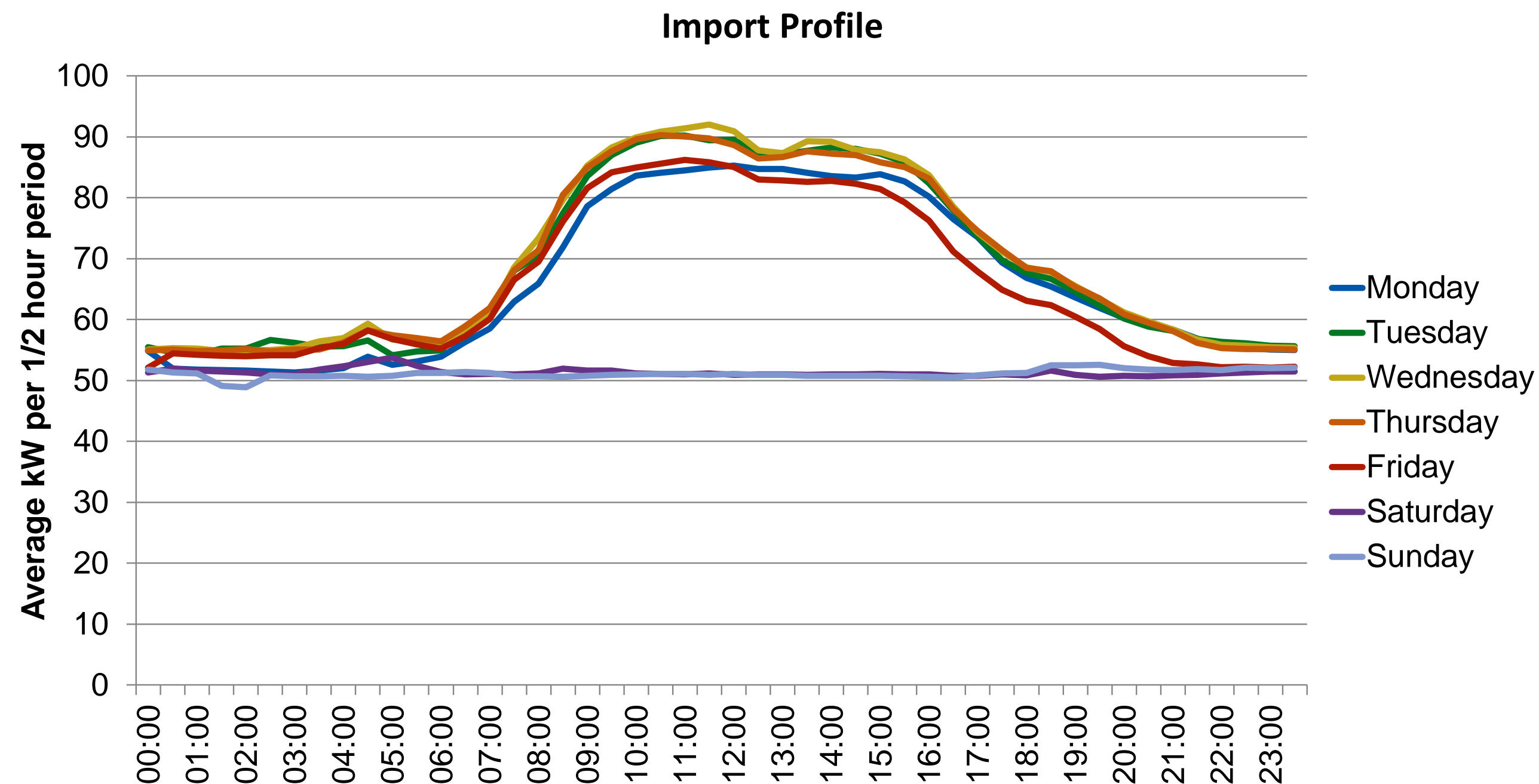
Additionally, the system will mitigate other environmental charges by replacing the imported energy with renewable generation.



# Example demand profile



This profile has a half hour base load c.50kW with a daily peak of around 90 kW. Total energy usage is just over 500 MWh per year.



This load profile has exposure both to the Red Time Period (17h00-19h00) and the TRIAD charging periods.

# Solar PV and battery impact



We have introduced here a 245 kW solar PV and a 200 kW battery system to reduce the imported electricity during the Red time periods by almost 90%.

In addition the system will mitigate other environmental charges by replacing the imported energy with renewable generation.

