

# Grid Flexibility Rhymes With Derivatives Trading: slice-and-dice lessons for home heat decarbonisation

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## Introduction

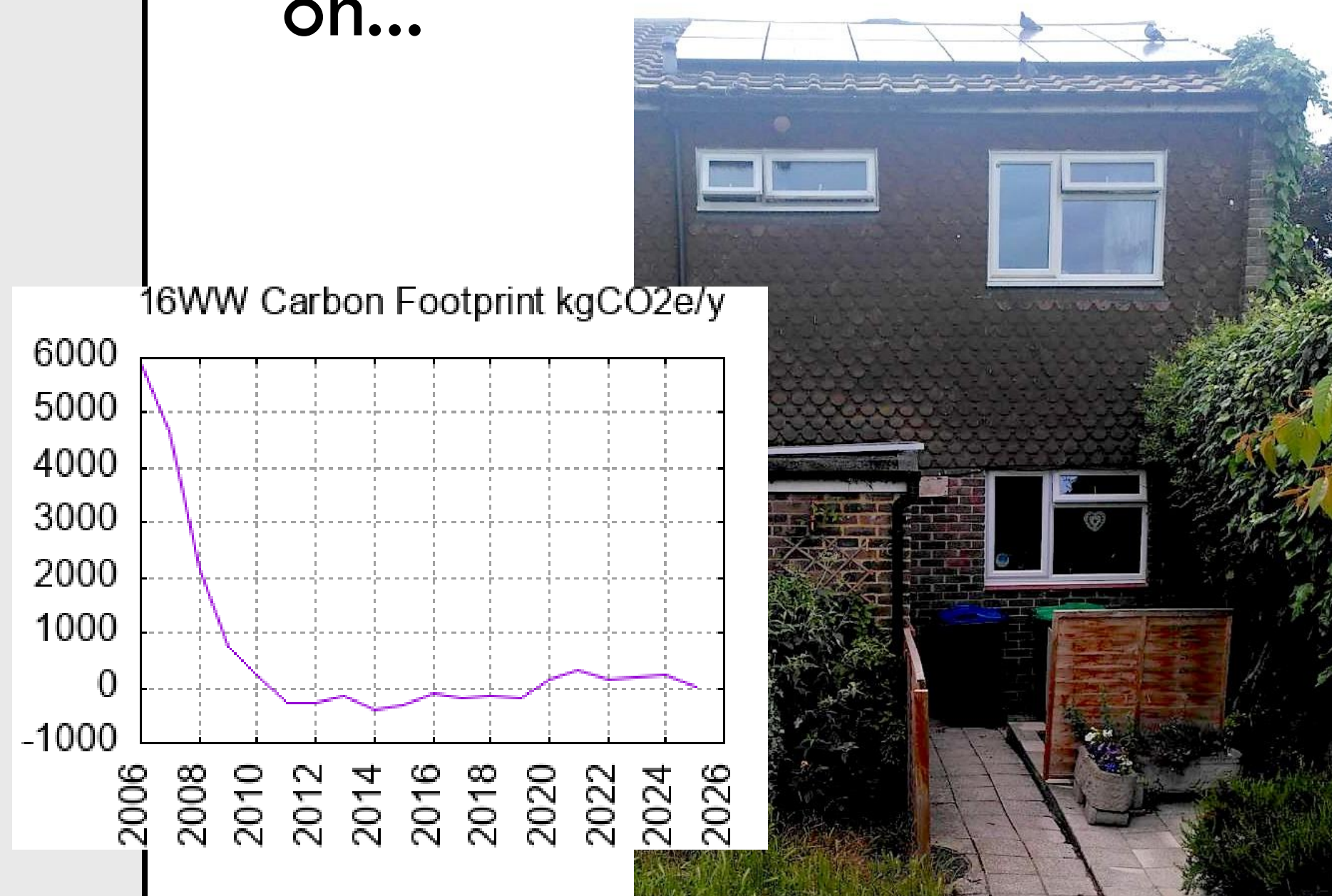
Technical progress is often incremental and piece-wise.

Derivatives trading, Internet protocols, and electrifying home heating all rhyme in this.

Switching to heat pumps for Net Zero could double peak load, and endanger the grid during dunkelflauten...

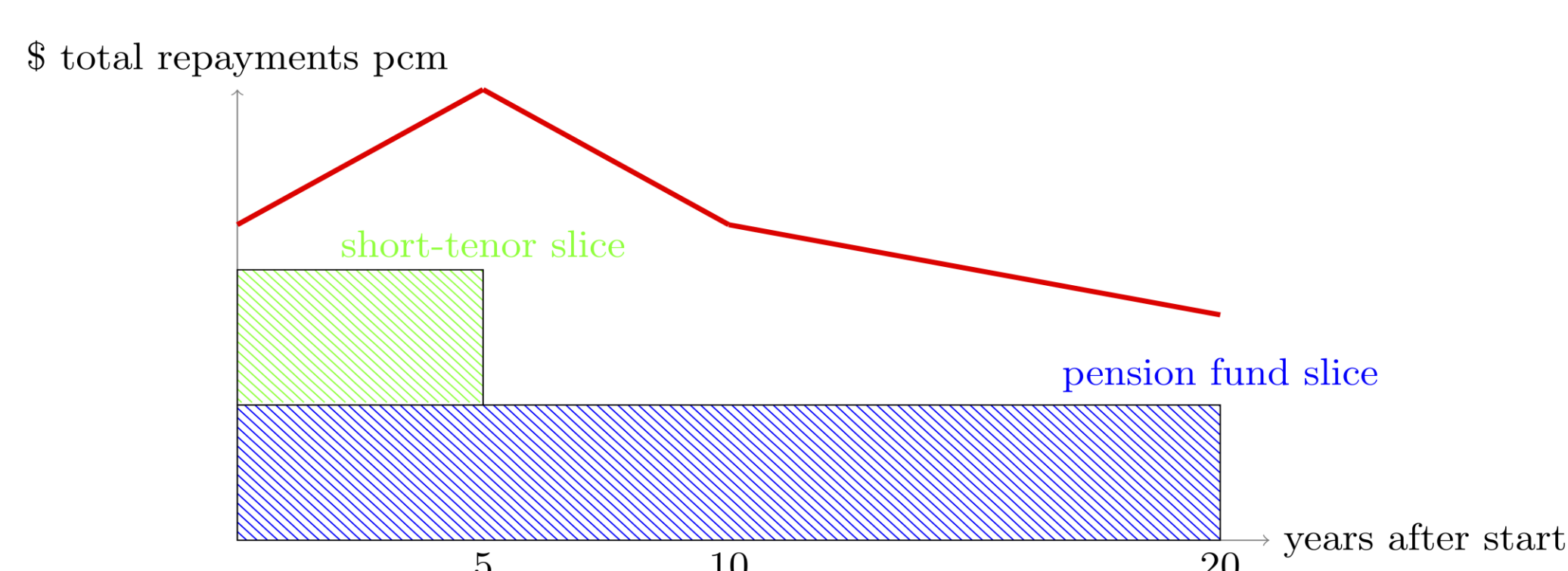
## Materials and methods

Existing literature + decades in the City + thinking about smart grid + Internet distributed systems + a home to experiment on...

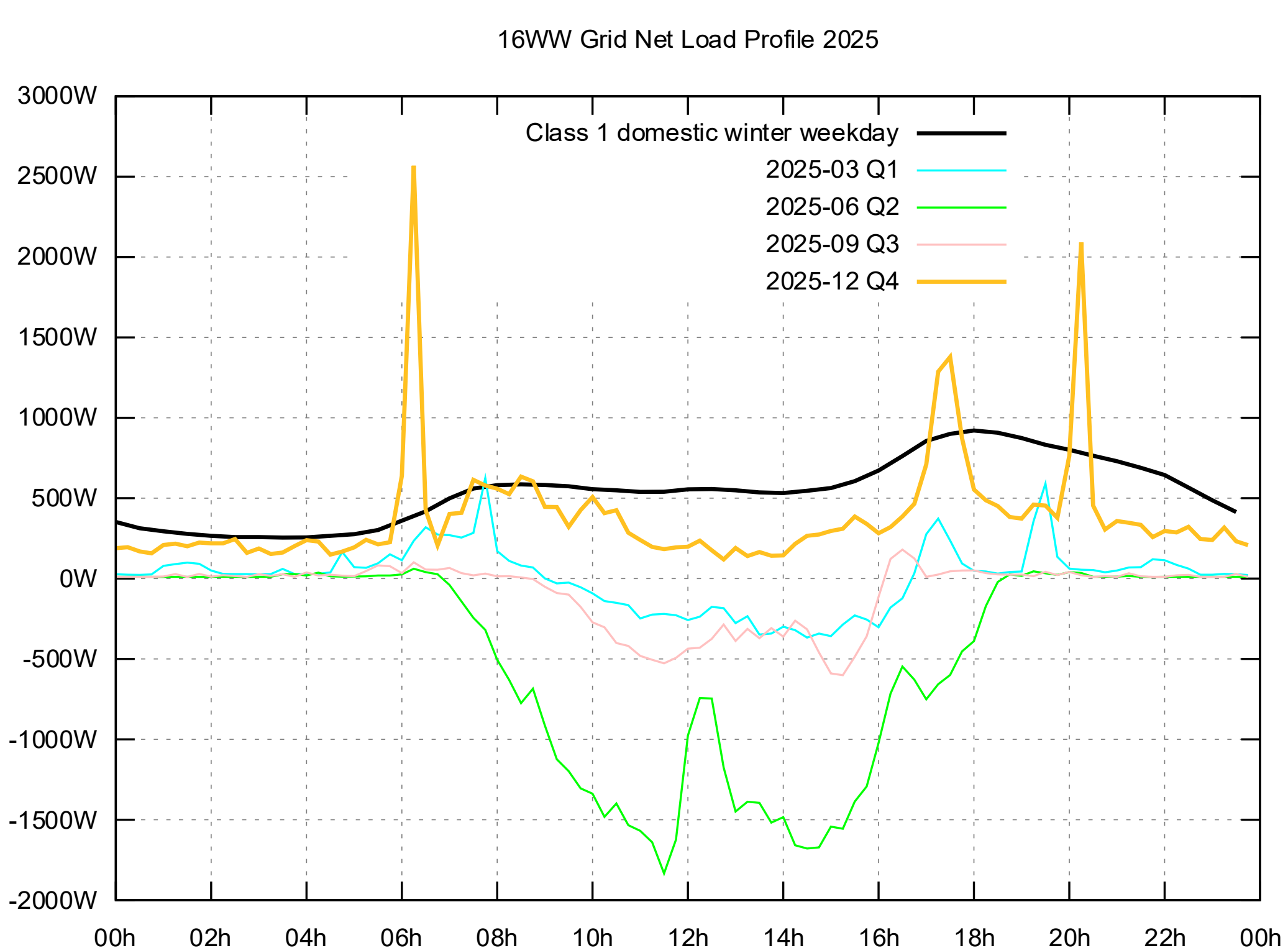


## Discussion and Results

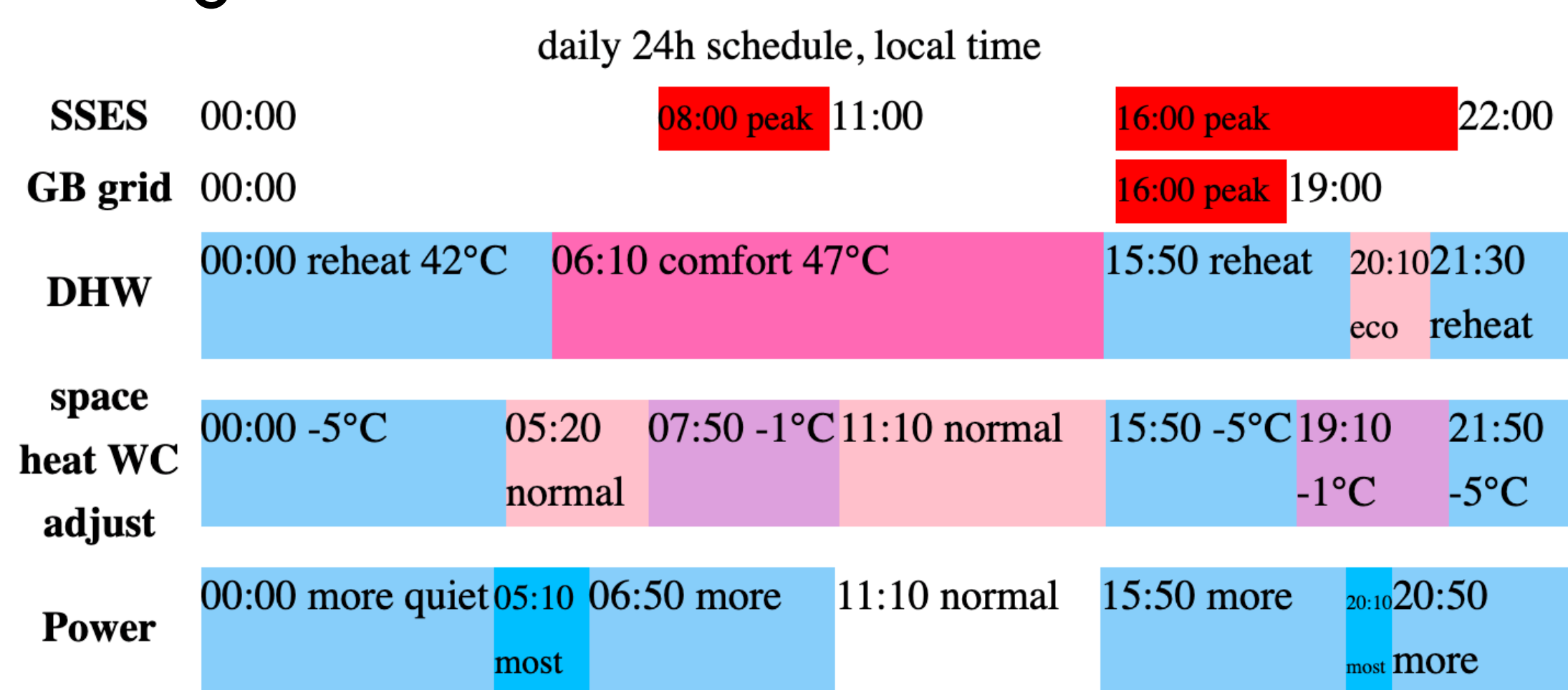
How does a derivatives structurer chop up a pool of 20-year residential mortgages to sell on to pension funds etc for different durations and risk appetites?



How far away from a typical GB domestic home (black) have I bent my own electricity load curve (yellow) and how?



Tackling a complex curve by many participants taking a different segment each...



## Conclusions

We are already doing this, over millions of participants. But we should be more explicit in our thinking so as to help spread the solutions more effectively between (say) low-engagement consumers and early-adopters and able-to-pay. Adjusted habits (free), though simple timers, solar PV and batteries, to heat-pumps (expensive) can all contribute.

**Next:** I am researching ways to increase agency across demographics so as to improve overall progress to Net Zero while decarbonising home heating, from smart controls to music.

## Relevant Literature

NESO (GB National Energy System Operator), Crowdflex (online). Coval J, Jurek J, Stafford E. The economics of structured finance. Journal of Economic Perspectives. 2009 03;23(1):3-25.



## Further information

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