

Research proves there is power in numbers to reduce electricity bills

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Consumers can save money on their electricity bills and negotiate better deals by joining forces with similar groups of customers to switch energy suppliers according to new research.

Collective switching or [group buying](#) schemes, where thousands of consumers join forces to negotiate cheaper [electricity](#) tariffs, are becoming more popular in the UK as bills continue to rise putting increasing pressure on household budgets. Initiatives like Which?'s Big Switch, People Power or the Big Deal have helped thousands of consumers to save, on average, up to a third of their yearly electricity bills.

Now research from Heriot-Watt University and the University of Southampton proves these schemes work and proposes a model to help consumers form more efficient buying groups and minimize switching risks.

A common problem with existing schemes is that one tariff may not be efficient for every consumer. Often they may have been financially better off not switching, or as the research now shows creating a new sub-group which chooses a different tariff.

Speaking at the AAAI Artificial Intelligence conference in Canada this week Dr. Valentin Robu from Heriot-Watt University explains, "Electricity suppliers buy from the wholesale market where [electricity prices](#) are considerably lower. There are a number of ways they sell this

onto consumers but typically they predict the amount of electricity required and pass on premium prices to consumers to cover any risk associated with over or under buying, allowing them to make profits.

"Crucially, this is where group buying is important. While everyone has potentially some uncertainty about their future consumption, our work shows that, by grouping together, consumers can gain size and market power and reduce their risk and access better prices."

In the new group buying models consumers start with a 'prediction-of-use tariff' which predicts their future consumption using their past data. Based on these patterns, they can then choose to join one of many different types of buyer groups with different tariffs, ranging from:

- **Unpredictable:** best suited to a flat tariff, which is identical to existing flat rate supplier tariffs, in which they just pay per unit consumed, irrespective of their prediction
- **Predictable:** best suited to a structured tariff where they pay less per unit of power predicted in advance but a higher penalty for over or under consumption

The research has been tested using consumption data from 3,000 UK domestic consumers and techniques from the fields of [artificial intelligence](#) and coalition theory to help find the best solution for each household.

Dr. Robu added, "While we now know how to efficiently form buyer groups to reduce each customer's [electricity bill](#), previous research and practice shows customers are often reluctant to switch providers. Even if we can calculate what the most efficient decision would be consumers worry about loss of convenience and uncertainty of the future benefits.

"Our next challenge is to design smarter systems that not only propose

the efficient tariff groups, but also "nudge" people towards making the optimal choice for them."

The ultimate aim of the research is to use artificial intelligence to design tools that enable consumers to choose their optimal tariff and allow them to identify other consumers to group with that have an efficient match in terms of their consumption patterns.

More information: Pre-print of the full paper is available at:
eprints.soton.ac.uk/364307/

Provided by Heriot-Watt University

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