



Whitaker Institute Policy Brief Series

Policy Brief No.: 91

December 2021

Cluster: Centre for Economic Research on Inclusivity and Sustainability (CERIS)

Theme: Sustainable and Inclusive Societies

Further Reading: Harold J, Bertsch V, Fell H (2021) Preferences for curtailable electricity contracts: Can curtailment benefit consumers and the electricity system? *Energy Economics*, DOI: 10.1016/j.eneco.2021.105454

Contact:
jason.harold@nuigalway.ie

Read More About: For more information about CERIS, visit <http://www.nuigalway.ie/ceris/>

The content and views included in this policy brief are based on independent, peer-reviewed research and do not necessarily reflect the position of the Whitaker Institute.

Sign up to the Policy Brief Series [Here](#)

Preferences for curtailable electricity contracts: Can they benefit consumers and the electricity system?

Growth in electricity demand together with the expansion of variable renewable energy will have significant implications for the future electricity system. One main concern is how the system can maintain balance between supply and demand to avoid blackouts from potential intermittent supply shortages. At present, this balance relies primarily upon traditional sources of flexibility on the supply side i.e. from the conventional power plants. With the transition underway to a more decarbonised system, new sources of flexibility are required including on the demand side. End-use specific curtailable electricity contracts are an instrument that could help increase demand flexibility, whereby utilities compensate a consumer to get access to their load to either interrupt it entirely or to curtail it to some degree during periods of system instability. It is end-use specific in that the load curtailed is directly related to the final energy service provided, for example, a remotely operated power button on a washing machine. In this context, this research examined consumer preferences for these types of contracts on household appliances in Ireland during the peak load hours between 5pm and 8pm.

Key Findings

Overall the research found that consumers are generally indifferent to curtailable contracts compared to their status quo contract with their preferences found to be largely dominated by the type of appliance in the end-use specific curtailable contract. After controlling for household appliance ownership, the research found that consumers are less likely to choose a contract that curtails the electric oven and more likely to choose contracts that curtail either the tumble dryer or dishwasher when compared to the washing machine. The research also shows that consumers have strong preferences for contracts with a low monthly frequency of curtailment that include both an advance notice of at least 12 hours for an upcoming event and an opt out from one event per month to be used when necessary. In addition, the net benefits to the electricity system in curtailing the tumble dryer or dishwasher at low monthly frequencies are found to be positive, while net benefits to the system are estimated to be negative for both the electric oven and the washing machine.

Policy Implications

The findings suggest that there is potential for end-use specific curtailable contracts with consumers found to prefer certain types of the alternative contracts presented to them compared to their current electricity contracts. This could present policymakers and grid operators with much greater flexibility in balancing electricity systems and help achieve greenhouse gas emissions targets more efficiently. Most notably, this research helps policymakers and utilities to understand the value that different electricity services provide to consumers by presenting them with meaningful estimates of the flexibility of so-called 'smart appliances' as well as the value of this flexibility. Furthermore, the availability of user friendly controls such as the provision of advance notice or an opt out is important for the acceptance of curtailable contracts. The presence of these type of controls are found to be very significant to consumer preferences at the margin and as a result, such features should be given consideration by those utilities interested in pursuing this type of demand flexibility.