WISE
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LECTURE SERIES

NRC-CNRC Canada

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DC 1302

Demand Responsive Buildings: Reducing on-peak electricity use in offices and houses

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Utilities need to reduce peak demand for electricity in order to preserve grid stability and to control prices. Buildings, as the biggest users, are prime targets for reducing their peak load through a variety of measures known collectively as "demand response" (DR). Through lab and field studies, researchers at NRC and elsewhere have demonstrated that substantial peak load reductions are possible in commercial buildings via lighting and HVAC (heating, ventilation, and air conditioning) control and curtailment, without hardship to occupants. In collaboration with the University of Waterloo, NRC has also looked at DR in residences, and in particular the PeakSaver program, which gives utilities direct control over residential AC units. Results show substantial reductions in peak load (though how much depends on how you calculate it!) but that a substantial number of program participants do not contribute to savings.

Biography

Dr. Newsham completed his Ph.D. in Architectural Science at Cambridge University in 1990 and joined NRC soon after. He became Group Leader of the Lighting Sub-Program in 1999 and was promoted to Principal Research Officer (NRC's highest grade) in 2011. He has led research projects in support of private and public sector clients on office space design, post-occupancy performance of green buildings, lighting quality and control, LED lighting, sensor networks in buildings, demand-responsive buildings, office equipment energy use, and thermal comfort. He has more than 100 publications related to his research work which have received numerous international awards. Dr. Newsham is a co-author of the new IESNA/ANSI Recommended Practice for Office Lighting, and is a member of the Task Group on Lighting and Electrical Power for the National Energy Code for Buildings.