Electricity Impacts of Coordinated Purposeful Behavior (CPB)

JOHNS HOPKINS UNIVERSITY

BERKELEY LAB
Lawrence Berkeley National Laboratory

Sarah Olexsak, Johns Hopkins University

Alan Meier, Lawrence Berkeley National Laboratory

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Can mass purposeful behavior affect regional electricity demand?

What are examples of this occurring in society?

Can collective efforts of purposeful behavior be useful?

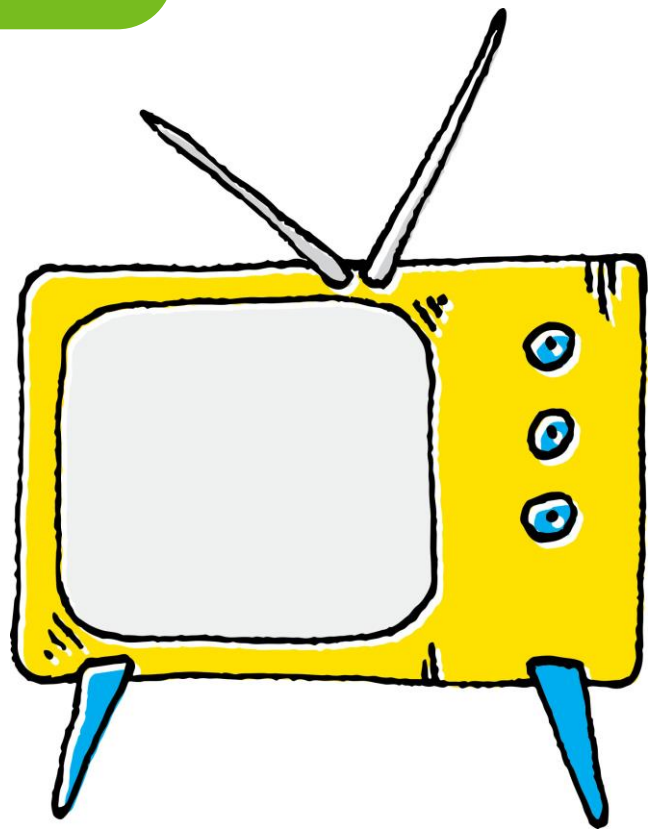
Where can it address temporary electricity shortfalls or other crises?

Can short-term demand shifts lead to longer-term action?

How can these events result in sustained behavior and investment change?

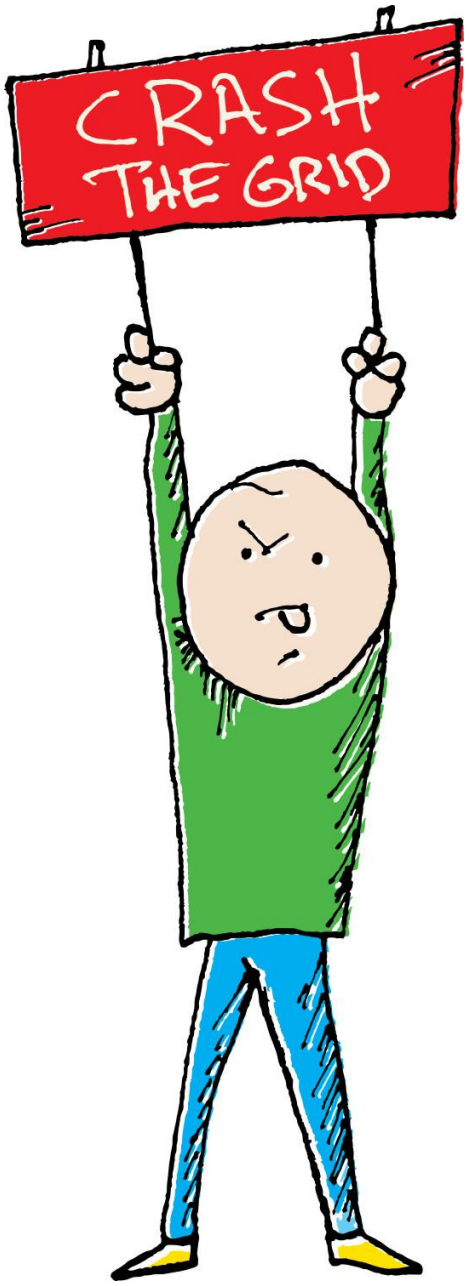
Television pickup

- Observed in the residential sector since the 1960s
- TV viewing displaces other activity electricity demand drops
- Commercial breaks causes jump in demand



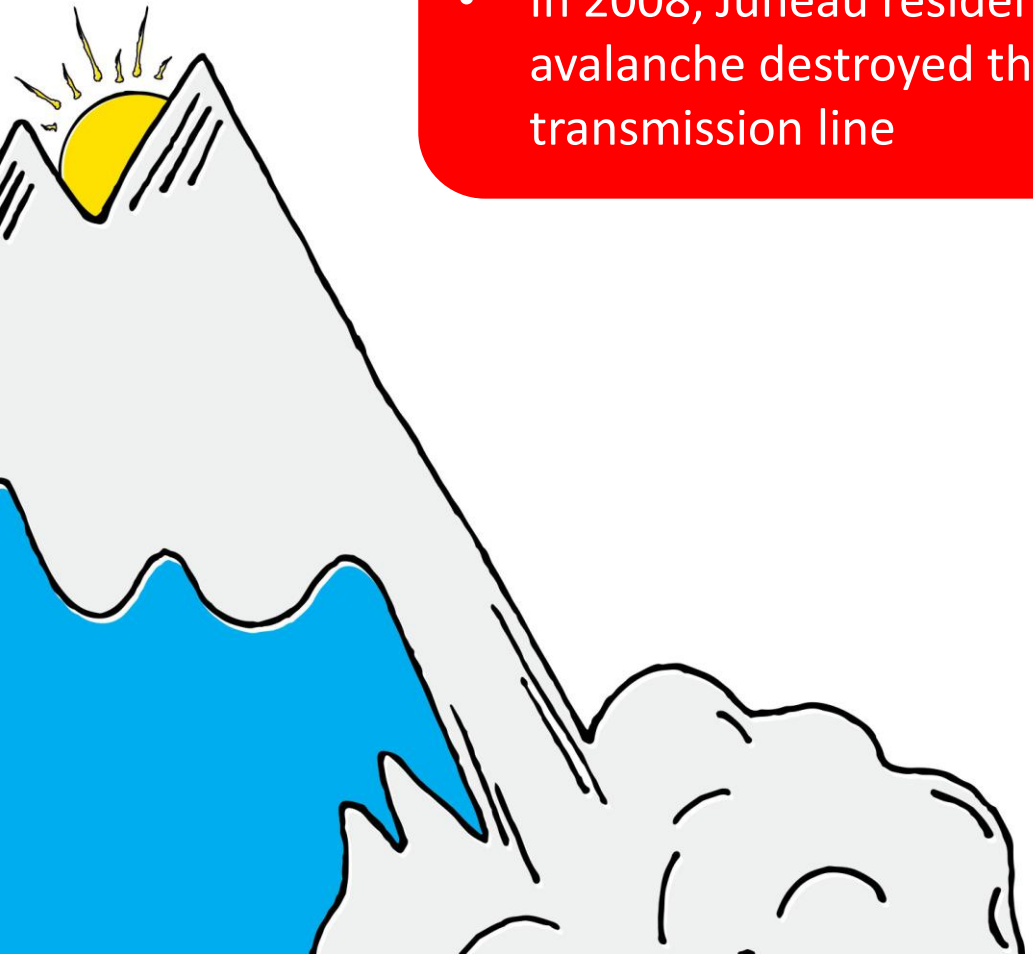
Civilian protest

- In 2009 Iranians banded together to protest the reelection of President Mahmoud Ahmadinejad
- By all turning on high electricity consuming appliances at the same time, citizens hoped to topple the grid
- Localized grid failure was reported



Emergency energy conservation

- Government leaders can use CPB as a demand-control strategy when use of price motivators is not possible
- In 2008, Juneau residents avoided blackout when an avalanche destroyed the central hydroelectric transmission line



Lunchtime in Japan

- Workers in commercial sector switch off average of 50 watts of lights & equipment per person each day during lunch
- Homogeneous population and traditions result in 6 GW drops midday drops

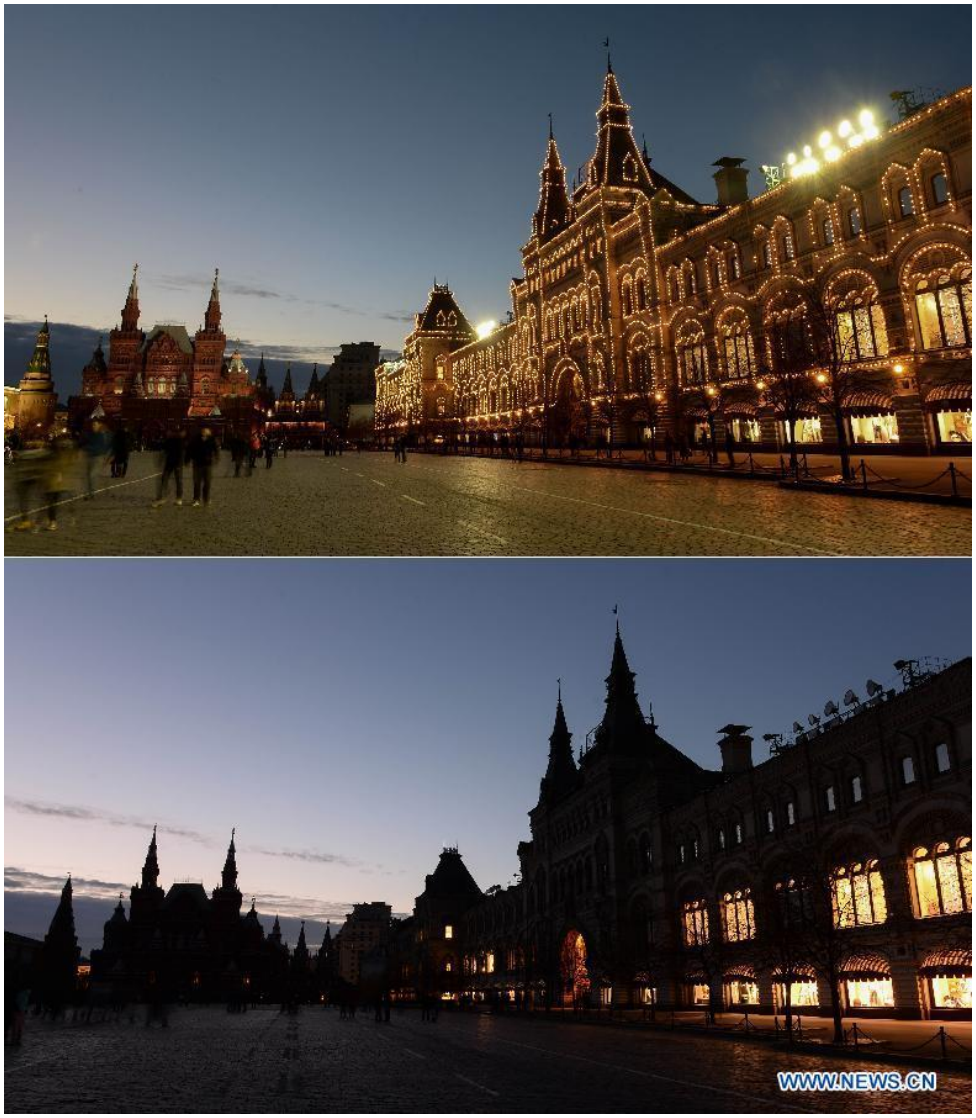
What is Earth Hour?

- Organized by the World Wildlife Fund
- Occurs once per year (March)
- Aims to call attention to collective impact a community can make when members voluntarily combine electricity conservation efforts

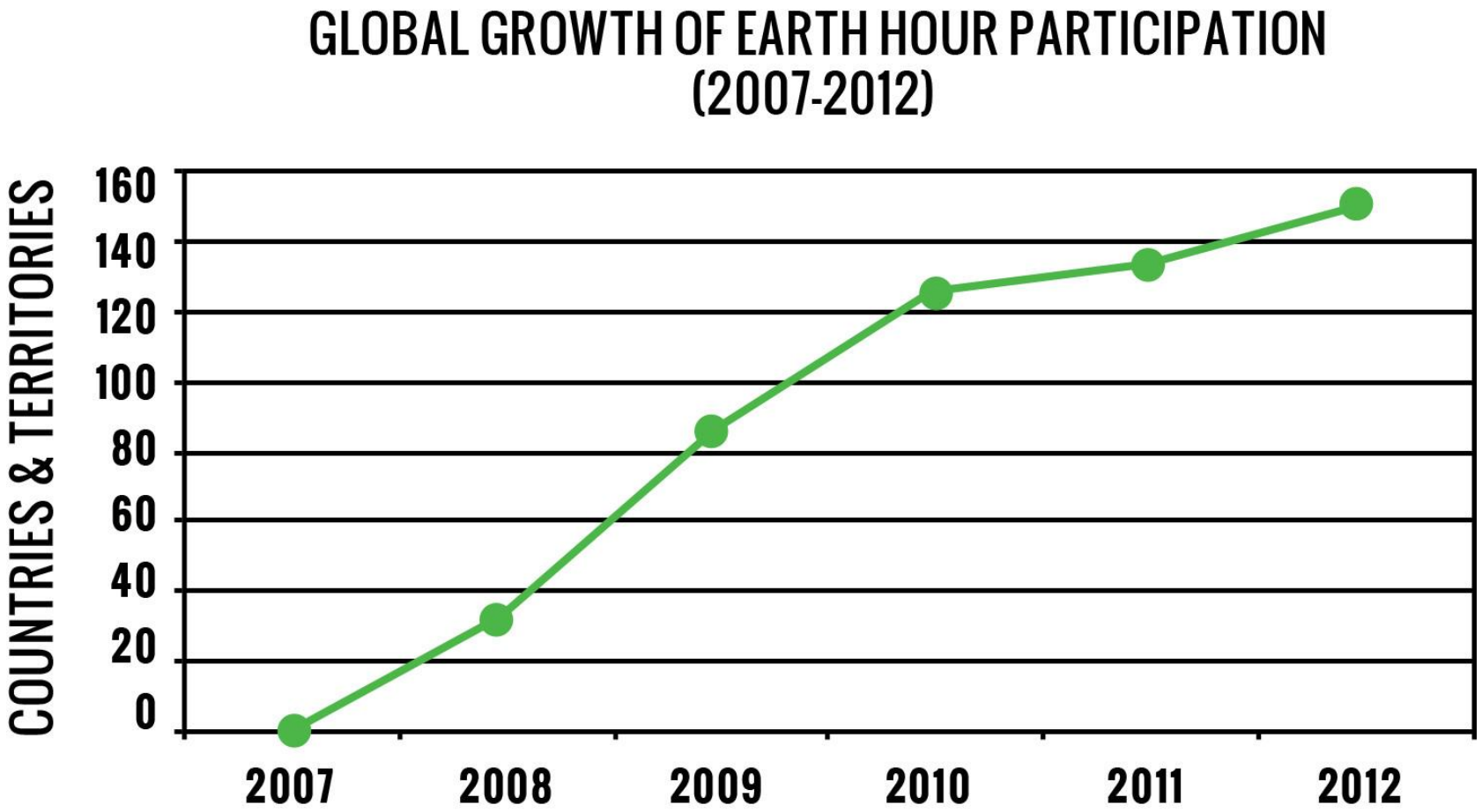
Earth Hour Sydney

Earth Hour Paris

Earth Hour Moscow



How has Earth Hour grown?



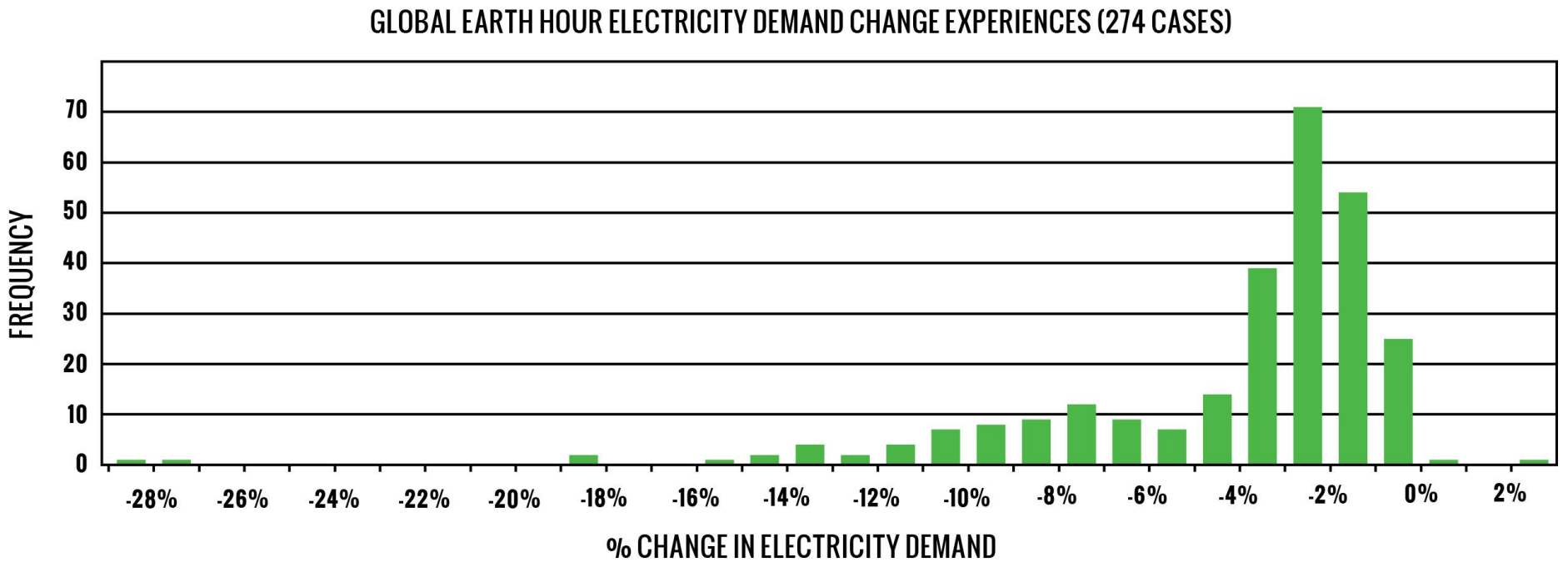
COUNTRIES WITH REPORTED EARTH HOUR DEMAND SHIFTS (2007-2012)

Country	Number of events	Observed electricity demand reduction (%)			
		Minimum	Maximum	Average	Median
Australia	18	18.8	−0.3[a]	6.6	5.9
Canada	231	28.0	0.1	3.9	2.6
Indonesia	3	6.6	2.0	3.9	3.0
Ireland	1	–	–	0	–
Israel	4	7.5	2.5	5.3	5.7
New Zealand	5	12.8	−2.1[a]	3.6	2.0
Qatar	1	–	–	10.0	–
Sweden	2	3.6	1.0	2.3	2.3
United Arab Emirates	1	–	–	2.4	–
United States	8	7.0	0	1.8	1.0
Total	274	28.0	−2.1[a]	4.0	2.6

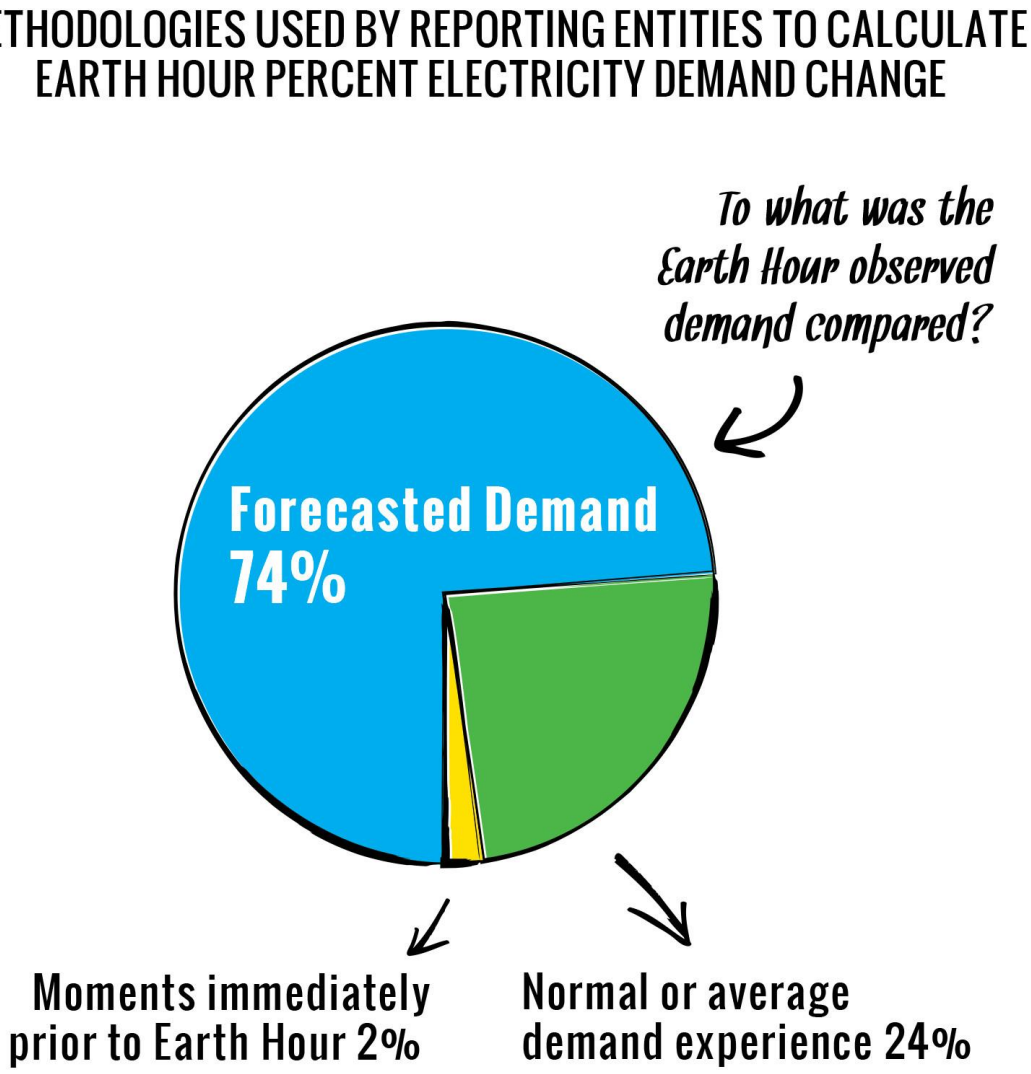
[a] An increase in demand was observed.

NOTE: Earth Hour does not aim to achieve measurable electricity savings.

Earth Hour resulted in average 4% drop in demand

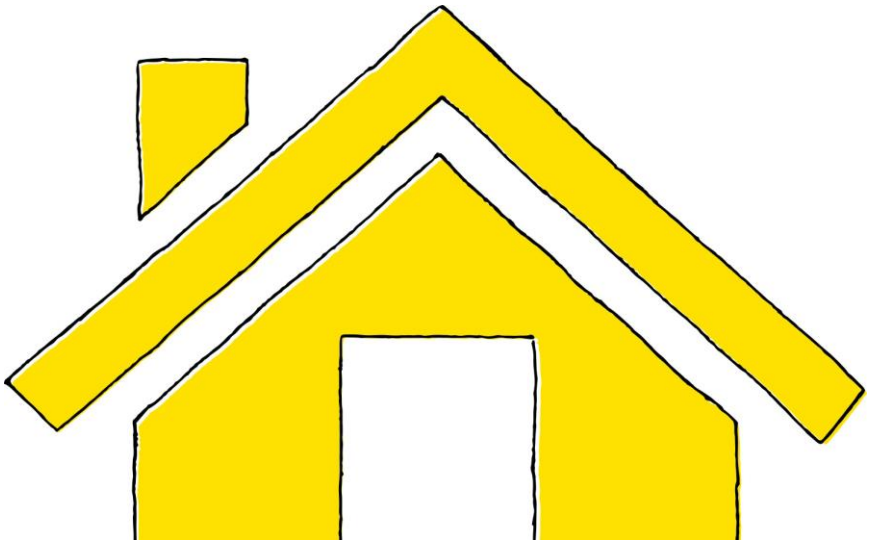


What demand change methodology was used in reports?



Conclusion #1: Coordinated Purposeful Behavior can quantitatively affect regional electricity demand

- Earth Hour participants acting together made measurable shifts in electricity demand at the grid level
- Earth Hour data, with other CPB anecdotes, illustrate the importance of short-term behavior on grid demand



Conclusion #2: Significant electricity reduction is possible without the use of price motivators (in the short term)

- This may prove important to leaders in days/hours leading up to electricity shortage when price has not yet increased
- More research needed to determine how short-term behavior change can be applied during these times of crises

Conclusion #3: Extending individual behavior change beyond Earth Hour is an opportunity and a challenge

- In 2011 Earth Hour organizers began encouraging participants to take actions beyond the “Hour” with “60+” campaign
- Persistent savings in regions that undertake the annual event does not necessarily reflect on individual behavior persistence
- More work needed to determine policy that encourages long-term behavior change and investment in energy efficient technology

Appendix: References

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