



DRIVING TRANSFORMATION

Behavior, Energy & Climate Change (BECC) / November 12-15, 2023 / Sacramento, CA

Co-Convened by

Stanford

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Solving the Grid Puzzle -

Effective Shed, Shift, and Stack approach to Behavioral Energy Efficiency and Demand Response

November 13, 2022

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Convened by:

The Good News Is: Utilities are Already Laying the Groundwork for BEE+BDR

Behavioral Energy Efficiency (BEE) programs are evolving into foundational programs to springboard customers into loadshifting, like Behavioral Demand Response.

Built in population to
call upon

Customers receiving
personalized insights
& *shed* coincident
demand via BEE and
time of use insights

Customers pre-
coached and ready
for nudges to *shift*

kW shed & shifted



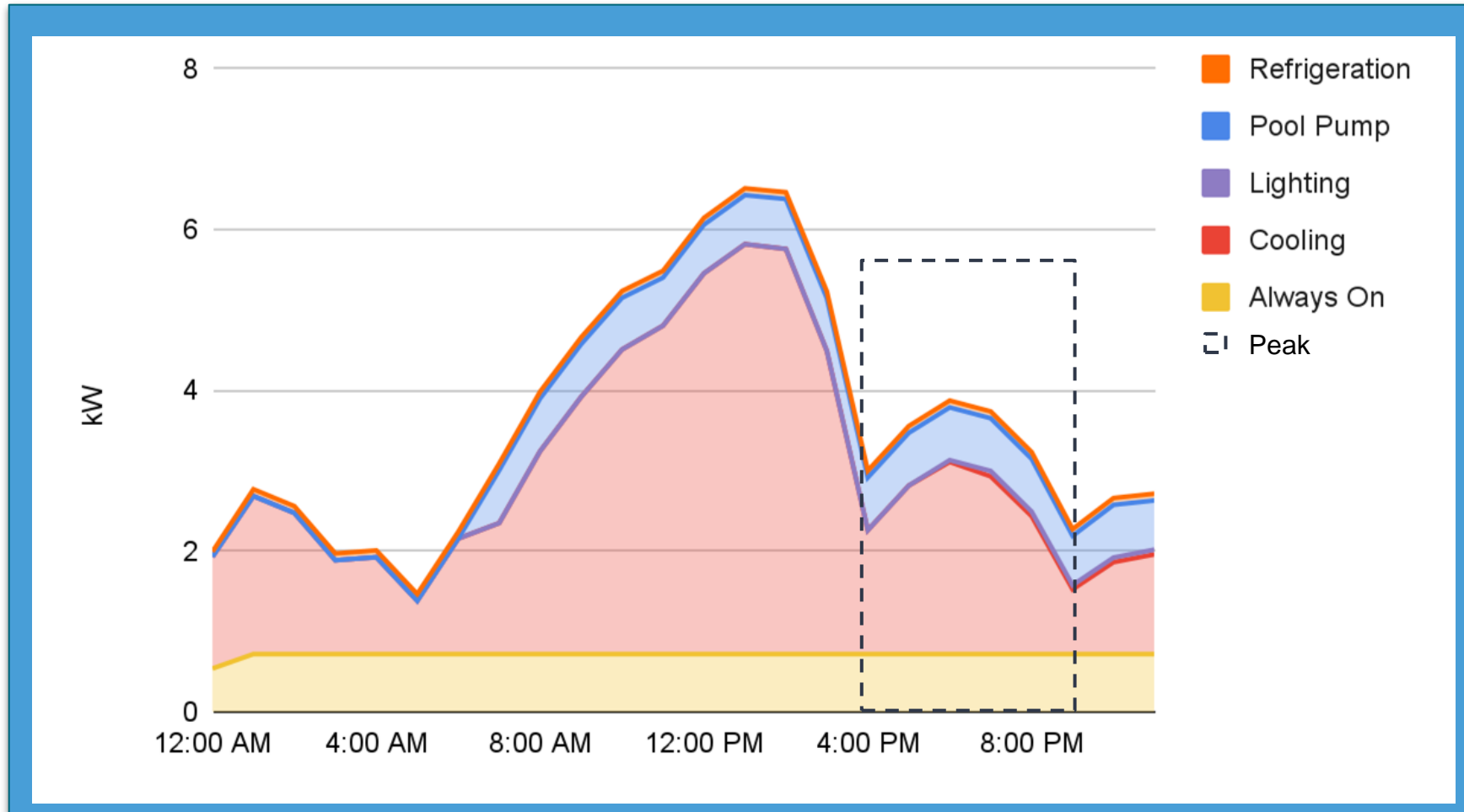
Case Study: Through the Eyes of the Customer

A four-person household with a baby and toddler at home. This customer is **sensitive to temperature swings** and prefers a constant temperature, but is willing to make some changes. They have high HVAC usage and **have a pool pump that runs consistently throughout** the day.



Typical July Weekday Usage

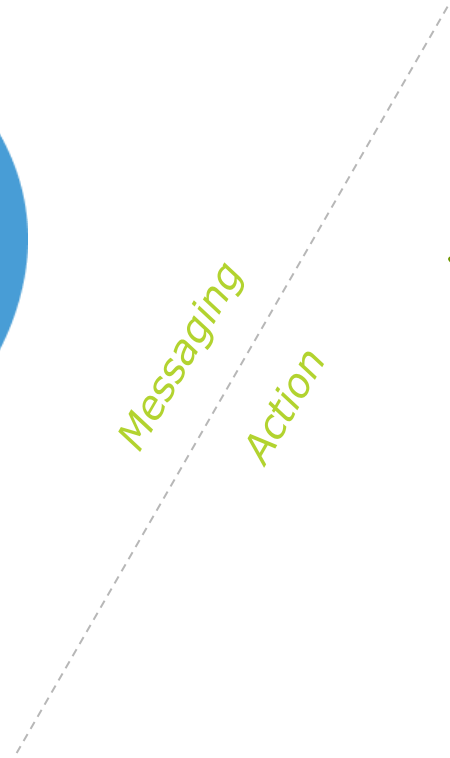
High HVAC & all-hours pool pump usage



Normative Comparison Shed-Focused Communication: Coincident Demand Reduced



"You used **more energy for AC than your neighbors** in the last cycle. Here are some ways to reduce your AC usage."



Adds insulation to attic to reduce AC usage



Non-Personalized Normative Comparison Shift- Focused Nudge: Unrealized Shift Opportunities



"You used **more energy than your neighbors** on the last peak day. Here's how you can save next time."



Messaging
Action

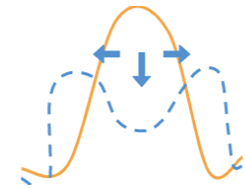


Unplugs some always-on appliances, limits lighting.



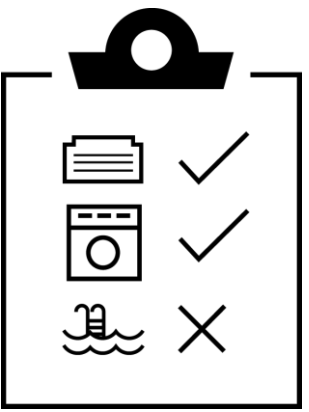
Unsure of what other actions to take





Hyper-Personalized Shift Messaging: Maximum Shift Realized

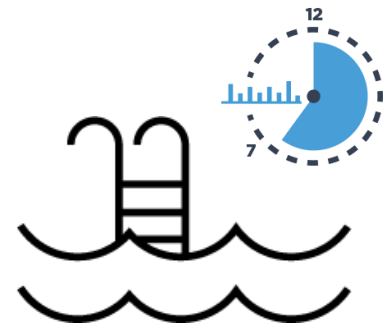
You used your **pool pump during peak hours**, consider programming to off peak.



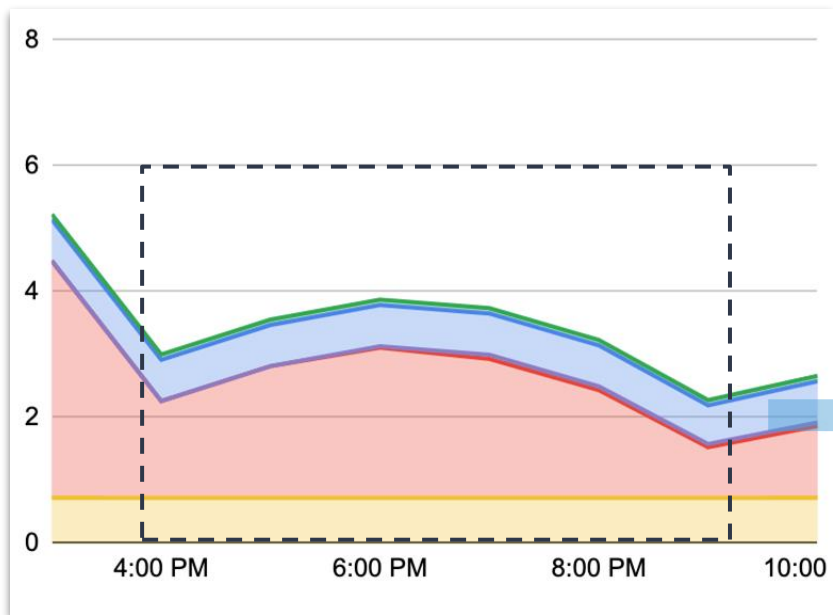
Messaging
Action



Shifts consumption by programming pool pump ahead of next event.

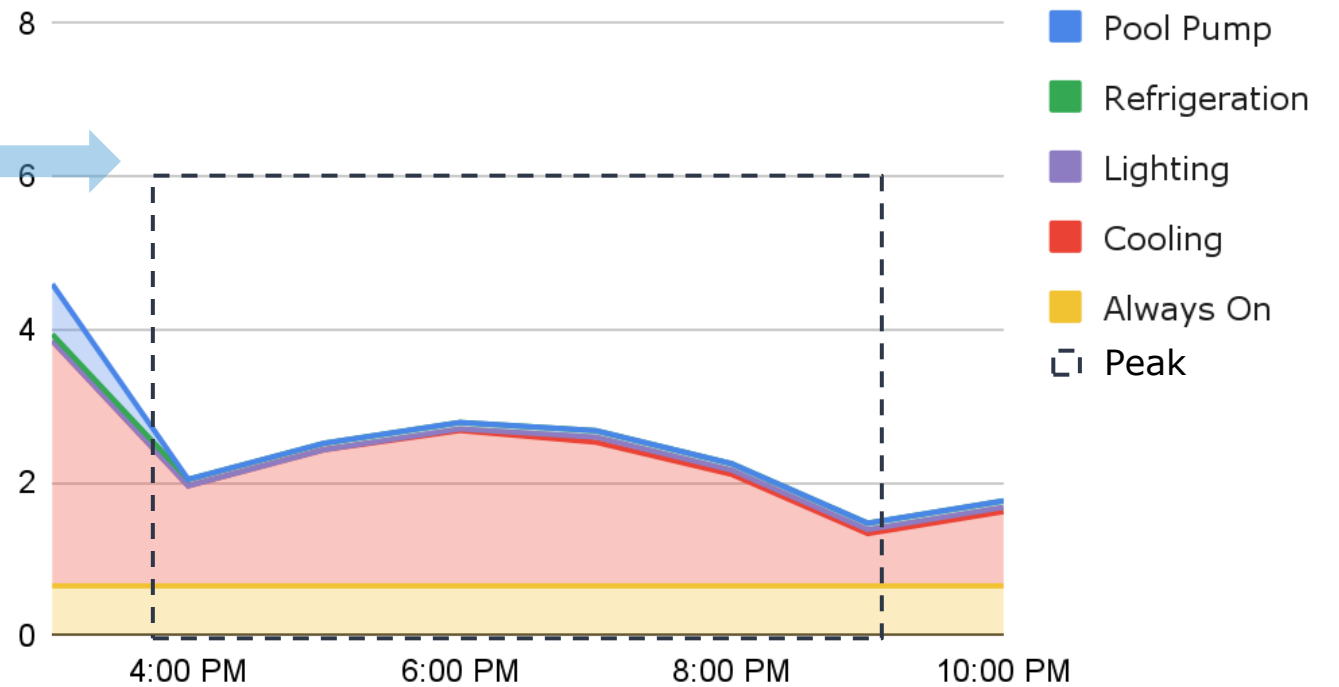


Before

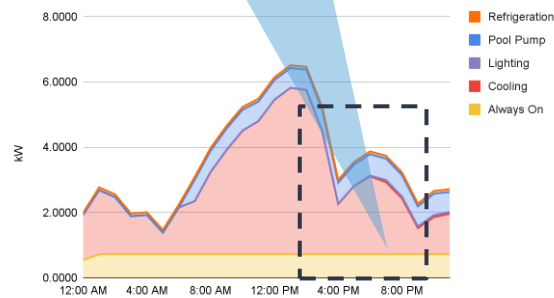


After: Pool Pump Eliminated, Always-On and Lighting Reduced - Flattest Curve

Customer 1: Personalized Messaging



Customer 1: Typical July Weekday Usage



What does this mean?

- **Understanding each piece of an individual's load fingerprint** is required to support customers holistically.
- **Providing deeper insights** can allow us to **maximize behavioral change** beyond the surface of one method alone.
- What's next? **Testing and measuring** stacking programs in the wild and analyzing results.

Theory

Cumulative Potential Peak Load Reduced



Normative Shed = 9%



Normative Shift = 10%



Hyper-personalized Shift = 30%



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