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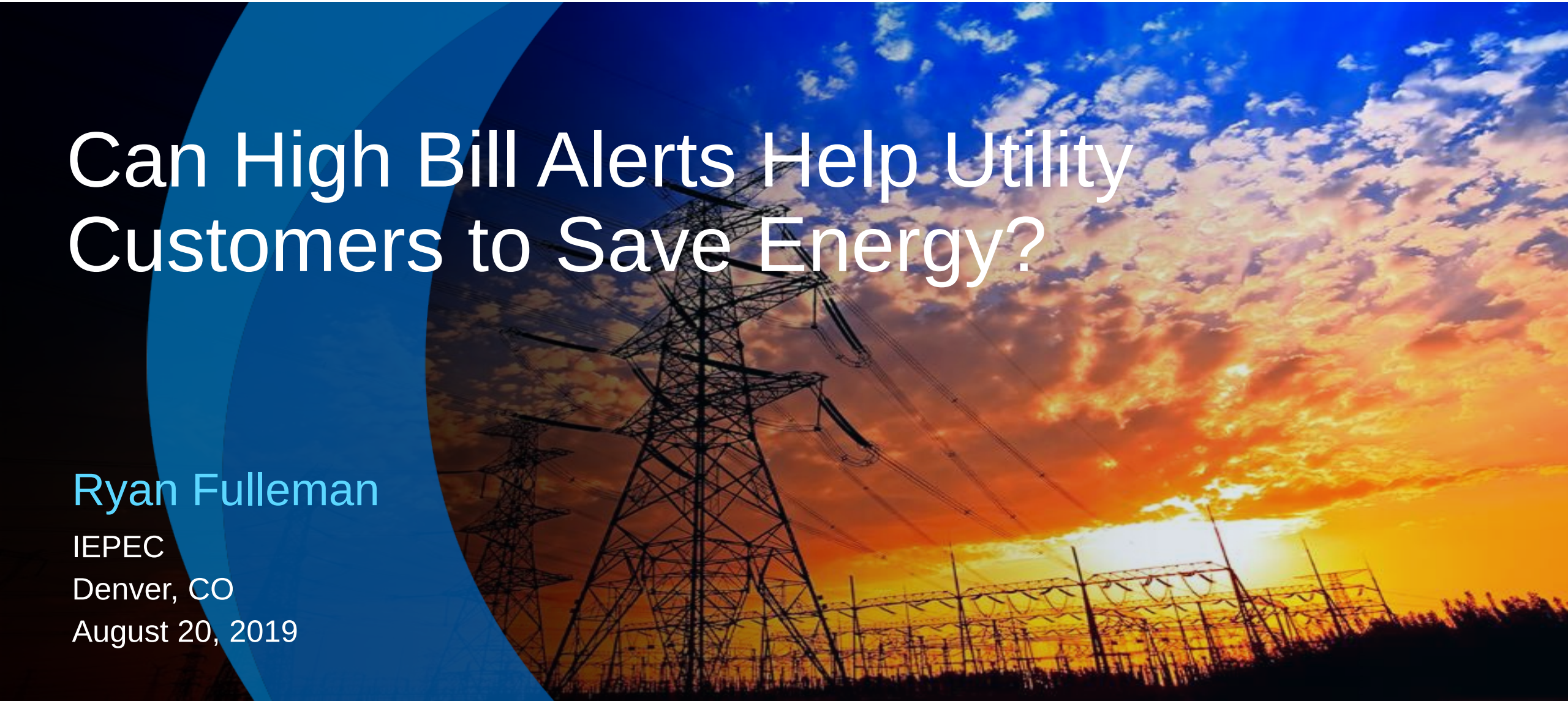
Xcel Energy®

Can High Bill Alerts Help Utility Customers to Save Energy?



Ryan Fulleman

IEPEC

Denver, CO

August 20, 2019

Agenda

HBA Pilot

Evaluation Approach

Findings

Takeaways and Future Research

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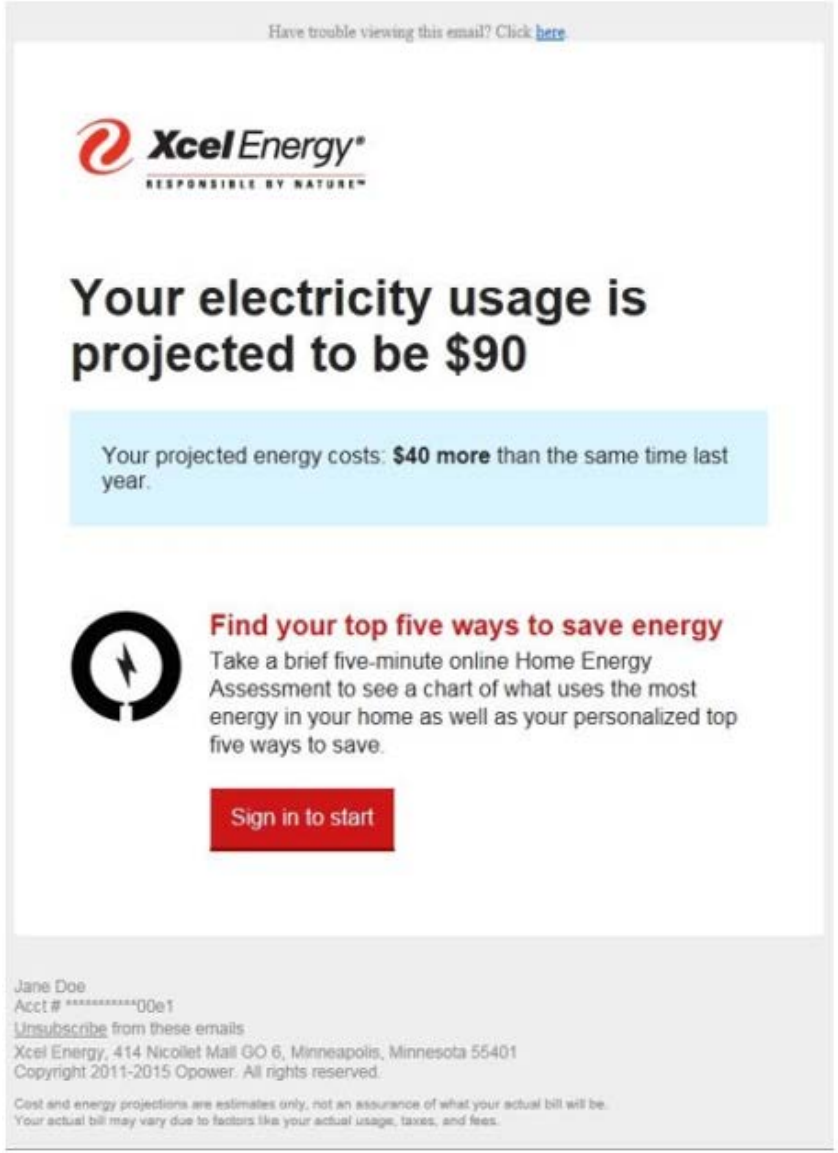
HBA Pilot Overview

- **Xcel Energy sought to reduce call center call volumes**
  - Many residential customers call about higher-than-expected bills
  - Reduce customer service costs
- **High Bill Alert Pilot Program**
  - 50,000 MN residential dual-fuel customers automatically enrolled
  - Email alert sent when customer's monthly electricity or gas consumption was on track to exceed normal levels
  - Alerts sent June 2015 - June 2016
  - HER customers excluded
  - Implemented by Opower (Oracle)

High Bill Alert Email



Features

- Xcel Energy branding
- Bill alert when spending on track to be 30% higher than normal
- Recipient directed to Xcel Energy's on-line Home Energy Assessment website
- Customers can opt out

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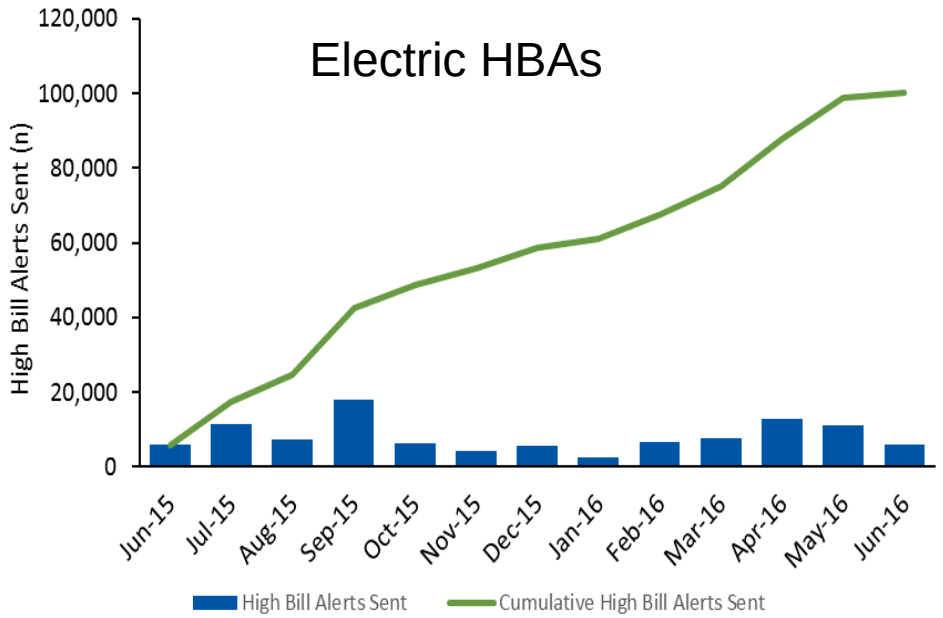
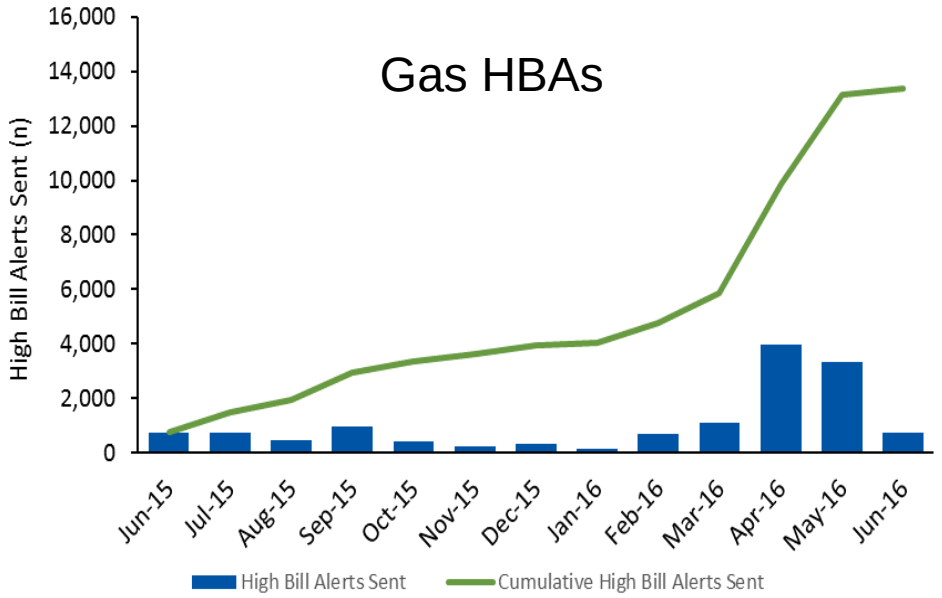
High Bill Alert Delivery





Fuel	Number of Customers Sent HBAs	Number of HBAs Sent	Average Number of HBAs per Treated Customer
Electricity	31,591	100,320	3.2
Natural Gas	6,163	13,355	2.2

- 59% of HBA emails were opened by recipient
- 6.4% of HBA emails resulted in clicking the Xcel Energy on-line energy audit link

Research Objectives

- **No statistically significant effect on customer call center call volumes (Source: Opower/Oracle analysis)**

- **Cadmus research objective**
  - Estimate customer gas and electricity savings during and after the pilot

Agenda

HBA Pilot

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Evaluation Approach

- **Pilot implemented as an RCT**
  - 50,000 treatment group customers and 25,000 control group customers
  - Only treatment group customers eligible to receive HBAs
- **Monthly billing consumption data**
- **Validation of randomized experiment**
- **Fixed-effects D-in-D panel regression**
- **Estimated savings for two phases:**
  - Phase 1: HBAs delivered (June 2015 - June 2016)
  - Phase 2: HBA delivery suspended (July 2016 – April 2018)

Agenda

HBA Pilot

Evaluation Approach

Findings

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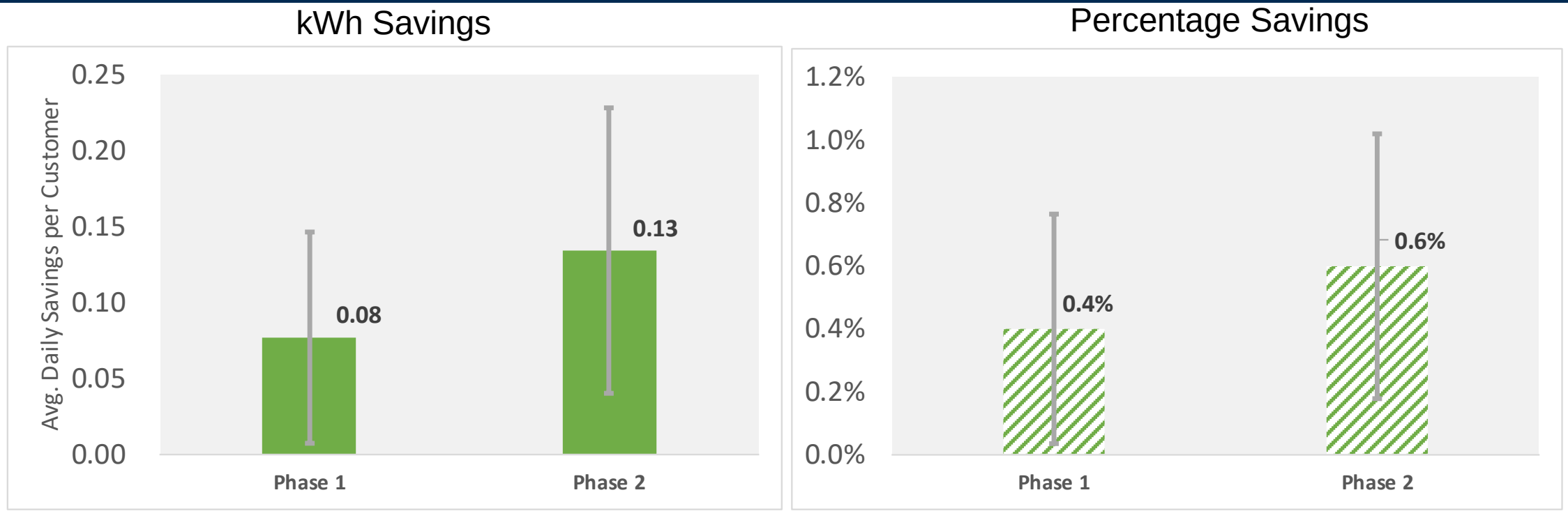
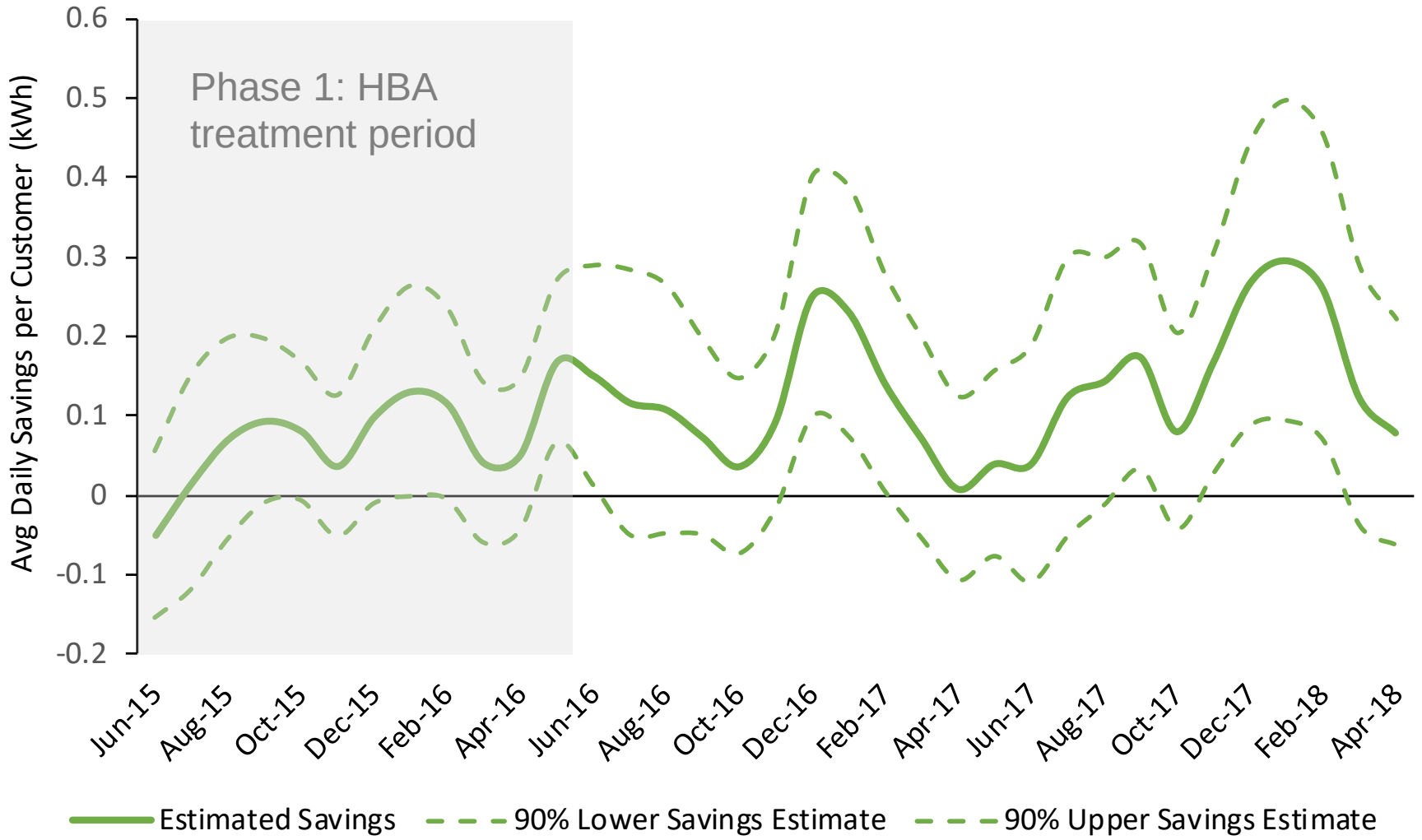
Electricity Savings Estimates



Note: Error bars indicated 90% confidence intervals based on standard errors clustered on customers.

- Electricity savings persisted after Xcel Energy stopped sending HBAs
- In Phase 2, electricity savings per customer who received an HBA equaled 0.16 kWh (0.7%)

Monthly Electricity Savings Estimates



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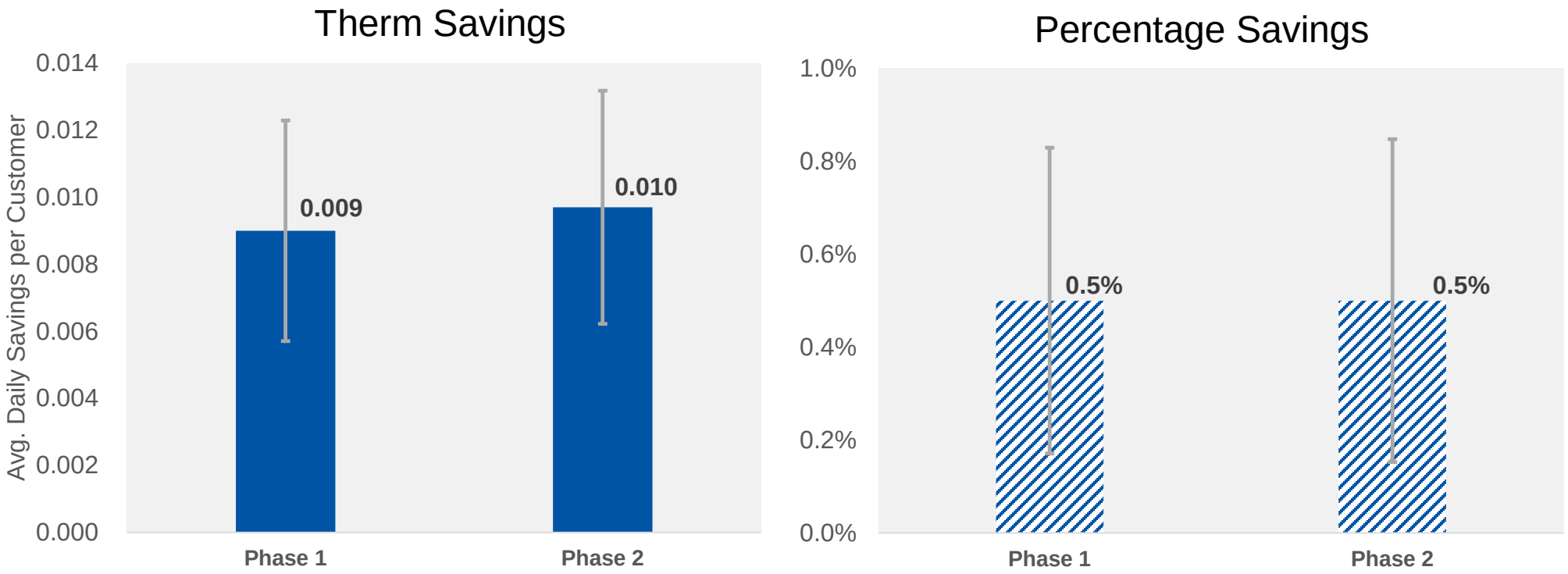
Gas Savings



Note: Error bars indicated 90% confidence intervals based on standard errors clustered on customers.

- Gas savings persisted after Xcel Energy stopped sending HBAs
- In Phase 2, gas savings per customer who received an HBA equaled 0.011 therms (0.6%)

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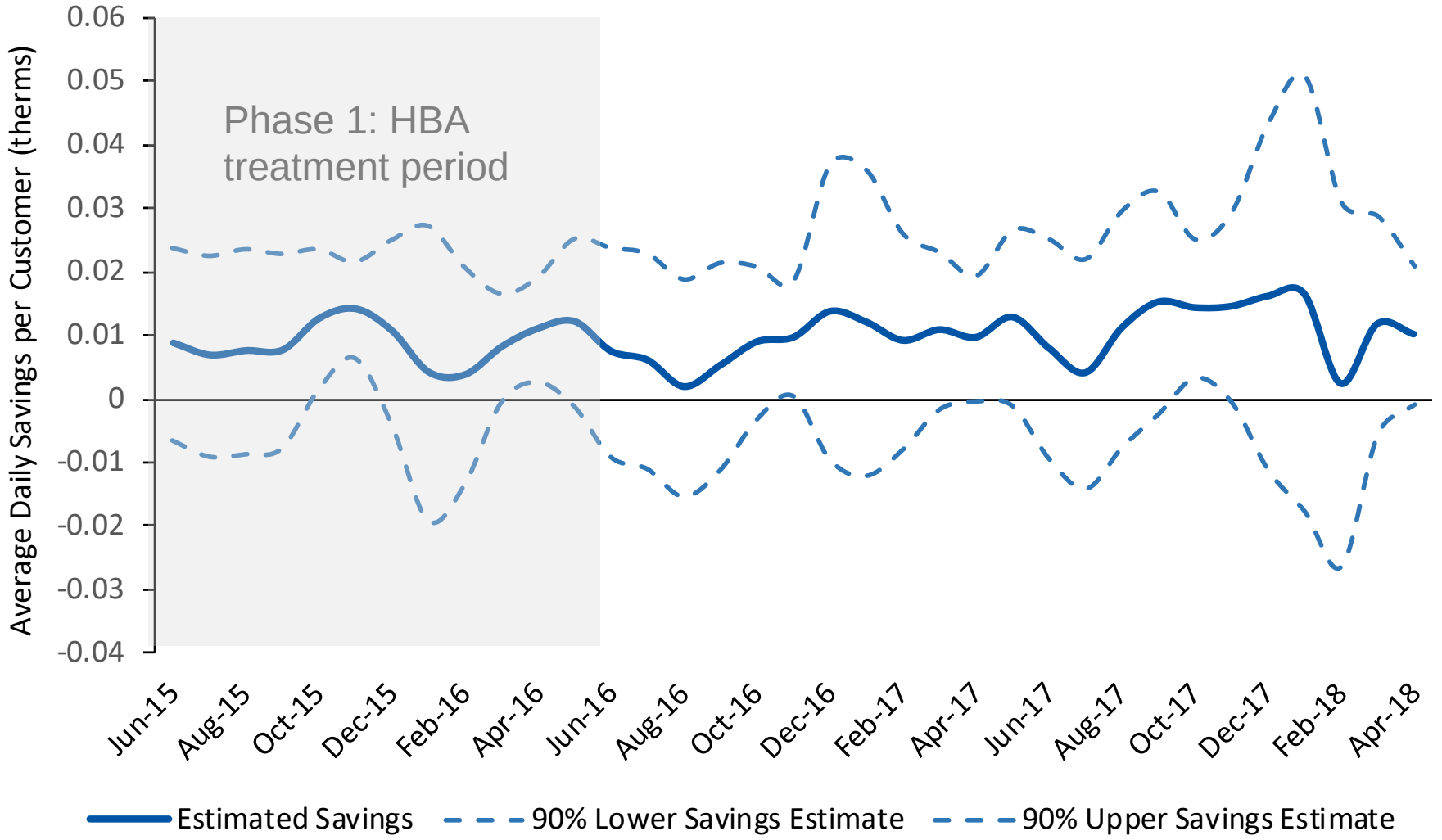
Monthly Gas Savings Estimates



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Agenda

HBA Pilot

Evaluation Approach

Findings

Takeaways and Future Research

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Takeaways

#1: HBAs did not reduce call center call volumes but generated energy savings

- Electricity and natural gas savings of about 0.5% during treatment

#2: Gas and electricity savings persisted after HBA treatment ended

- Electricity savings increased after Xcel Energy stopped sending HBAs

#3: HBAs have other potential benefits that this evaluation did not assess

- Utility customer welfare
  - Customers are inattentive
  - HBAs may reduce costs of tracking consumption, and help customers avoid billing surprises, regret, and billing arrearages
- Customer satisfaction with the utility

Outstanding Research Questions

#1: What are effects of HBAs on customer engagement, satisfaction, and welfare?

- Value from alerts
- Behavioral changes
- Impact on customer satisfaction with utility

Research approach: Customer surveys, willingness-to-pay analysis

#2: How do HBAs generate energy savings? Why do HBA savings persist?

- Visits to Home Energy Assessment website?
- Participation in Excel Energy efficiency programs?

Research approach: Channeling/joint savings analysis

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Thank You

Questions?