

# Behavioral Persistence: a Natural (Gas) Experiment

*Presentation to:*

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# Introduction

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- Behavioral programs increasingly important contributor to electric and gas portfolios
- Persistence of behavioral impacts is uncertain
- Prior studies involved the removal of a randomized subset of a program population
- Summary findings from a “natural experiment” provide assess persistence after cessation of program treatment



# Study Background

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- **Study leverages data from EM&V of Arkansas Joint Gas Utilities programs (program years 2013 & 2014)**
  - CenterPoint Energy (CNP)
  - SourceGas AR (SGA)
- **Home energy comparison reports**
  - Programs launched November 2011
  - CenterPoint Energy: program still administered
  - SourceGas AR: program cancelled after PY2013



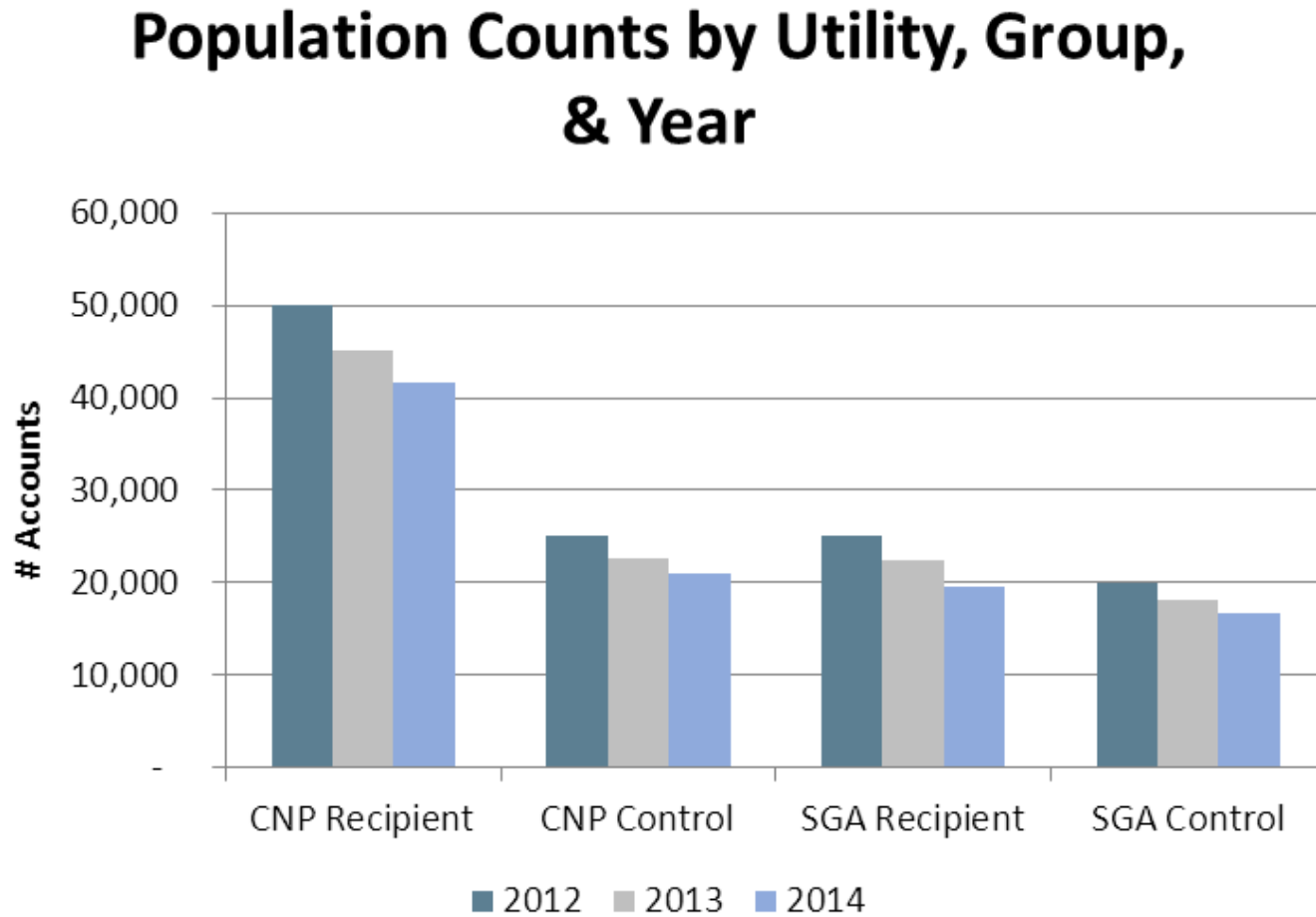
# Study Detail

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- **Utilities administered same program, same implementer**
  - Natural gas usage comparison reporting
  - Randomized control trial study design
    - CNP: 50,000 recipients, 25,000 control
    - SGA: 25,000 recipients, 20,000 control



# Program Attrition



# Study Caveats

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- **Natural experiment grants a study opportunity that would not normally be funded, but with some drawbacks**
  - Issues in comparability; two trials are similar, but not a perfect match
  - Study constrained to model specification used in EM&V reporting
  - No AMI data available; irregular meter reads



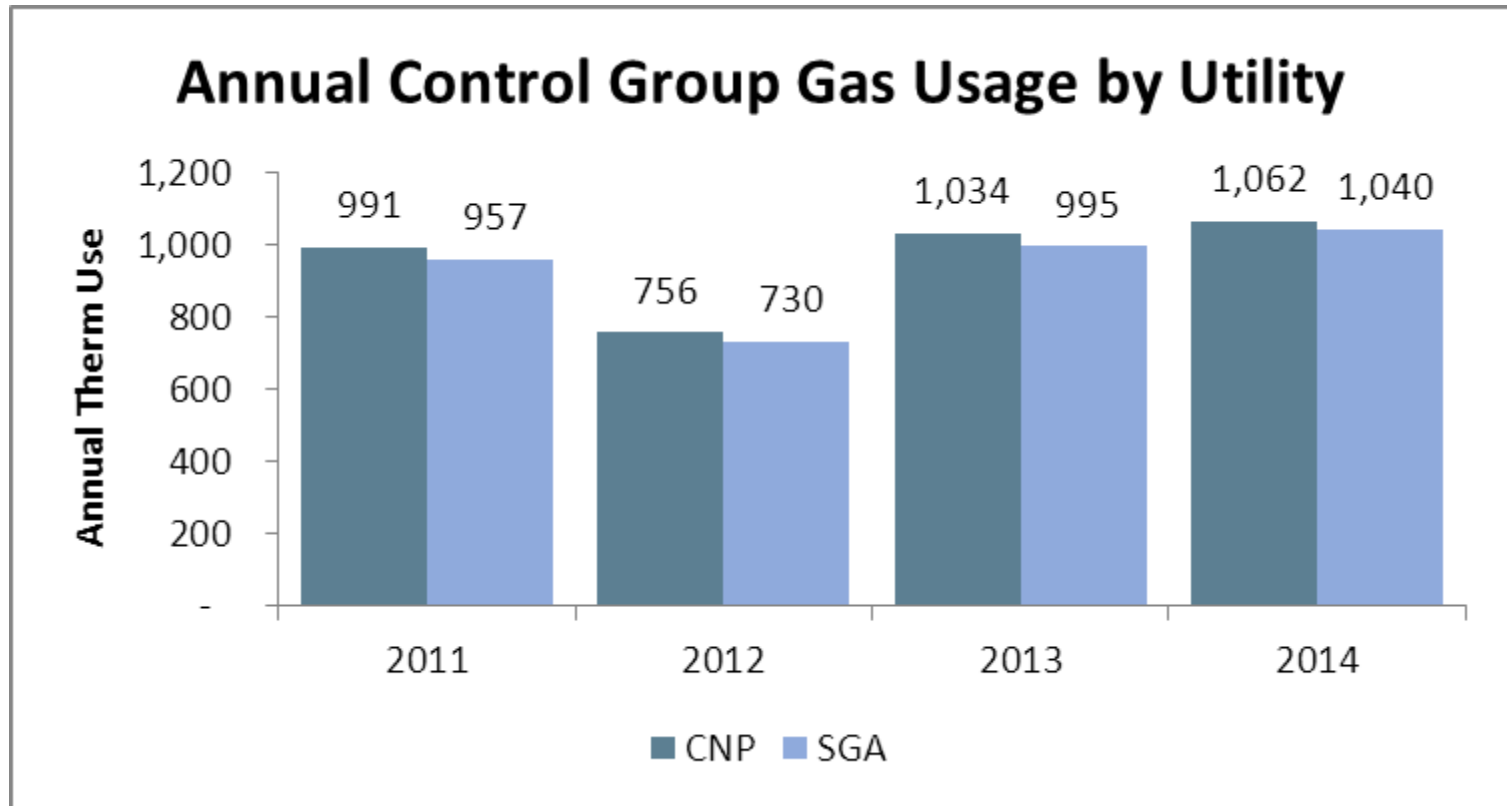
Terms & Conditions

# Population Usage Data

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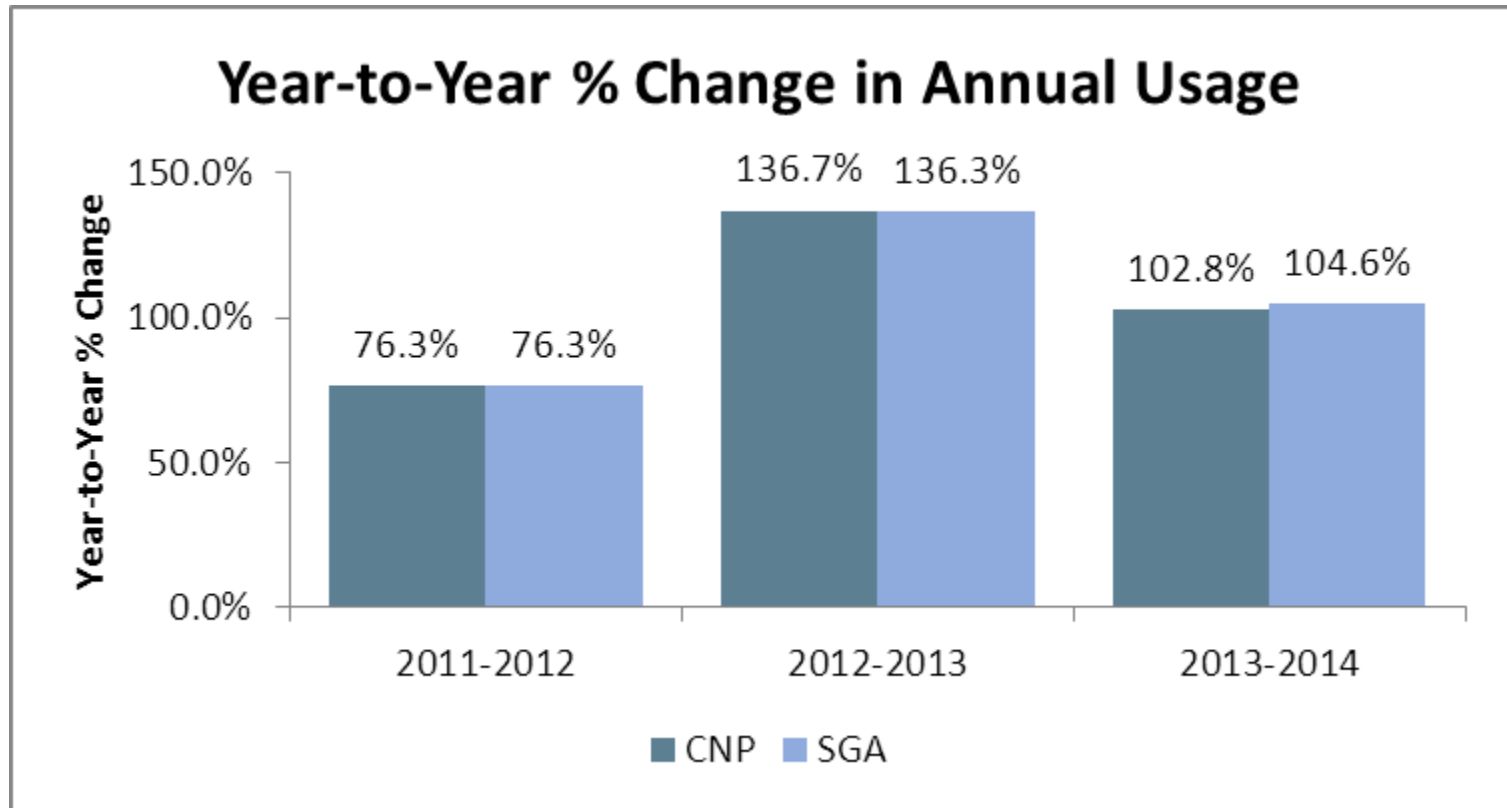
- **Comparison of billed use between control groups**
  - Comparing control groups of both RCTs allows for assessment of comparability between the two RCTs
  - “Control trial for a control trial”

# Control Group Annual Use





# Population Usage Data



- SGA accounts averaged 3.3% lower annual use per-account, but year-to-year changes were closely aligned



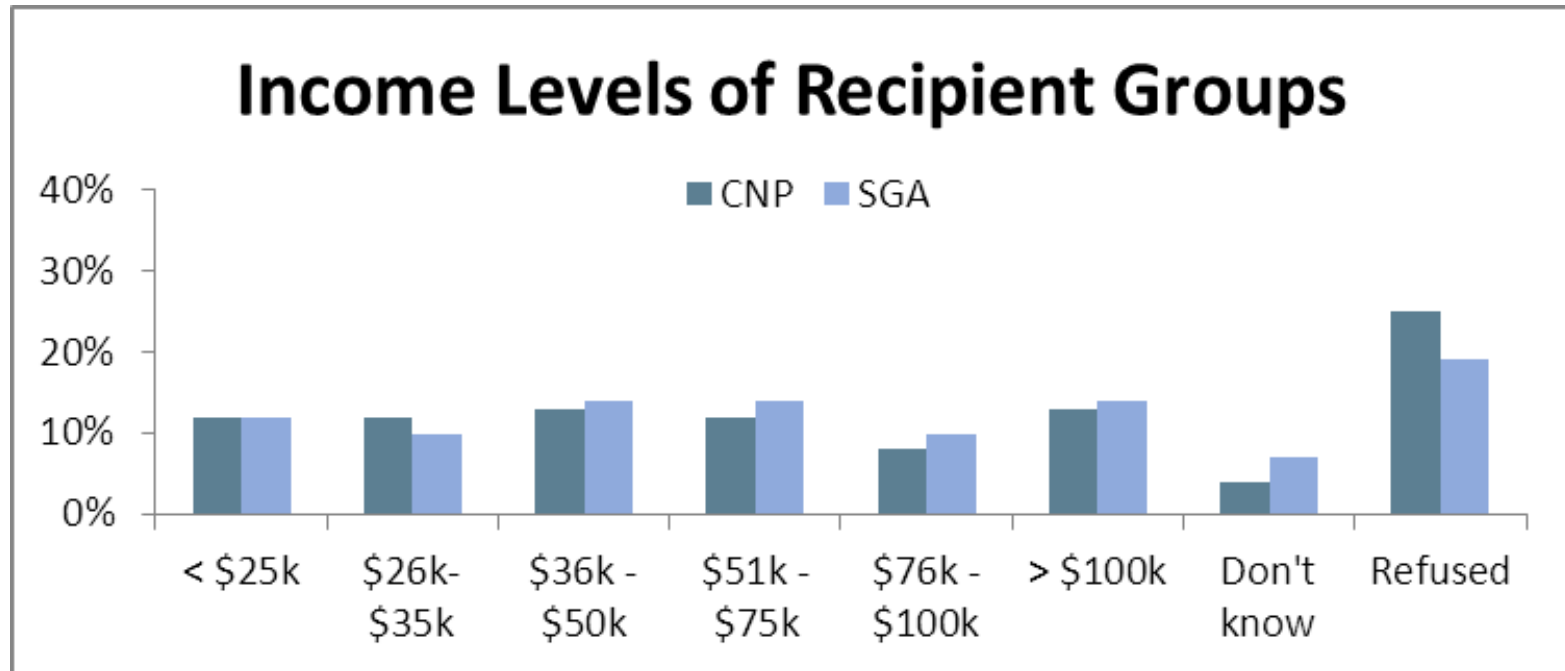
# Population Demographics

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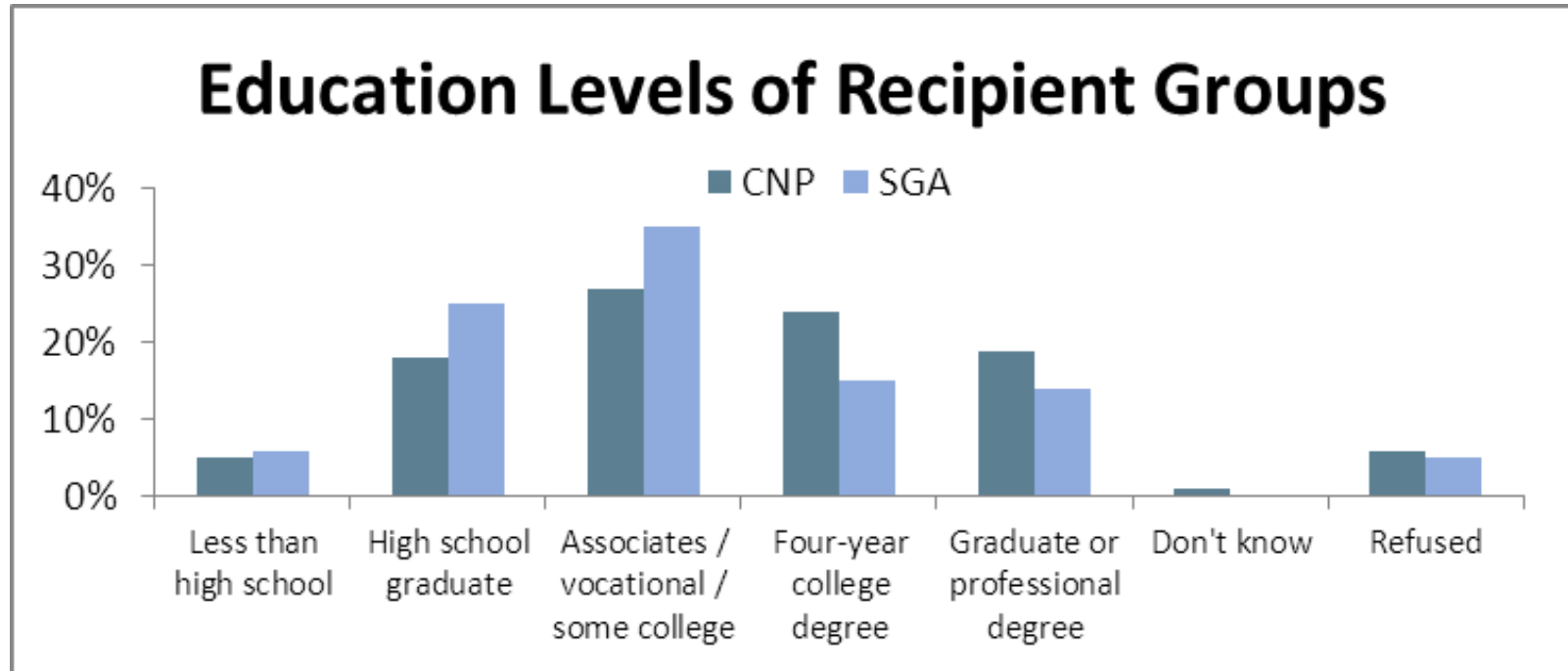
- **Demographic comparison of recipient groups**
  - Survey Counts
    - CNP: 300 recipients
    - SGA: 240 recipients
- **Notable differences in education level, less-so in income**



# Population Demographics - Income



# Population Demographics - Education



# Model Specification

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- **Control groups validated with one year of pre-use bills**
  - Each month tested for statistically significant difference
  - Both control groups validated
- **Post-only with pre-usage controls**
  - Treatment dummy
  - Average daily usage during pre-period
  - Average daily usage in December January, February during pre-period
  - Average daily usage in June, July, August during pre-period
  - Month-year dummies & interaction terms



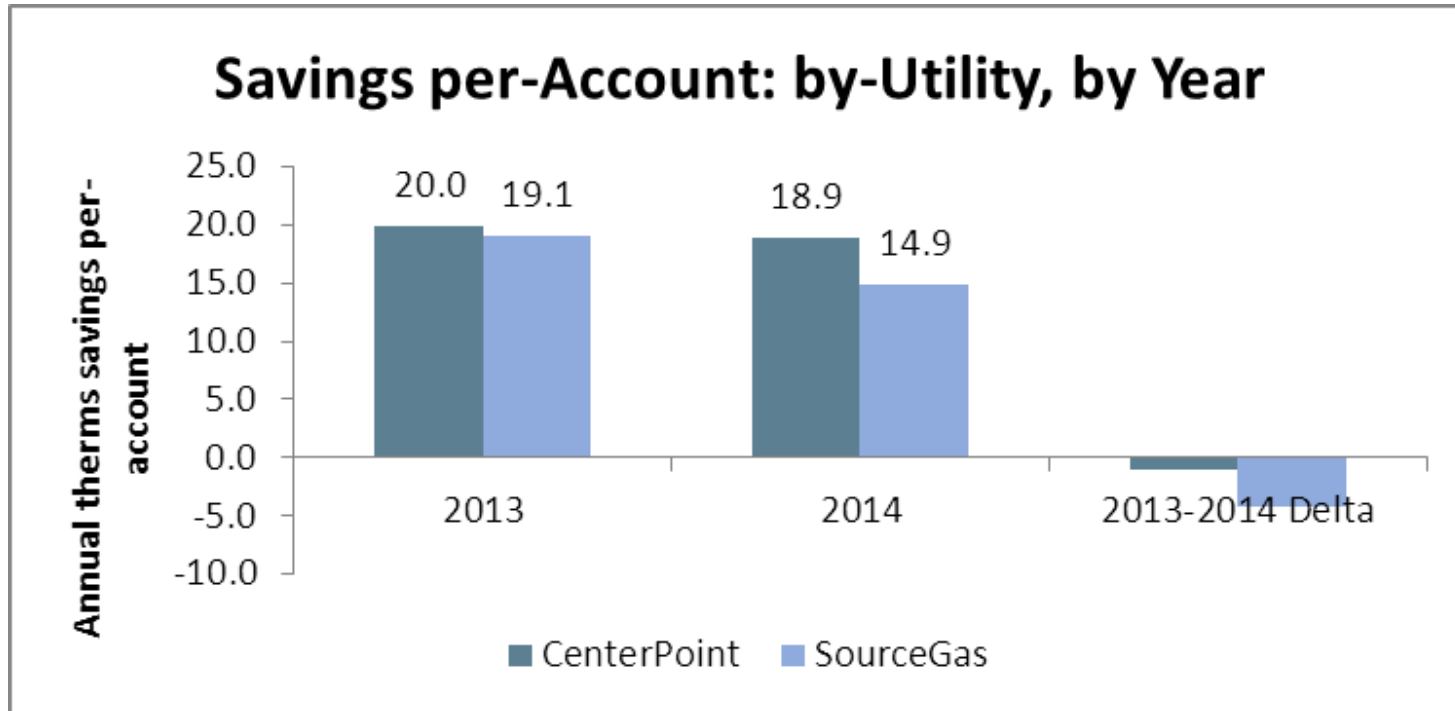
# Key Model Output

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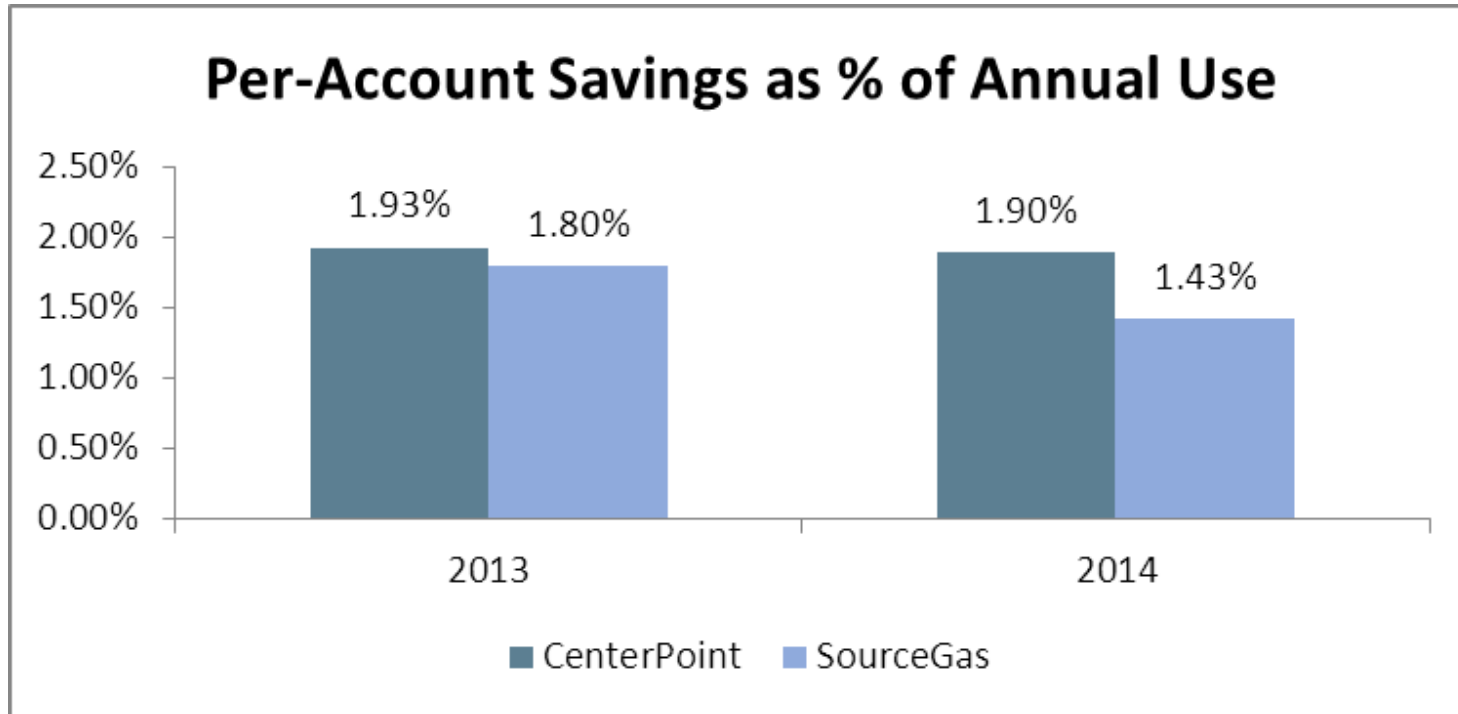
<b>Treatment Coefficient</b>	<b>2013</b>	<b>2014</b>	<b>2013-2014 delta</b>
CenterPoint	-.0547	-.0518	.029
SourceGas	-.0524	-.0407	.117
<b>Model R-Square</b>			
CenterPoint	.86	.86	
SourceGas	.88	.87	



# Findings

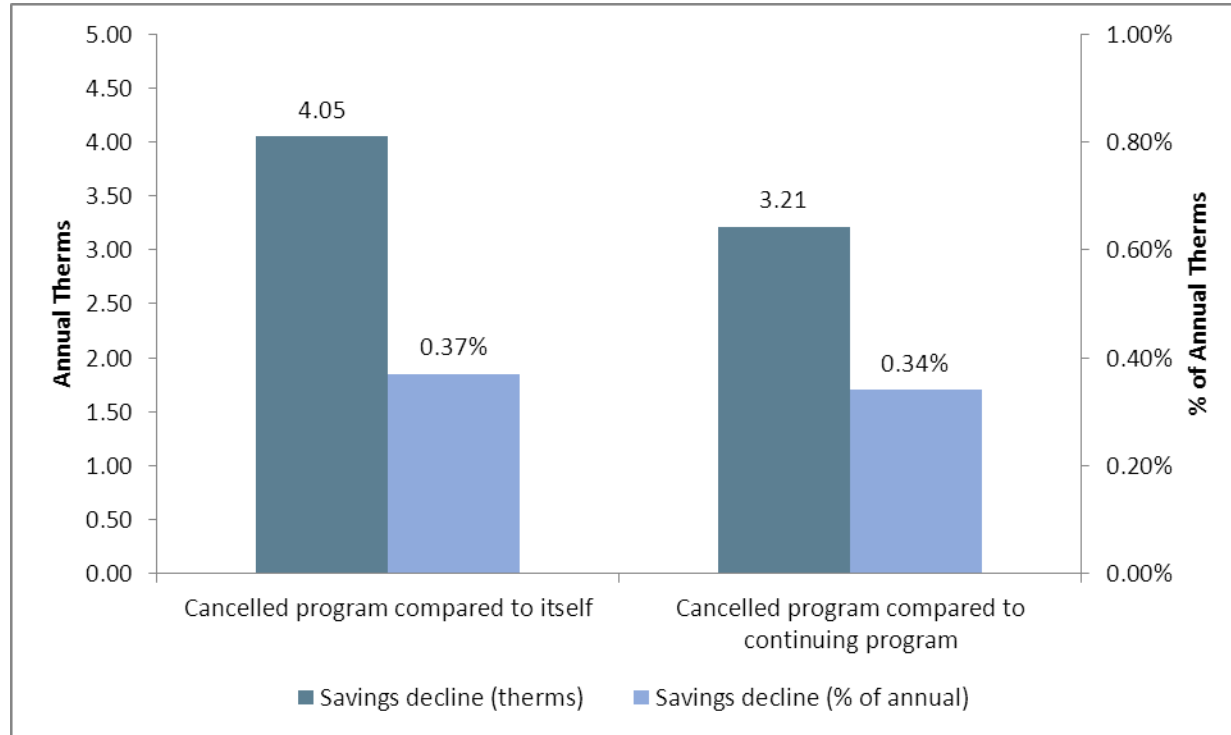


# Findings





# Findings



# Findings

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- **Natural decline occurs from 2013-2014, observed in continuing program**
- **Savings in absolute usage:**
  - Declines by 4.3 therms/account for cancelled program, 3.2 when comparing cancelled to continuing program
- **Savings as % of customer bills:**
  - Declines by .37% (20.5% of total) when comparing cancelled program to itself, .34% (18.9%) when comparing cancelled to continuing program



# Conclusions

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- **Savings for natural gas energy comparison reporting declined by 20.5% in the first year after end of treatment**
  - 79.5% of year-2 savings could potentially be considered an extension of year 1, with 20.5% being new first-year savings from program continuation
- **Use of comparison randomized control trial validated that naturally occurring decline from 2013 to 2014 was minimal (.03% of annual use, 1.6% of savings)**



# Questions?

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*Thank You!*

# Contact Information

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