GDS Associates, Inc.
ENGINEERS & CONSULTANTS

MichaelsEnergy

CADMUS

brightline GROUP

MAD DASH FIELD SERVICES

PRESENTED BY GDS ASSOCIATES, INC.

ILLINOIS 2023 BASELINE AND POTENTIAL STUDY

Presentation of Key Observations and Draft Results

August 13, 2024

AGENDA

STUDY OVERVIEW

Objectives
Approach
Study Process

BASELINE STUDY RESULTS

Data collection and analysis approach
Snapshots of key observations

POTENTIAL STUDY FRAMEWORK

Levels of Potential
Policy Drivers in Achievable Scenarios
Differences from upcoming utility plans

POTENTIAL RESULTS

Statutory Maximum Achievable Potential Results
Considerations for Additional Scenarios

NEXT STEPS

Baseline and Potential

STUDY OVERVIEW

Illinois Baseline and Potential Study

STUDY OBJECTIVES (SUMMARIZED)

- **Develop baseline and efficiency program potential for:**
  - *ComEd*
  - *Nicor Gas*
  - *Ameren Illinois electricity and natural gas*
- **Collect data and develop analyses on:**
  - *Energy utilization by residential, commercial, and industrial customers*
  - *Collect survey data to understand equipment efficiency saturations*
- **Estimate total achievable potentials for multiple scenarios**
- **Provide data, summaries, and documentation**
- **Offer independent opinions on future potential**
- **Work collaboratively with utilities and stakeholders**
- **Inform 2026-2029 plans, long-term opportunity to 2045**

THE STUDY PROCESS

- **Kick-off August 15**
- **Formed Working Group – many involved, met weekly**

Utilities:
ComEd
Nicor Gas
Ameren Illinois

Illinois Commerce Commission
Illinois Attorney General Office
Natural Resources Defense Council
National Consumer Law Center

GDS Team:
GDS Associates
Michaels Energy
Cadmus
Brightline Group

- **Initial focus on the Baseline Study data collection**
- **Received data from utilities for sampling, customer contacts**
- **Many discussions on approaches, policy, modeling considerations**

THE STUDY PROCESS

- **Fall 2023**
  - *Focus on baseline data collection*
  - *Developed sampling approach, drew samples with available data*
  - *Developed survey instruments with input from Working Group*
- **Winter 2023/2024**
  - *Finalized data collection instruments*
  - *Received final utility customer data in late February*
  - *Launched online survey in March 2024*
- **Spring 2024**
  - *Conducted online surveys and site visits for nested samples*
  - *Across residential and nonresidential sectors:*
    - **6,300 online baseline survey responses**
    - **1,027 willingness to participate survey responses**
    - **739 site visits**

THE STUDY PROCESS

- **Spring 2024 (cont'd)**
  - *Engaged working group on potential modeling topics*
  - *Began model development*
  - *Onsite data collection completed in late June 2024*
- **Summer 2024**
  - *Summarization of online survey results, discussion w/ Working Group*
  - *Summarization of onsite results (still underway)*
  - *Finalization of baseline results (reconciliation of online and onsite)*
  - *Finalizing all potential scenarios (in-process)*
  - *Reporting (forthcoming)*

APPROACH SUMMARY: BASELINE STUDY

- **Conduct online data collection using utility customer databases**
  - *Collect general information about the homes and buildings for key end uses*
  - *Confirm appropriate segmentation by building type*
  - *Collect household size and income information to confirm IQ status*
  - *Recruit for onsite data collection*
- **Collect Willingness to Participate data to inform potential modeling**
  - *For major end uses, likelihood to participate in a program based on:*
  - *Utility incentive share of cost (residential)*
  - *Simply payback or rate of return (nonresidential)*
  - *Advanced lighting controls decision tree (nonresidential)*
- **Kept online study open to complete onsite recruitment or meet target goals**
  - *Nonresidential recruitment was a census of all available customers*
  - *Residential kept open to ensure IQ coverage and achieve onsite target count*

APPROACH SUMMARY: POTENTIAL STUDY

- **Utilize utility forecasts to develop baseline forecasts by customer segment and end-use**
- **Apply end-use shares of consumption to equipment types**
  - *Energy Information Administration data*
  - *Baseline data collection results*
  - *Other information from utilities or research*
- **Develop measure characterizations, primarily using the IL TRM (V12)**
- **By end-use, segment savings opportunities, accounting for existing efficient shares**
- **Develop potential scenarios, focusing on incremental annual savings**
  - *Role of efficiency, electrification*
  - *Starting with Statutory Maximum, moving toward Stipulation-like and others*
  - *Estimate savings and annual program budgets*

Baseline Study Results

Illinois Baseline and Potential Study

BASELINE STUDY DATA COLLECTION

- **Three efforts for residential and nonresidential**

Online Baseline Survey
- General Characteristics
- Equipment Presence/Saturation
-Energy Sources (HVAC, DHW)

Residential Sample:
Single-Family
Multifamily
IQ Quota (80% AMI)

NonResidential Sample:
Major Building Types
Small vs Large (<400 kW)
Utilized all available accounts

Willingness to Participate
- Likelihood to install measure
- Incentive share of cost for Res
- Simple payback/IRR for Nonres
- Economics or program-driven
- Major End-Uses
- Informs long-term adoption

Site Visits
- Equipment efficiencies
- Confirm/correct online info
- Blower door tests (Res SF sub sample)
- Inform end-use energy shares
- Efficient equipment saturations

SURVEY RESPONSE OUTCOMES

Residential

Income and Housing Type	SF*	MF
IQ (<80% AMI)	33%	47%
Not IQ	67%	53%
Count	1,953	1,931
Income not provided	221	311

*includes 45 mobile homes

NonResidential

2,157 online respondents
12 building types
83% < 400 kW (small electric)

337 onsite completes
Multifamily - 152
Single Family - 185
- 69 with blower door tests

399 site visit completes
All 12 building types
81% < 400 kW (small electric)

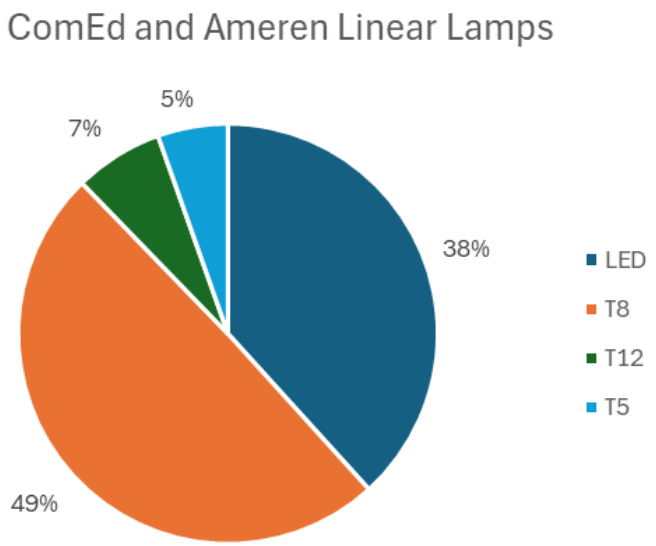
Income and Housing Type	SF	MF
IQ (<80% AMI)	125	138
Not IQ	268	213
Total	393	351

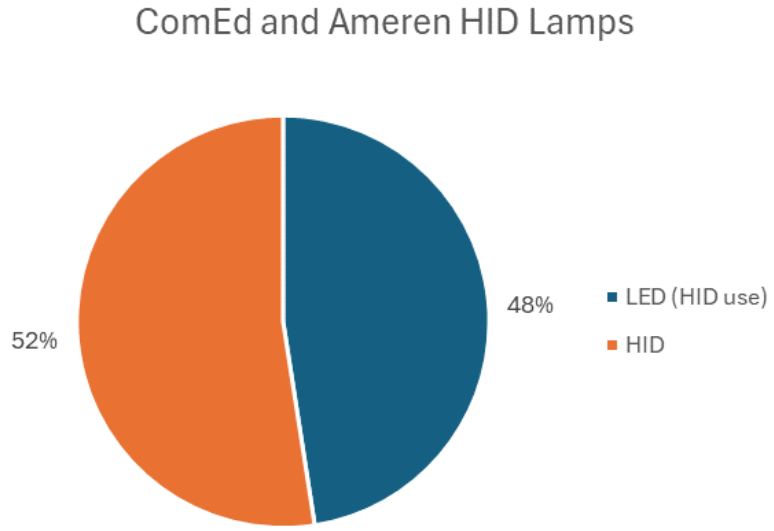
282 completes
All 12 building types
62% < 400 kW (small electric)

KEY BASELINE STUDY FINDINGS

NonResidential Snapshot: Site Visits, Lighting

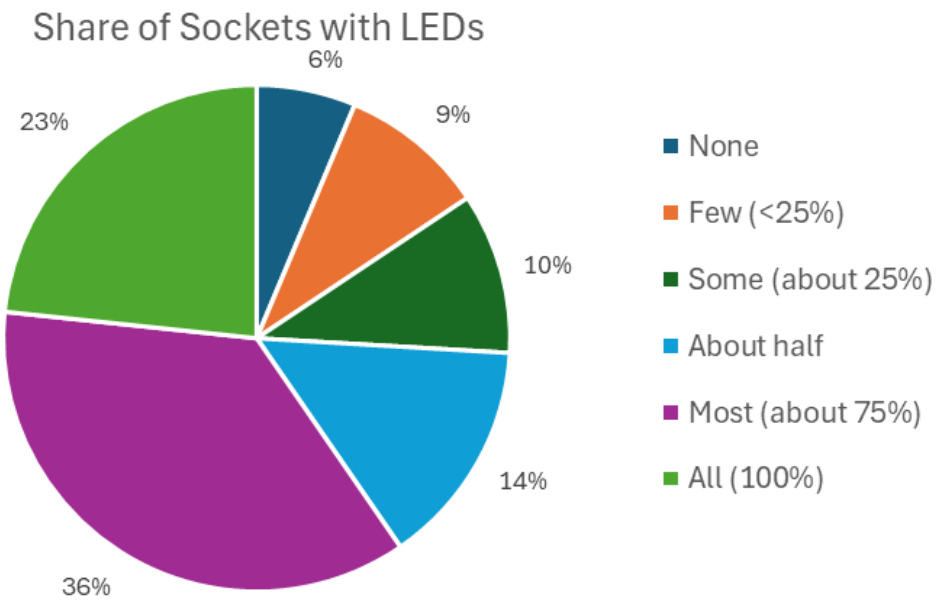
- *Linear LED Lamp Saturation Less than Expected*
- *HID LEDs show a similar share to linear*
- *Ongoing opportunities for lighting retrofits*
  - **Education, Retail, and "Other" buildings > 50% linear LEDs**
  - **Industrial, Retail, and Warehouse > 65% LED HID use**

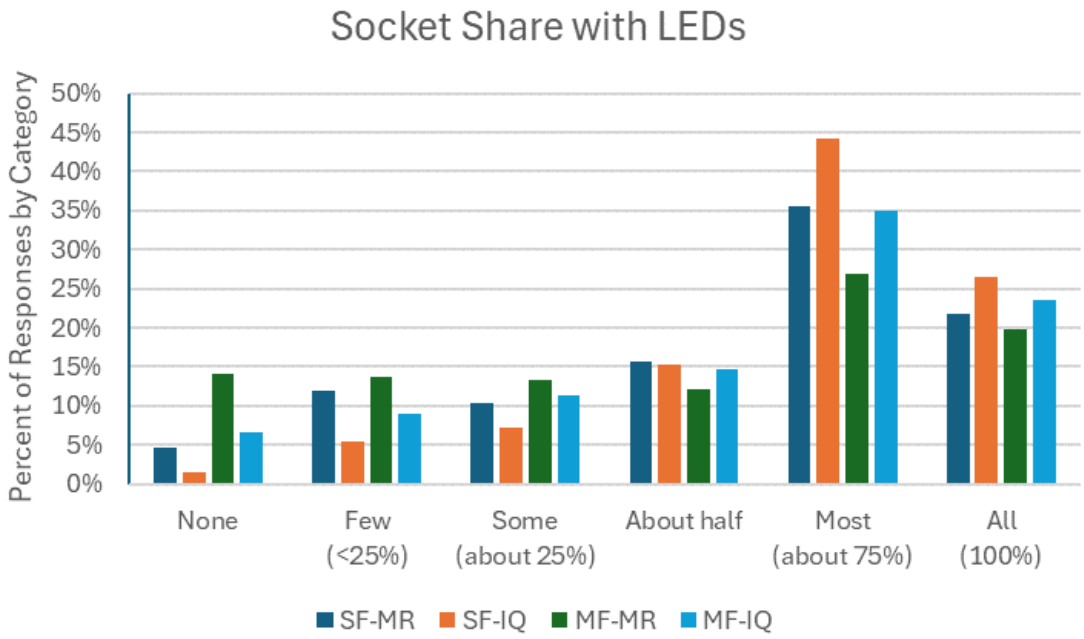




KEY BASELINE STUDY FINDINGS

Residential Snapshot - LEDs

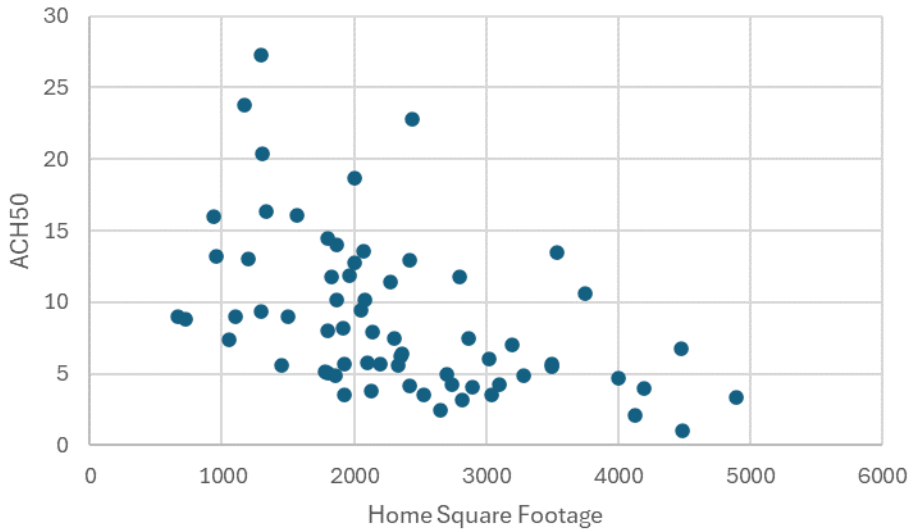




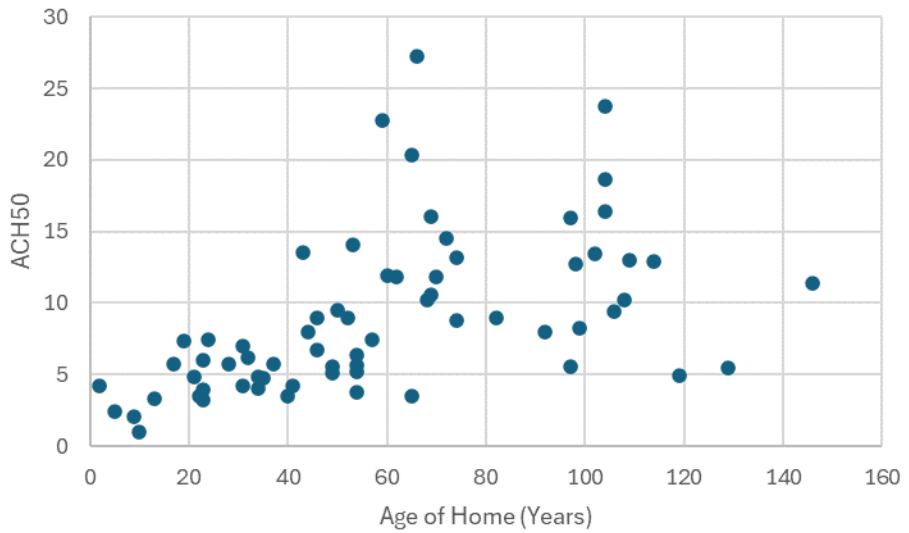
KEY BASELINE STUDY FINDINGS

Snapshot – SF Blower Door Results

By Home Size



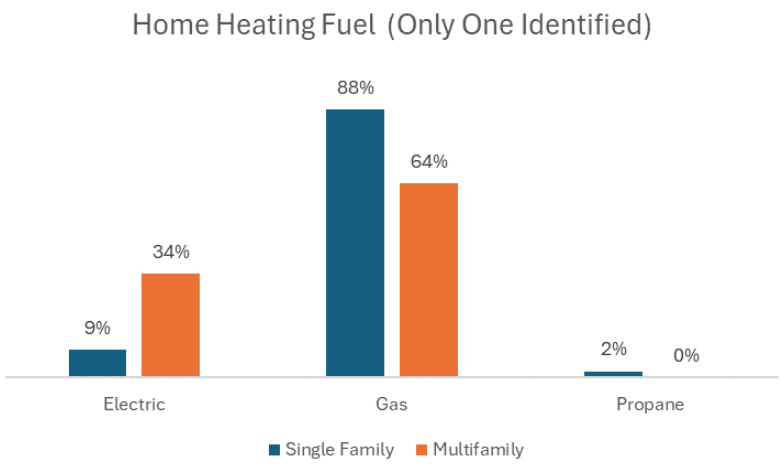
By Home Age

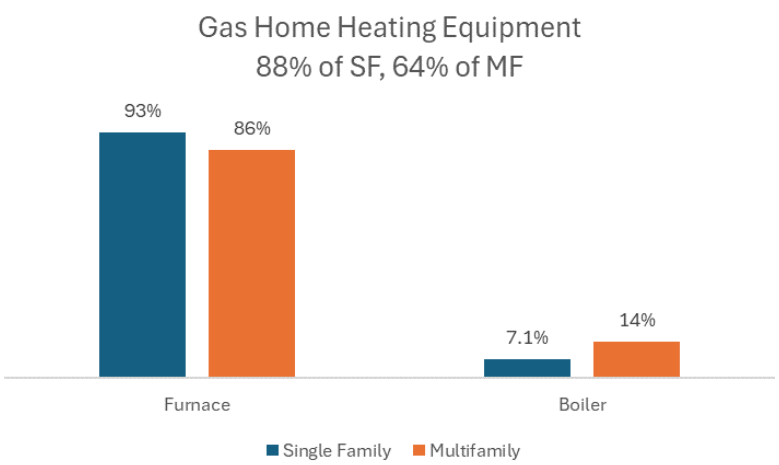


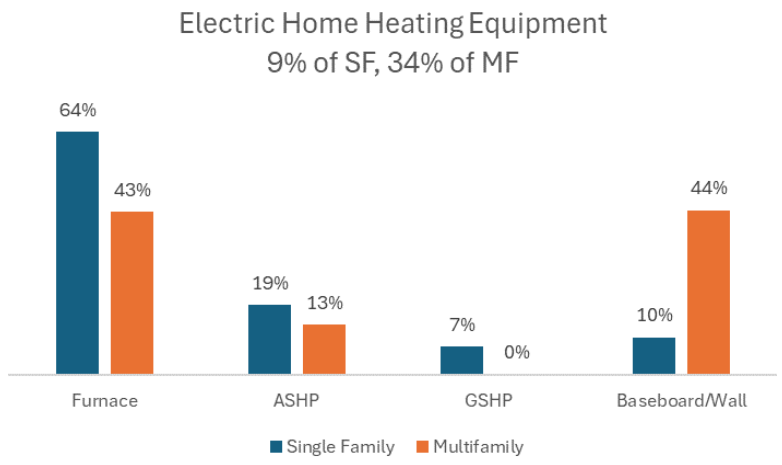
Sealing Quality	Count	ACH50	Avg Occ Sq Ft	Avg Age
Good	15	5.2	2,919	40
Normal/Fair	38	9.4	2,130	58
Poor	16	15.1	2,033	79

KEY BASELINE STUDY FINDINGS

Snapshot – Residential Space Heating Energy and Equipment (from online responses)





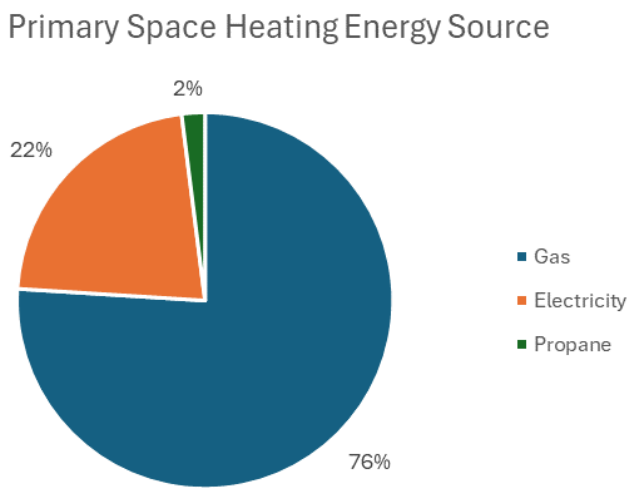


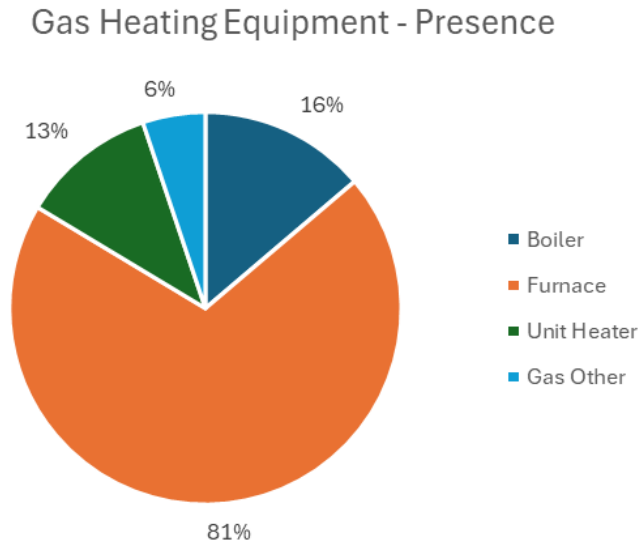
12% of Multifamily didn't know their space heating fuel

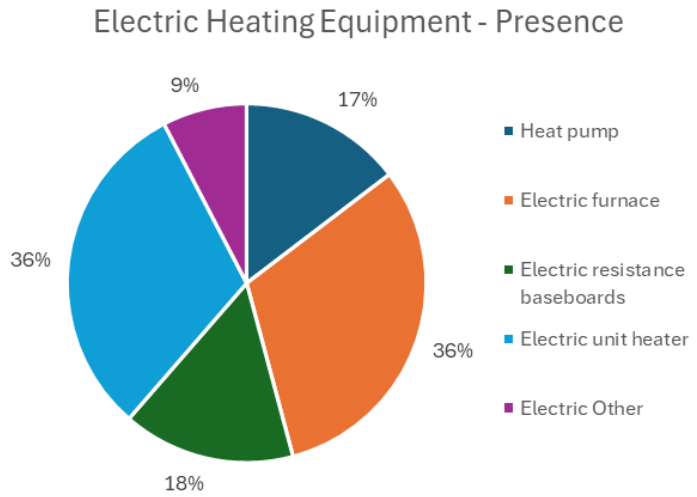
~9% of SF and 7% of MF indicated multiple heating sources
- Includes small space heaters
- ASHPs – 4% SF and 7% MF (of multifuel), mostly linked to natural gas furnaces

KEY BASELINE STUDY FINDINGS

Snapshot – Nonresidential Space Heating Energy and Equipment (from online responses)







ADDITIONAL BASELINE WORK UNDERWAY

- **Breakouts**
  - *Mobile Homes*
  - *Statistical review of Large vs Small Nonresidential*
  - *Recommended utility breakout vs aggregated*

- **Ongoing data review**
  - *Share of electric heating, multifuel analysis*
  - *Presence of HPWH (unlikely high shares)*
  - *Site visit reconciliation with online results*

- **Equipment efficiencies and characteristics from site visits**

Potential Study Observations

Illinois Baseline and Potential Study

CONTEXT FOR THE POTENTIAL STUDY RESULTS

- **The potential study results ARE NOT program plans**
- **Multiple scenarios will be useful to understand the implication of possible program plans**
  - *May inform draft utility plans*
  - *Useful for stakeholders to consider the implication of stipulations*
- **Modeling assumptions and choices point to program opportunities and challenges**
  - *Addressing policy requirements or constraints*
  - *Balancing opportunities with finite resources*
- **Draft or final utility program plans will likely deviate from potential scenarios**

LEVELS AND TYPES OF POTENTIAL

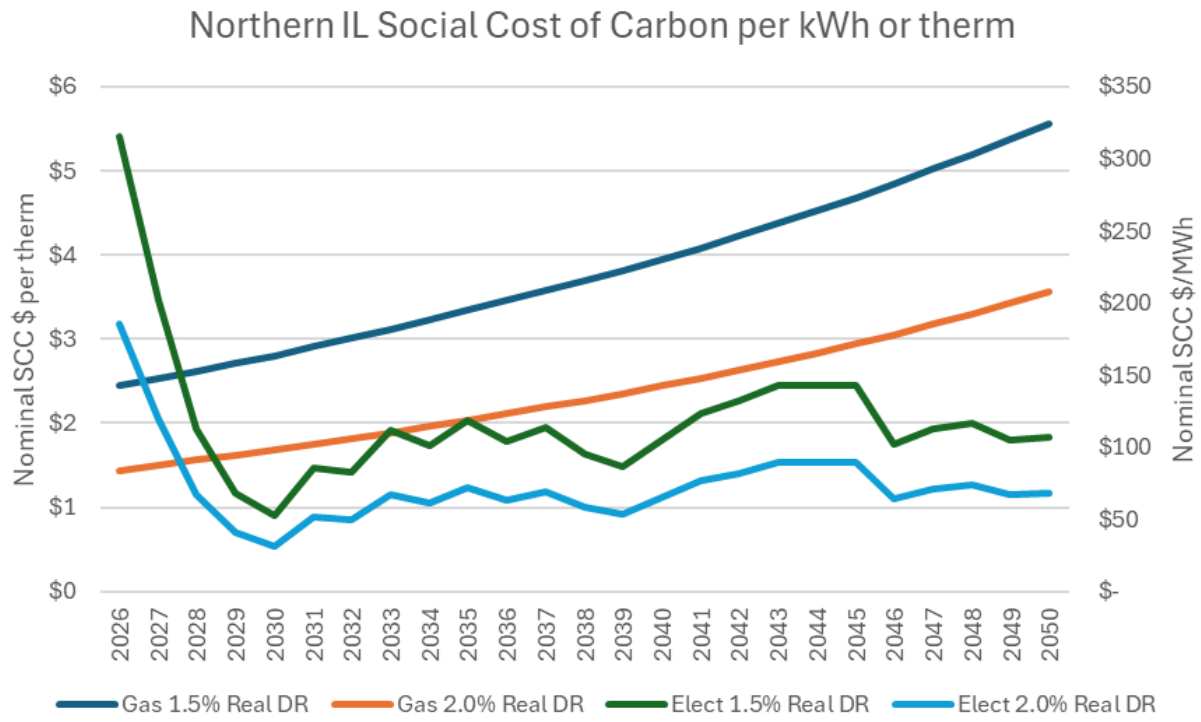
- **Technical Potential**
  - *What is feasible, regardless of cost*
  - *An upper bound*
- **Economic Potential**
  - *Measures must pass cost-effectiveness test (TRC, with NEIs)*
  - *A subset of technical potential*
- **Maximum Achievable Potential**
  - *Assume programs offer 100% of measure cost (incremental or full)*
  - *Utilize adoption curves based on WTP survey results*
  - *Apply typical program costs (i.e. non-incentive costs per kWh or therm)*
  - *An upper bound on program opportunities*
  - *Subset of economic potential (includes program costs, NTG)*
  - *Not bounded by spending limitations or policy requirements*

LEVELS AND TYPES OF POTENTIAL

- **Realistic Achievable Potential**
  - *Apply typical utility incentives for measures*
  - *Apply typical utility program costs ($ per unit energy savings)*
  - *Adoption of measures informed by adoption curves*
  - *A subset of maximum achievable potential*
  - *What programs could do if not bounded by spending caps or other constraints – a step to model constrained potential scenarios*
- **Statutory Maximum Achievable Potential (SMAP)**
  - *Based on Illinois statutes, one form of constrained potential*
  - *Modeling choices to capture key elements of:*
    - **Statutory Requirements (e.g. minimum IQ spending)**
    - **Maximum electrification (net MWh), applied to electric utilities**
      - ***Used to understand the possible impact of electrification under other constrained scenarios***

KEY MODELING INPUTS AND OBSERVATIONS

- **Social Cost of Carbon (SCC), Criteria Pollutant NEIs**
  - *Working group provided GDS with SCC assumptions*
    - **Value per therm and per MWh across forecast period**
    - **Utilizes EPA SCC work and reflects changing emissions rates of electricity production.**



TRC B/C RATIO IS SENSITIVE TO SCC

- **SCC value has a substantial impact**
  - **Measures and programs are very cost-effective**
  - **Electrification program cost-effectiveness is positive**
  - **Portfolio B/C results are sensitive to SCC assumptions**
    - ***70 percent of electricity benefits are SCC (average over 20 years)****
    - ***77 percent of natural gas benefits are SCC (average over 20 years)****
- **ComEd Residential examples, assume IQ = 1.0:**

Program	B/C With NEIs	B/C Without NEIs
Retail Online	3.2	0.7
Single Family Upgrades	5.7	1.2
Multifamily Upgrades	3.2	1.1
Electrification	2.9	1.1
Overall (all Res programs)	5.6	1.2

Partial program list

IQ is embedded

Does not include cross-cutting portfolio costs

*excludes Criteria pollutant NEIs and electric capacity-related impacts

ELECTRIFICATION OBSERVATIONS AND CONSIDERATIONS

- **Illinois is early in the electrification process**
  - *Policy, program, and market discovery phase*
  - *Heavy natural gas use compared to states with greater experience*
- **Statutes limit contribution of electrification**
  - *Natural gas sales likely to be impacted at the margins*
  - *Limited impact on availability of natural gas energy efficiency*
  - *Propane customers are limited, but show positive economic outcome*
- **Stipulation requirements for IQ spending, billing reductions**
  - *Places cap on possible non-IQ electrification*
  - *IQ electrification is generally more expensive to acquire*
  - *Determination of bill impacts can only occur after project initiation*
- **General incentives are lower than other jurisdictions w/ more aggressive electrification efforts**

ELECTRIFICATION OPPORTUNITIES, ASSUMPTIONS

- **Programs can leverage IRA over the next plan**
  - *Tax credits for homes*
  - *State HEERA (IQ-focused, 10% multifamily)*
  - *Reduce acquisition costs, leverage funding, market pull*
- **Propane opportunities exist**
  - *Water heating, space heating, forklifts*
  - *Likely insufficient to "make a market"; difficult to specifically forecast*
- **Potential study assumes**
  - *Focused program efforts*
  - *No major change to incentives*
  - *Market acceptance will happen and continue*
  - *Capped at statutory limits (10% for Plan 7, then 15%) for statutory maximum scenario*

ELECTRIFICATION: ENERGY OPERATING COSTS

Storage Water Heater
HPWH vs Fossil Fuel

Net cost per purchased MMBTU

Price per therm of fossil fuel	Price per kWh $0.10	$0.11	$0.12	$0.13	$0.14	$0.15	$0.16	$0.17	$0.18	$0.19	$0.20
$ 0.30	$ (6.55)	$ (7.72)	$ (8.89)	$ (10.06)	$ (11.24)	$ (12.41)	$ (13.58)	$ (14.75)	$ (15.92)	$ (17.10)	$ (18.27)
$ 0.40	$ (4.82)	$ (6.00)	$ (7.17)	$ (8.34)	$ (9.51)	$ (10.68)	$ (11.86)	$ (13.03)	$ (14.20)	$ (15.37)	$ (16.54)
$ 0.50	$ (3.10)	$ (4.27)	$ (5.44)	$ (6.62)	$ (7.79)	$ (8.96)	$ (10.13)	$ (11.30)	$ (12.48)	$ (13.65)	$ (14.82)
$ 0.60	$ (1.38)	$ (2.55)	$ (3.72)	$ (4.89)	$ (6.06)	$ (7.24)	$ (8.41)	$ (9.58)	$ (10.75)	$ (11.92)	$ (13.09)
$ 0.70	$ 0.35	$ (0.82)	$ (1.99)	$ (3.17)	$ (4.34)	$ (5.51)	$ (6.68)	$ (7.85)	$ (9.03)	$ (10.20)	$ (11.37)
$ 0.80	$ 2.07	$ 0.90	$ (0.27)	$ (1.44)	$ (2.61)	$ (3.79)	$ (4.96)	$ (6.13)	$ (7.30)	$ (8.47)	$ (9.65)
$ 0.90	$ 3.80	$ 2.63	$ 1.45	$ 0.28	$ (0.89)	$ (2.06)	$ (3.23)	$ (4.41)	$ (5.58)	$ (6.75)	$ (7.92)
$ 1.00	$ 5.52	$ 4.35	$ 3.18	$ 2.01	$ 0.83	$ (0.34)	$ (1.51)	$ (2.68)	$ (3.85)	$ (5.03)	$ (6.20)
$ 1.10	$ 7.25	$ 6.07	$ 4.90	$ 3.73	$ 2.56	$ 1.39	$ 0.21	$ (0.96)	$ (2.13)	$ (3.30)	$ (4.47)
$ 1.20	$ 8.97	$ 7.80	$ 6.63	$ 5.45	$ 4.28	$ 3.11	$ 1.94	$ 0.77	$ (0.41)	$ (1.58)	$ (2.75)
$ 1.30	$ 10.69	$ 9.52	$ 8.35	$ 7.18	$ 6.01	$ 4.83	$ 3.66	$ 2.49	$ 1.32	$ 0.15	$ (1.03)
$ 1.40	$ 12.42	$ 11.25	$ 10.07	$ 8.90	$ 7.73	$ 6.56	$ 5.39	$ 4.21	$ 3.04	$ 1.87	$ 0.70
$ 1.50	$ 14.14	$ 12.97	$ 11.80	$ 10.63	$ 9.45	$ 8.28	$ 7.11	$ 5.94	$ 4.77	$ 3.59	$ 2.42
$ 1.60	$ 15.87	$ 14.69	$ 13.52	$ 12.35	$ 11.18	$ 10.01	$ 8.83	$ 7.66	$ 6.49	$ 5.32	$ 4.15
$ 1.70	$ 17.59	$ 16.42	$ 15.25	$ 14.07	$ 12.90	$ 11.73	$ 10.56	$ 9.39	$ 8.21	$ 7.04	$ 5.87
$ 1.80	$ 19.31	$ 18.14	$ 16.97	$ 15.80	$ 14.63	$ 13.45	$ 12.28	$ 11.11	$ 9.94	$ 8.77	$ 7.59
$ 1.90	$ 21.04	$ 19.87	$ 18.69	$ 17.52	$ 16.35	$ 15.18	$ 14.01	$ 12.83	$ 11.66	$ 10.49	$ 9.32
$ 2.00	$ 22.76	$ 21.59	$ 20.42	$ 19.25	$ 18.07	$ 16.90	$ 15.73	$ 14.56	$ 13.39	$ 12.21	$ 11.04
$ 2.10	$ 24.49	$ 23.32	$ 22.14	$ 20.97	$ 19.80	$ 18.63	$ 17.46	$ 16.28	$ 15.11	$ 13.94	$ 12.77
$ 2.20	$ 26.21	$ 25.04	$ 23.87	$ 22.70	$ 21.52	$ 20.35	$ 19.18	$ 18.01	$ 16.84	$ 15.66	$ 14.49
$ 2.30	$ 27.94	$ 26.76	$ 25.59	$ 24.42	$ 23.25	$ 22.08	$ 20.90	$ 19.73	$ 18.56	$ 17.39	$ 16.22
$ 2.40	$ 29.66	$ 28.49	$ 27.32	$ 26.14	$ 24.97	$ 23.80	$ 22.63	$ 21.46	$ 20.28	$ 19.11	$ 17.94

0.58 UEF FF Storage 2.6 UEF HPWH

Space Heating
ASHP vs Fossil Fuel
(excludes possible cooling savings)

Price per kWh

	$0.10	$0.11	$0.12	$0.13	$0.14	$0.15	$0.16	$0.17	$0.18	$0.19	$0.20
$ 0.30	$ (6.02)	$ (6.99)	$ (7.97)	$ (8.95)	$ (9.92)	$ (10.90)	$ (11.88)	$ (12.85)	$ (13.83)	$ (14.81)	$ (15.78)
$ 0.40	$ (4.77)	$ (5.74)	$ (6.72)	$ (7.70)	$ (8.67)	$ (9.65)	$ (10.63)	$ (11.60)	$ (12.58)	$ (13.56)	$ (14.53)
$ 0.50	$ (3.52)	$ (4.49)	$ (5.47)	$ (6.45)	$ (7.42)	$ (8.40)	$ (9.38)	$ (10.35)	$ (11.33)	$ (12.31)	$ (13.28)
$ 0.60	$ (2.27)	$ (3.24)	$ (4.22)	$ (5.20)	$ (6.17)	$ (7.15)	$ (8.13)	$ (9.10)	$ (10.08)	$ (11.06)	$ (12.03)
$ 0.70	$ (1.02)	$ (1.99)	$ (2.97)	$ (3.95)	$ (4.92)	$ (5.90)	$ (6.88)	$ (7.85)	$ (8.83)	$ (9.81)	$ (10.78)
$ 0.80	$ 0.23	$ (0.74)	$ (1.72)	$ (2.70)	$ (3.67)	$ (4.65)	$ (5.63)	$ (6.60)	$ (7.58)	$ (8.56)	$ (9.53)
$ 0.90	$ 1.48	$ 0.51	$ (0.47)	$ (1.45)	$ (2.42)	$ (3.40)	$ (4.38)	$ (5.35)	$ (6.33)	$ (7.31)	$ (8.28)
$ 1.00	$ 2.73	$ 1.76	$ 0.78	$ (0.20)	$ (1.17)	$ (2.15)	$ (3.13)	$ (4.10)	$ (5.08)	$ (6.06)	$ (7.03)
$ 1.10	$ 3.98	$ 3.01	$ 2.03	$ 1.05	$ 0.08	$ (0.90)	$ (1.88)	$ (2.85)	$ (3.83)	$ (4.81)	$ (5.78)
$ 1.20	$ 5.23	$ 4.26	$ 3.28	$ 2.30	$ 1.33	$ 0.35	$ (0.63)	$ (1.60)	$ (2.58)	$ (3.56)	$ (4.53)
$ 1.30	$ 6.48	$ 5.51	$ 4.53	$ 3.55	$ 2.58	$ 1.60	$ 0.62	$ (0.35)	$ (1.33)	$ (2.31)	$ (3.28)
$ 1.40	$ 7.73	$ 6.76	$ 5.78	$ 4.80	$ 3.83	$ 2.85	$ 1.87	$ 0.90	$ (0.08)	$ (1.06)	$ (2.03)
$ 1.50	$ 8.98	$ 8.01	$ 7.03	$ 6.05	$ 5.08	$ 4.10	$ 3.12	$ 2.15	$ 1.17	$ 0.19	$ (0.78)
$ 1.60	$ 10.23	$ 9.26	$ 8.28	$ 7.30	$ 6.33	$ 5.35	$ 4.37	$ 3.40	$ 2.42	$ 1.44	$ 0.47
$ 1.70	$ 11.48	$ 10.51	$ 9.53	$ 8.55	$ 7.58	$ 6.60	$ 5.62	$ 4.65	$ 3.67	$ 2.69	$ 1.72
$ 1.80	$ 12.73	$ 11.76	$ 10.78	$ 9.80	$ 8.83	$ 7.85	$ 6.87	$ 5.90	$ 4.92	$ 3.94	$ 2.97
$ 1.90	$ 13.98	$ 13.01	$ 12.03	$ 11.05	$ 10.08	$ 9.10	$ 8.12	$ 7.15	$ 6.17	$ 5.19	$ 4.22
$ 2.00	$ 15.23	$ 14.26	$ 13.28	$ 12.30	$ 11.33	$ 10.35	$ 9.37	$ 8.40	$ 7.42	$ 6.44	$ 5.47
$ 2.10	$ 16.48	$ 15.51	$ 14.53	$ 13.55	$ 12.58	$ 11.60	$ 10.62	$ 9.65	$ 8.67	$ 7.69	$ 6.72
$ 2.20	$ 17.73	$ 16.76	$ 15.78	$ 14.80	$ 13.83	$ 12.85	$ 11.87	$ 10.90	$ 9.92	$ 8.94	$ 7.97
$ 2.30	$ 18.98	$ 18.01	$ 17.03	$ 16.05	$ 15.08	$ 14.10	$ 13.12	$ 12.15	$ 11.17	$ 10.19	$ 9.22
$ 2.40	$ 20.23	$ 19.26	$ 18.28	$ 17.30	$ 16.33	$ 15.35	$ 14.37	$ 13.40	$ 12.42	$ 11.44	$ 10.47

80% AFUE furnace 3.0 COP ASHP

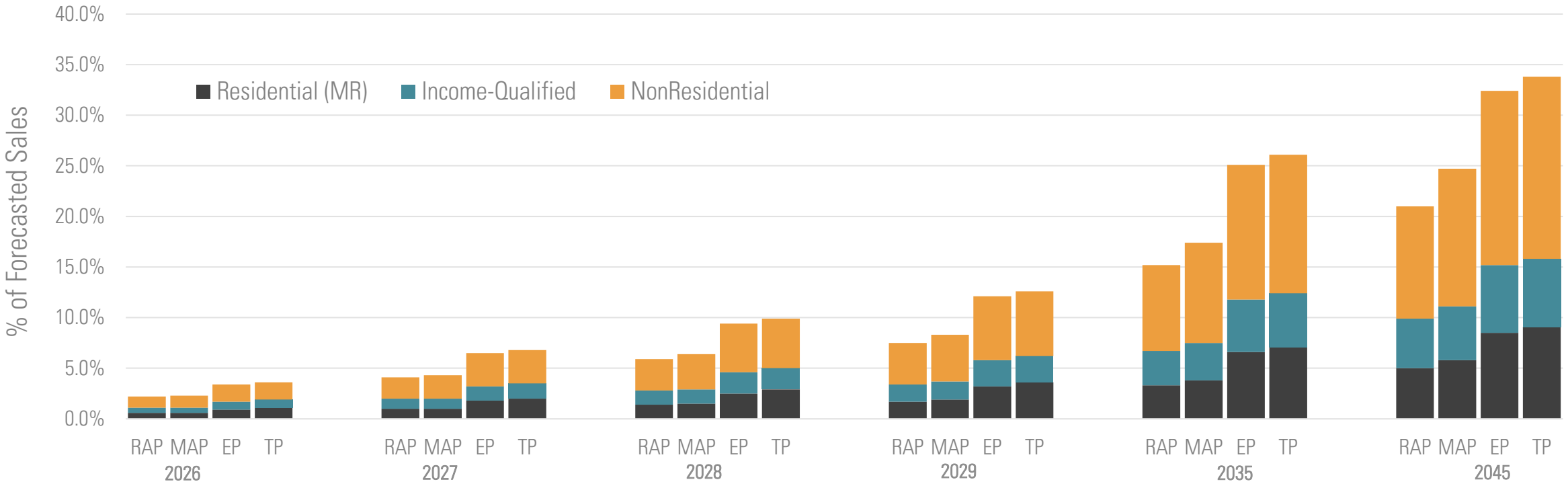
Potential Study Results

Illinois Baseline and Potential Study

OVERALL ELECTRIC SUMMARY

ComEd & Ameren Combined, Electric Energy Efficiency Only

- Cumulative annual savings over time
- Unconstrained by overall budgets
- Unconstrained RAP is 7% through 2029, over 20% by 2045

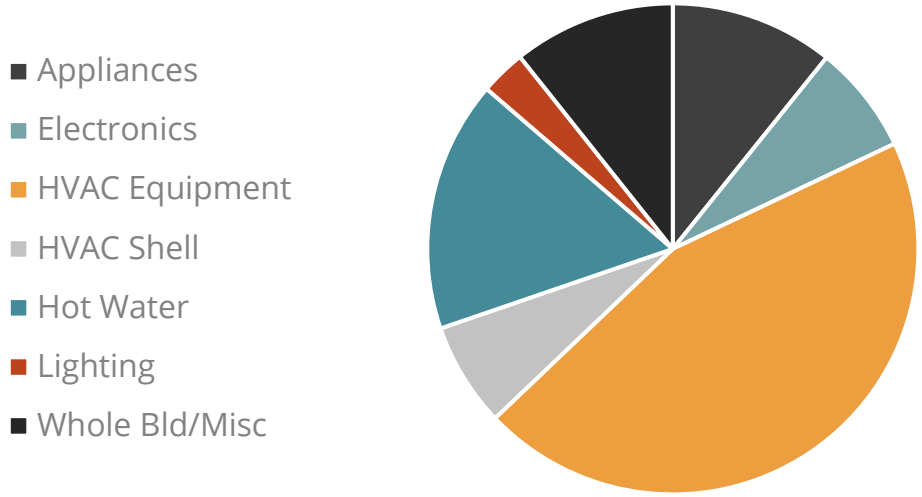


RESIDENTIAL END-USE BREAKDOWN OF RAP

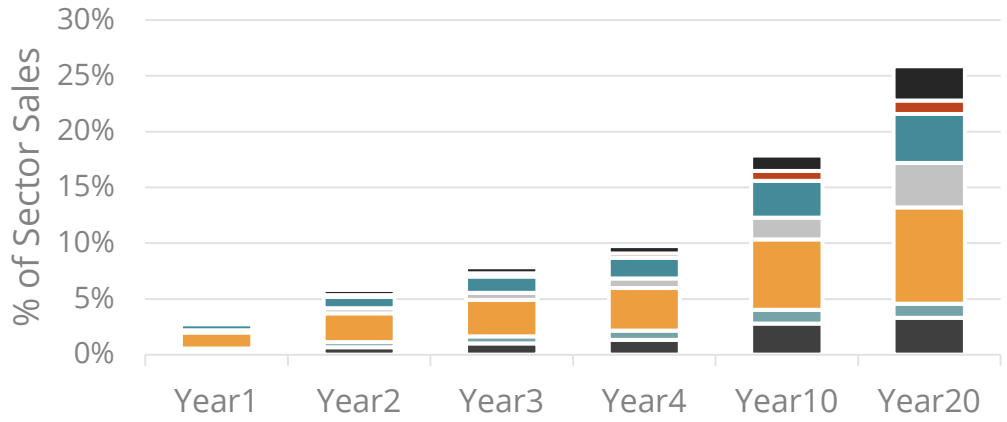
ComEd & Ameren Combined, Electric Energy Efficiency Only

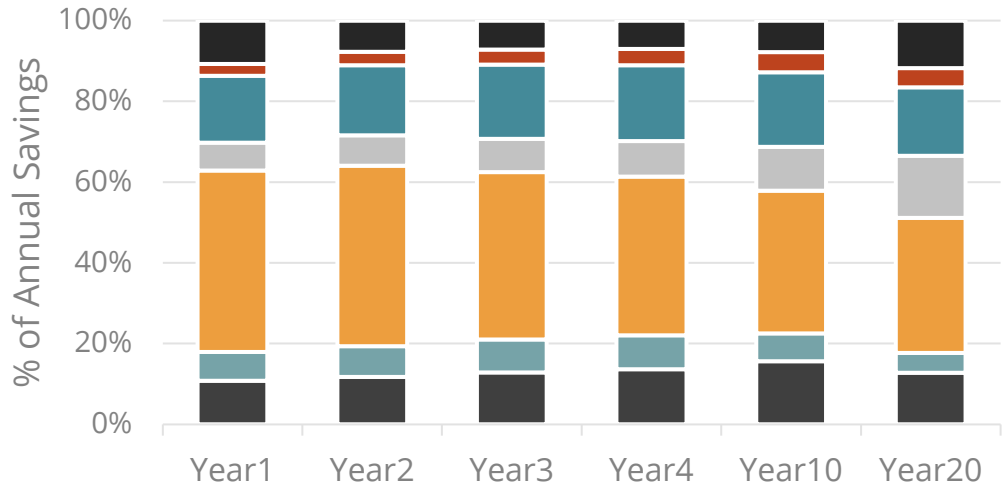
- **Opportunities emphasize HVAC and DHW**
- **Limited lighting (excludes EISA lamps)**
- **HVAC equipment shrinks over time**
- **Shell measures increase**

Savings by End Use (2026)



Cum. Ann. Savings by End Use



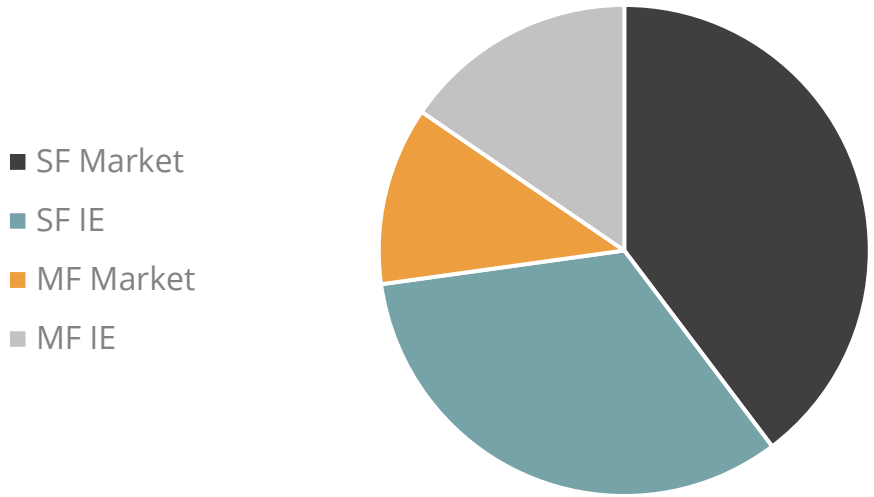


RESIDENTIAL BREAKDOWN OF ACHIEVABLE POTENTIAL (HOUSING/INCOME TYPE)

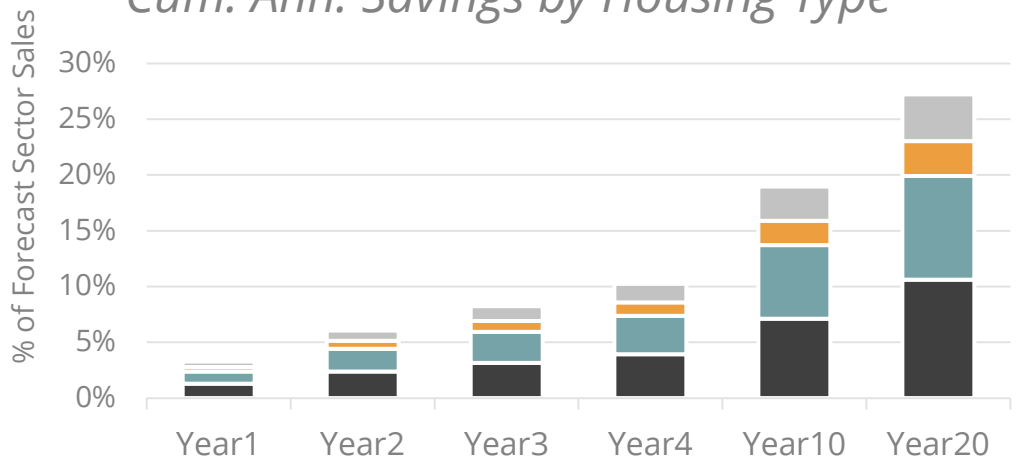
ComEd & Ameren Combined, Electric Energy Efficiency Only

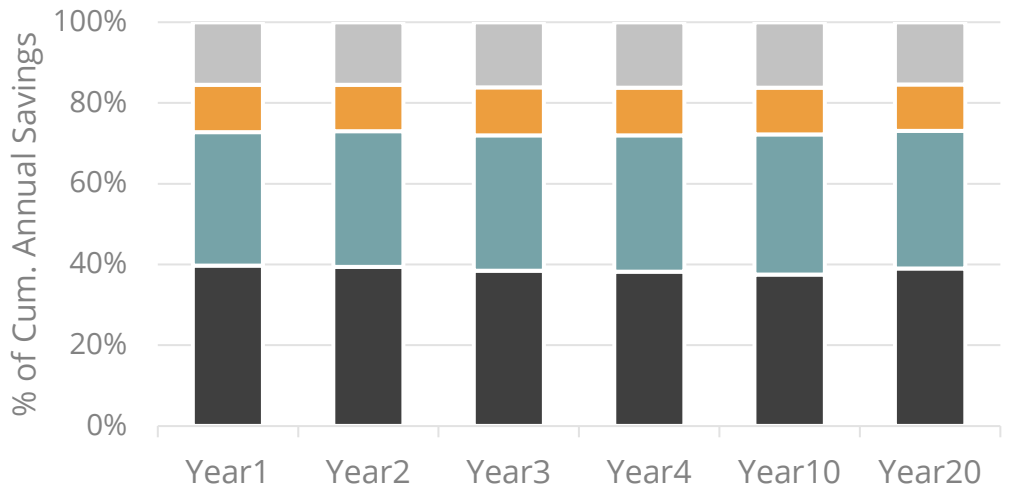
- Shares in the marketplace held constant
- Ongoing opportunities for MR and IE
- Housing stock and savings dominated by single family
- Multifamily and IE are important shares

Savings by Housing Type (2026)



Cum. Ann. Savings by Housing Type

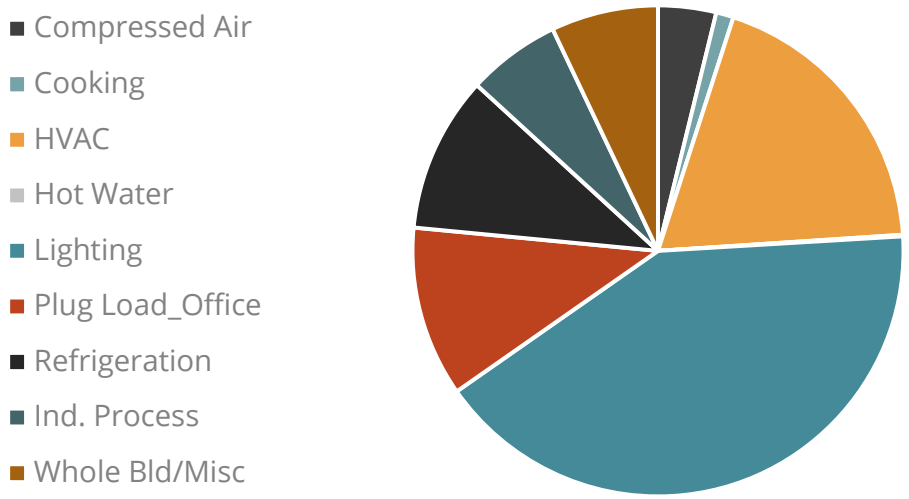




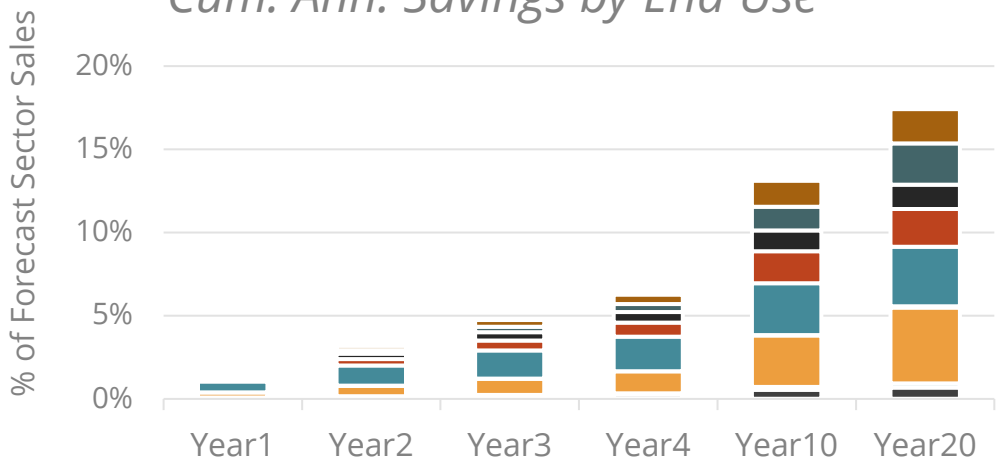
NONRESIDENTIAL BREAKDOWN OF ACHIEVABLE POTENTIAL (END USE)

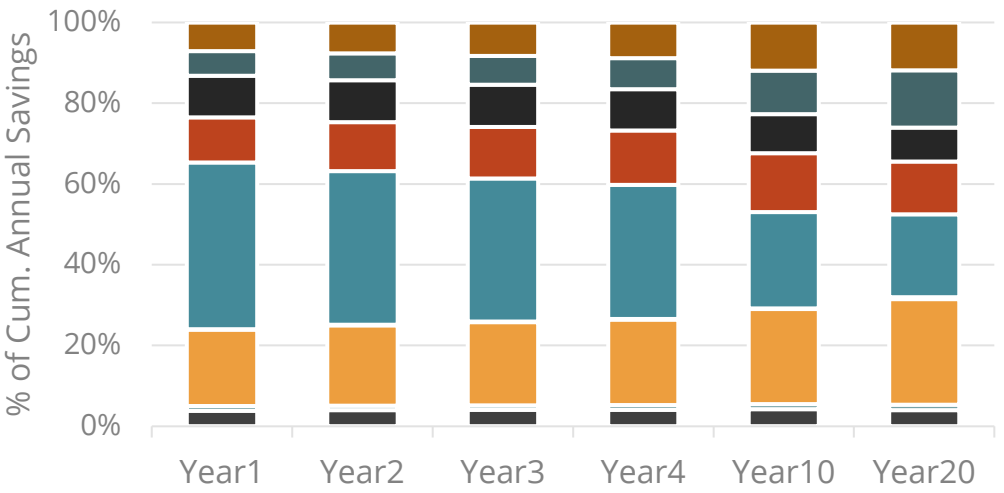
- Near-term significant lighting, decreasing over time
- Other end-uses grow to fill the gap
- Long-term EE opportunities across end-uses

Savings by End Use (2026)

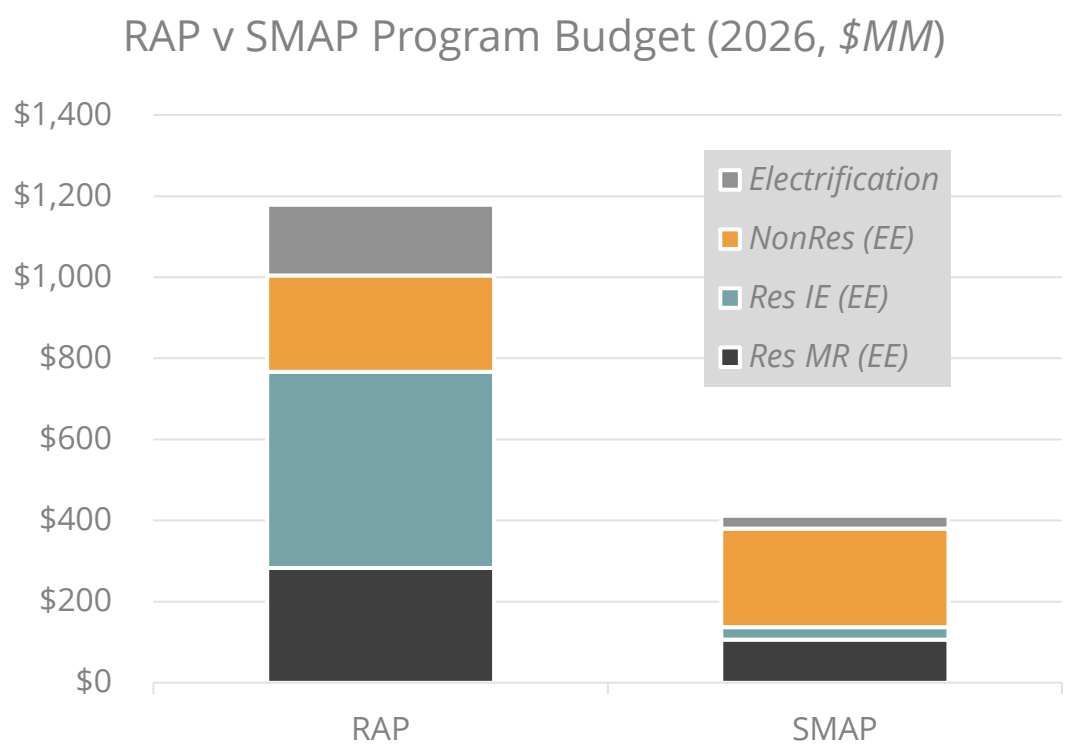


Cum. Ann. Savings by End Use





COMED - RAP TO STATUTORY MAXIMUM (SMAP)

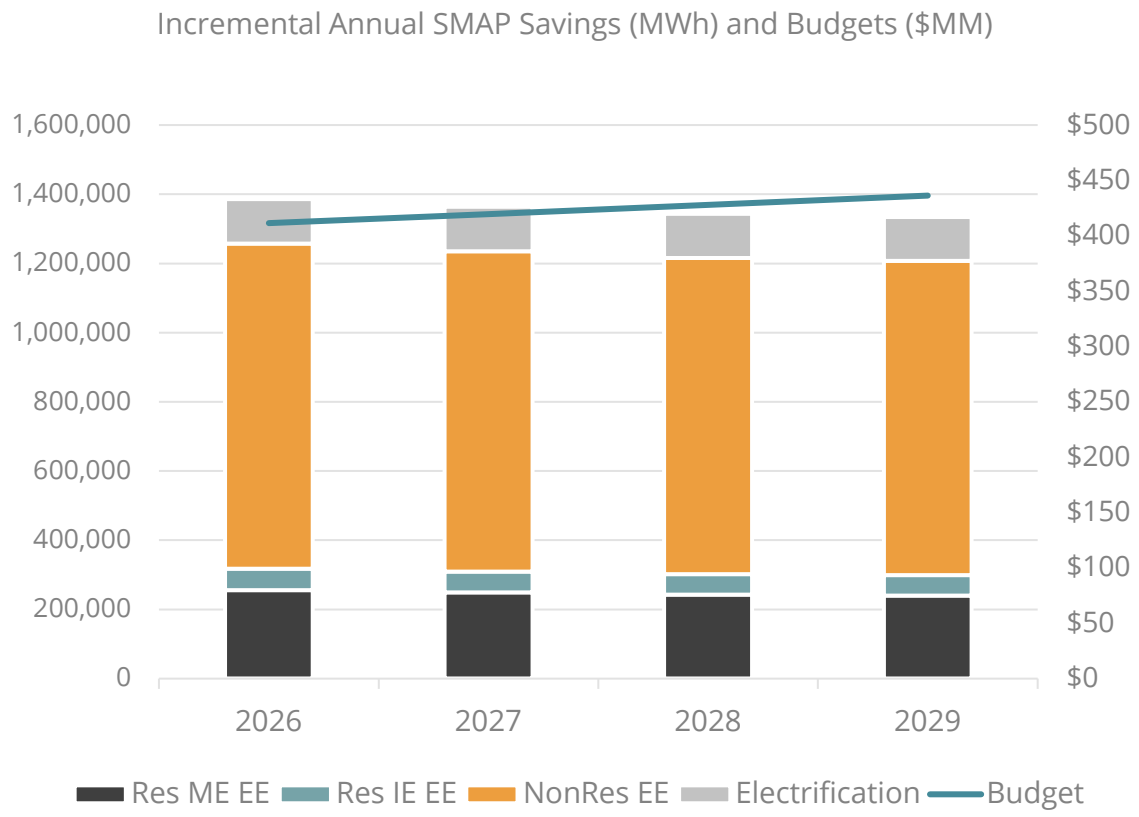


SMAP PARAMETERS
$411.5MM overall program budget, excluding cross-cutting portfolio costs
$40MM IE (IQ) Spending
10% electrification savings thru 2029
15% electrification savings thru 2045
NonRes budget similar to current spend
IQ budget substantially reduced from current ~$100MM
Simple scaling of RAP EE opportunities, adjusting for budget shares

- ***10 percent electrification may not be realistic (big step change from current)***
- ***Serves as a contrast to other constrained potential scenarios - not a program plan***
- ***Demonstrates scaling effect of constrained budgets***

COMED STATUTORY MAXIMUM (SMAP)

ComEd Electric Energy Efficiency and Electrification



Residential MR and IQ savings constrained by funding

Nonresidential spending close to RAP savings level

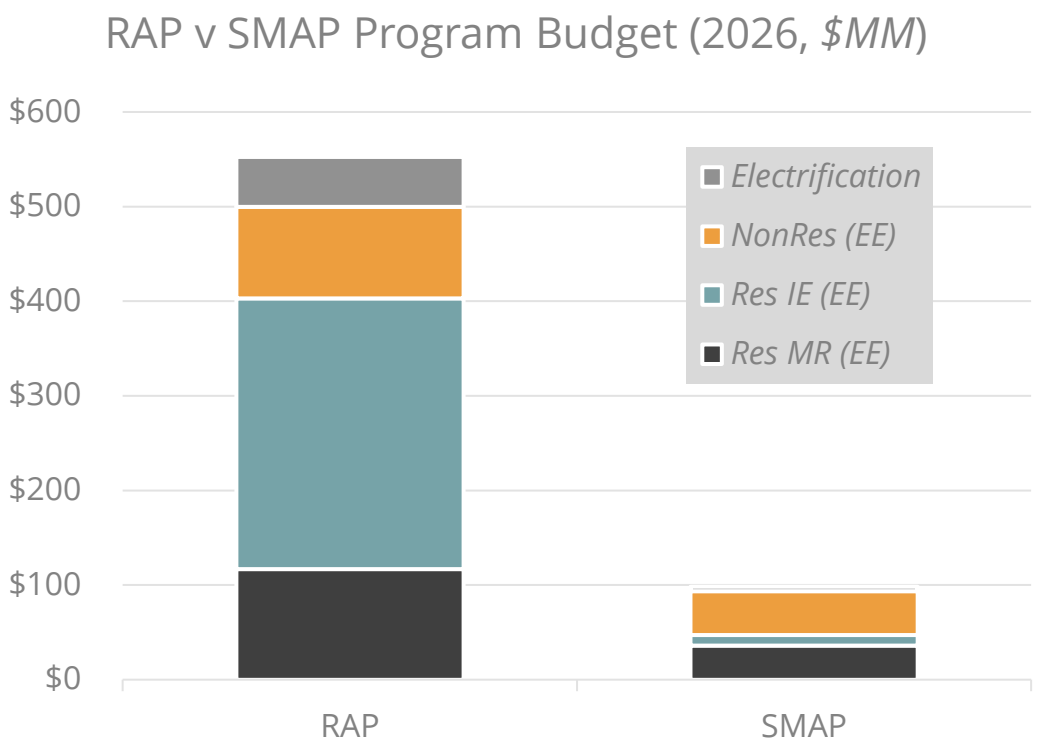
Home Energy Reports at current levels

No prioritization for lower cost measures
- Scaled to RAP potential
- Other scenarios will explore prioritization

Budgets increase by rate of inflation

Savings include converted claimed gas and electrification

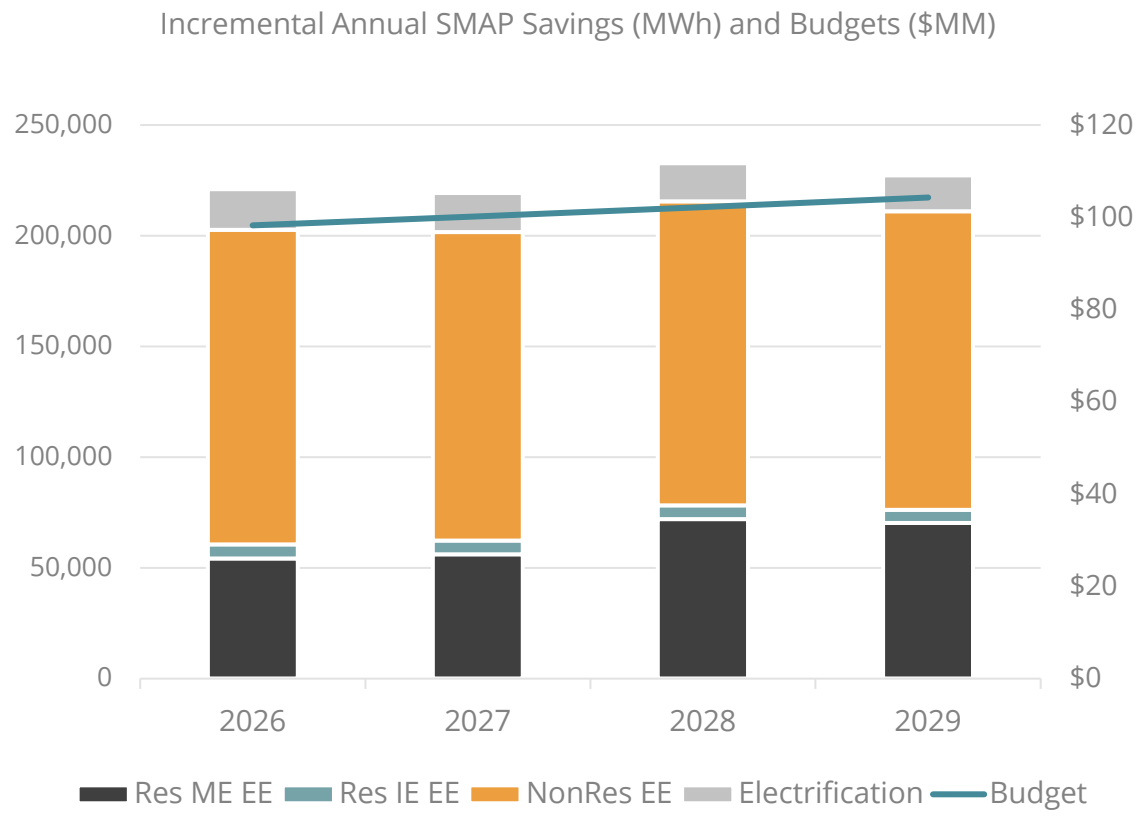
AMEREN ELECTRIC - RAP TO SMAP



SMAP PARAMETERS
$98MM overall program budget, excluding cross-cutting portfolio costs
$13MM IE (IQ) Spending
10% electrification savings thru 2029
15% electrification savings thru 2045
NonRes budget similar to current spend
10% electrification does not reflect current focus on propane
Simple scaling of RAP EE opportunities, adjusting for budget shares

- ***10 percent electrification not realistic (would require large program shift & ramp)***
- ***Serves as a contrast to other constrained potential scenarios - not a program plan***
- ***Demonstrates scaling effect of constrained budgets***

AMEREN ELECTRIC STATUTORY MAXIMUM (SMAP)



Residential MR and IQ savings constrained by funding

NonResidential spending close to RAP savings level

No current Home Energy Reports
- Identified in RAP
- Scaled with other measures

No prioritization for lower cost measures
- Scaled to RAP potential
- Other scenarios will explore prioritization

Budgets increase by rate of inflation

TOP MEASURES BY SECTOR – RAP AND SMAP

2026-2029 ANNUAL AVERAGE

Residential

Measure	% OF RAP	% OF SMAP
Home Energy Reports	9.6%	31.9%
Duct Sealing	11.9%	9.3%
Low Flow Showerhead	6.7%	5.2%
Advanced Thermostat Installation	5.1%	4.3%
Heat Pump Water Heaters	4.7%	3.7%
Ducted Heat Pumps	4.8%	3.4%
Energy Star Refrigerators	3.8%	3.1%
Emerging Tech - Advanced Windows U-0.10	3.0%	2.9%
Advanced Power Strip - Tier 1	3.4%	2.7%
Central AC	2.8%	2.4%
Emerging Tech - Home Energy Management System	2.5%	2.4%
ENERGY STAR Television	2.3%	1.9%
GSHP	2.3%	1.7%
Insulated Cellular Shades	1.4%	1.4%
Energy Star Air Purifier/Cleaner	1.6%	1.3%

NonResidential

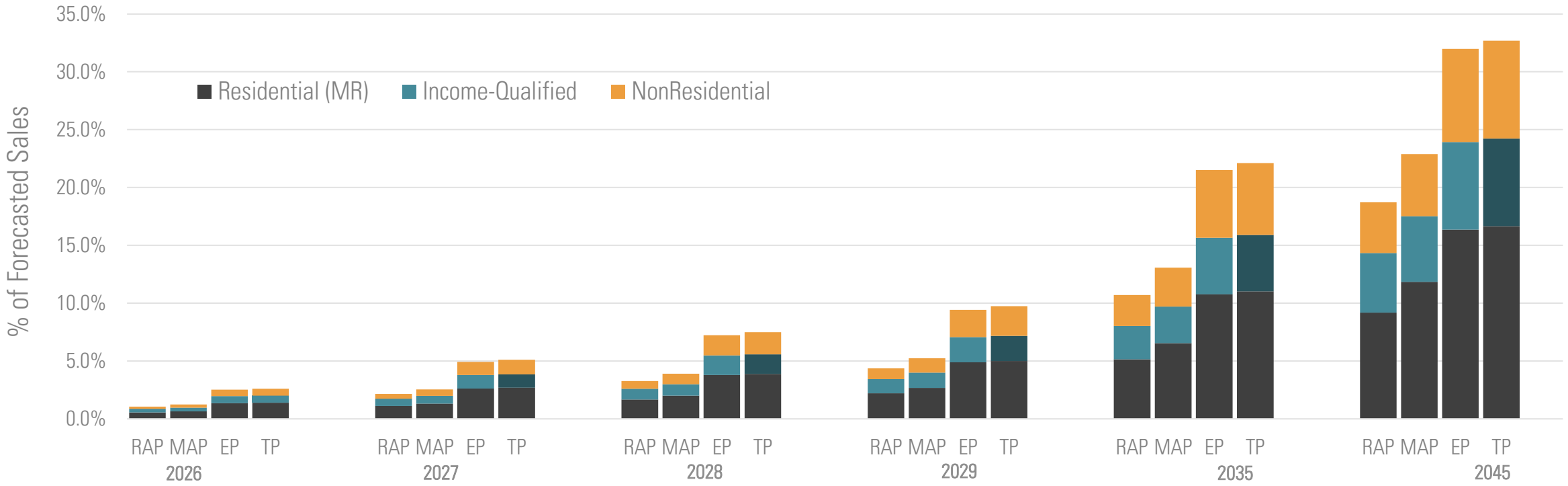
Measure	% OF RAP	% OF SMAP
Lighting Controls	8.8%	8.9%
LED Linear Replacement Lamps and Troffers	6.3%	6.5%
Advanced Power Strip	5.7%	5.9%
Pump and Fan Variable Frequency Drive Controls (Fans)	5.1%	5.2%
Custom Miscellaneous	4.9%	4.9%
SEM	5.2%	4.4%
LED High-Bay Fixtures	4.2%	4.4%
Fluorescent Delamping | 4-ft	4.3%	4.4%
Demand Controlled Ventilation	3.5%	3.6%
Computer Room Air Conditioner Economizer	3.3%	3.4%
Retro-commissioning	3.3%	3.4%
Energy Management System	3.2%	3.3%
Anti-Sweat Heater Controls for Glass Door Cooler or Refrigerator-Cooler	2.4%	2.4%
Compressed Air Leak Repair	2.0%	2.0%
LED Low-Bay Fixtures	1.9%	1.9%

- Wide range of measures / end-uses in residential
- More lighting focus in Nonresidential
- Top 15 in Residential = 77% of residential opportunity
- Top 15 in Nonresidential = 65% of nonresidential opportunity

OVERALL GAS SUMMARY

Nicor Gas & Ameren Gas Combined, Gas Efficiency

- 33% TP by 2045
- 19% RAP by 2045
- ~50% of RAP is non-low income residential, ~25% IQ, ~25% C&I

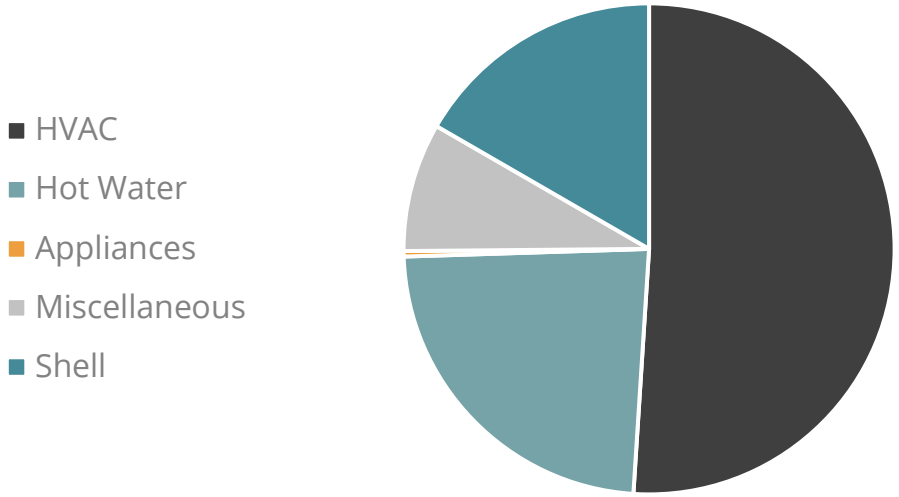


RESIDENTIAL END-USE BREAKDOWN OF RAP

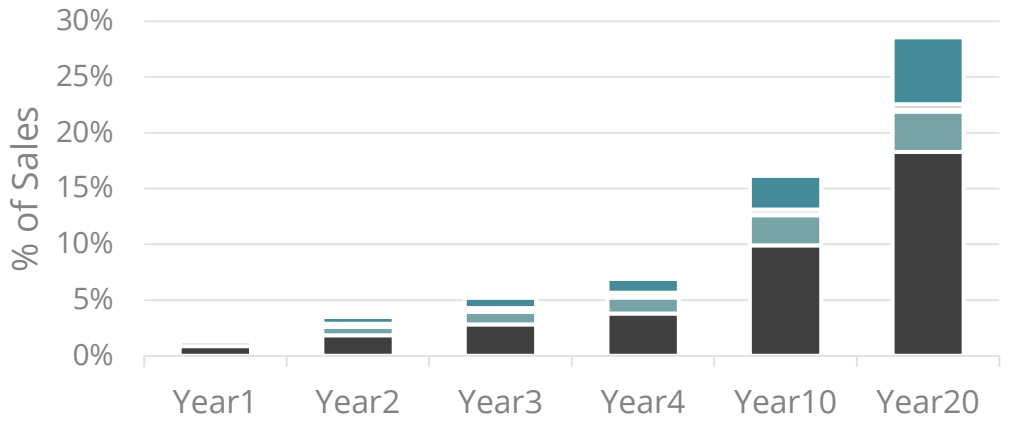
Nicor & Ameren Combined, Gas Efficiency Only

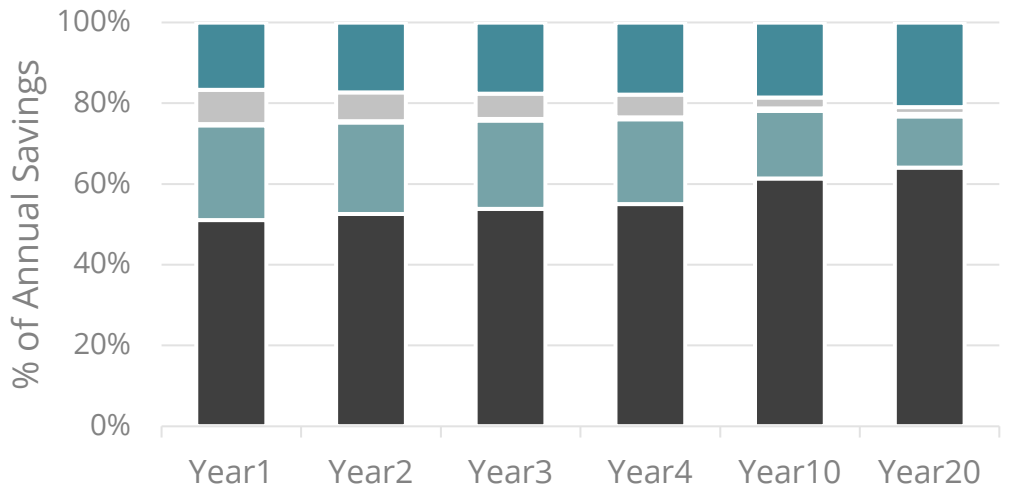
- **HVAC and Hot Water equipment show highest opportunities**
- **Hot water decreases over time**
- **Building shell increases over time**

Savings by End Use (2026)



Cum. Ann. Savings by End Use

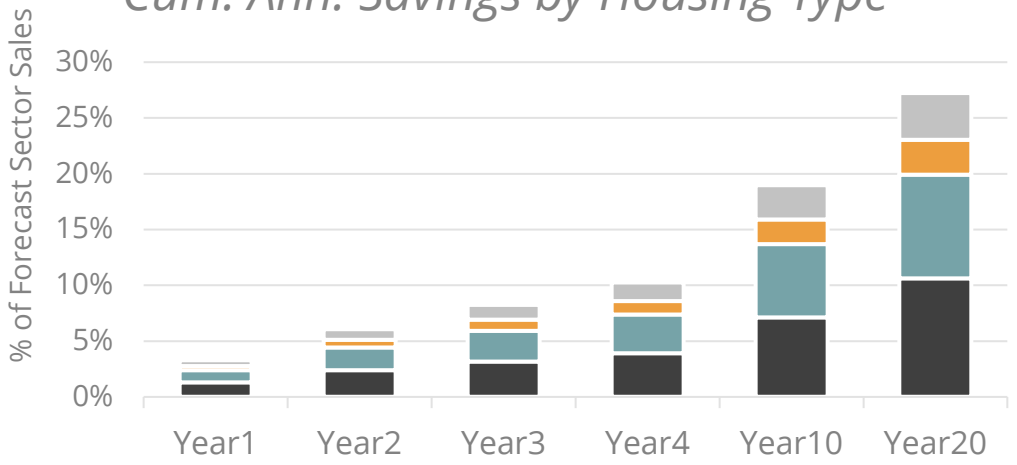




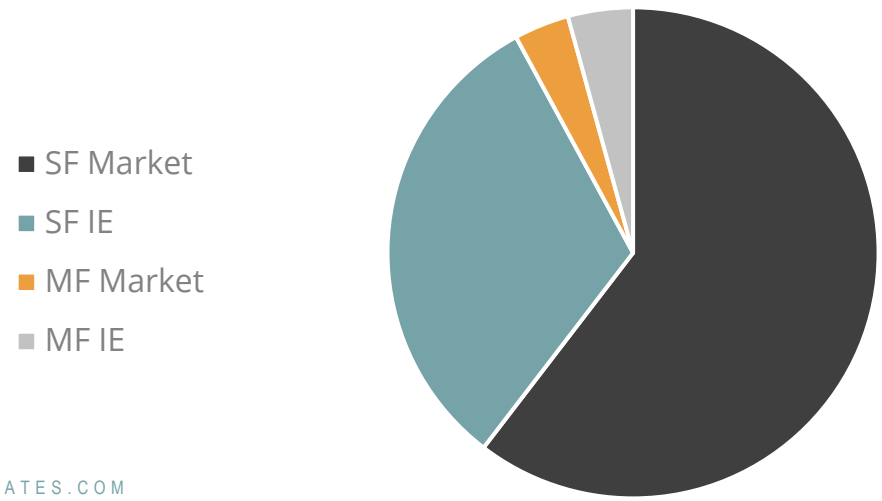
RESIDENTIAL BREAKDOWN OF ACHIEVABLE POTENTIAL (HOUSING/INCOME TYPE)

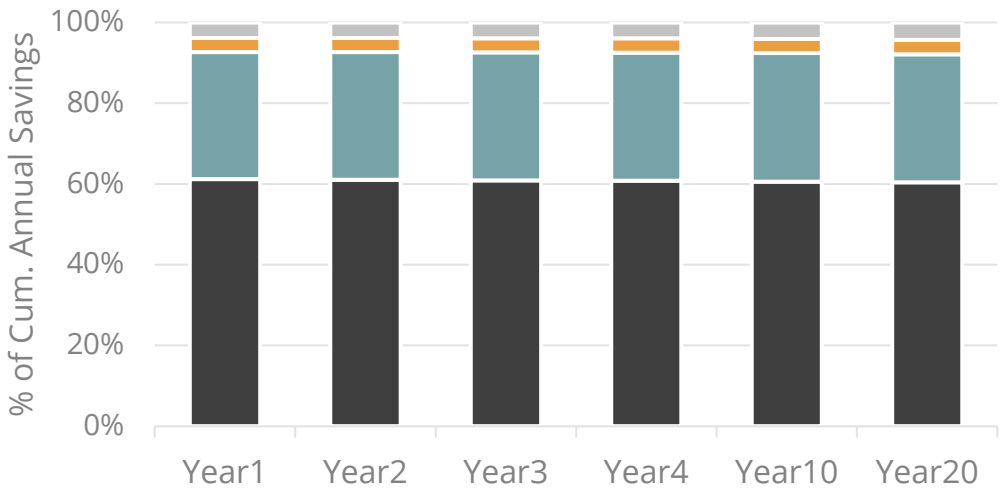
- Shares in the marketplace held constant
- Ongoing opportunities for MR and IE
- Housing stock and savings dominated by single family
- Emerging tech important to achieve savings outcomes

Cum. Ann. Savings by Housing Type



Savings by Housing Type (2026)

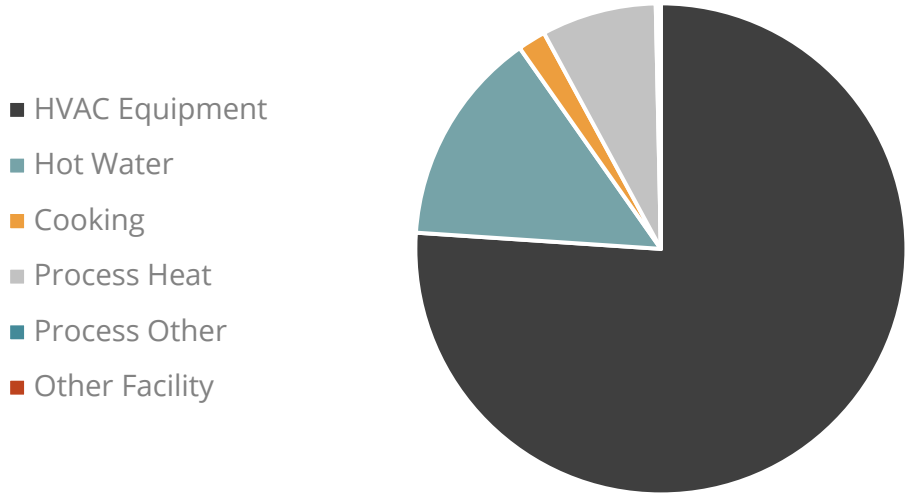




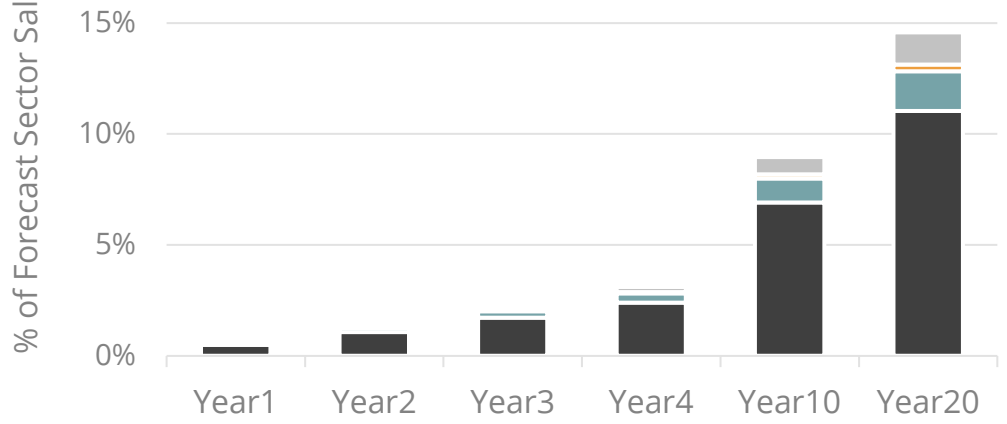
NONRESIDENTIAL BREAKDOWN OF ACHIEVABLE POTENTIAL (END USE)

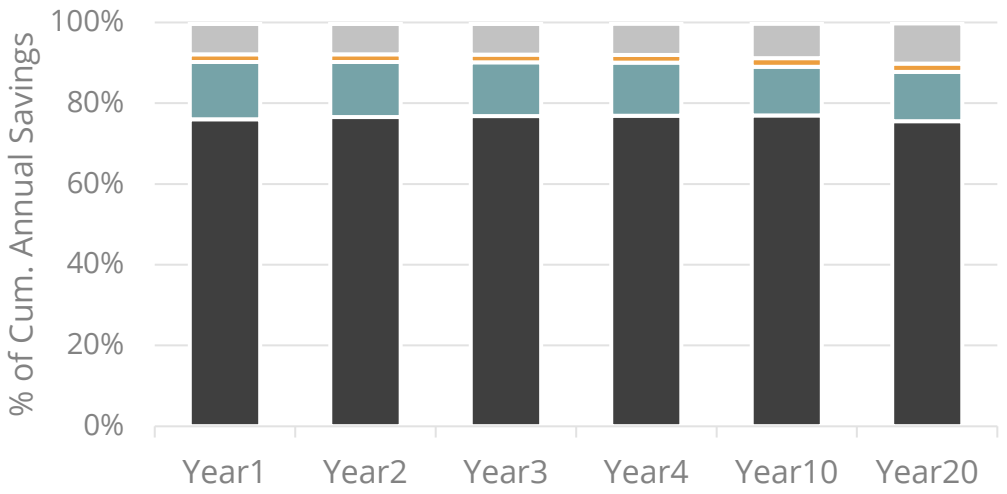
- HVAC Equipment is *the* major category
- Hot water and industrial process heat are also important
- Relative opportunities steady through forecast

Savings by End Use (2026)

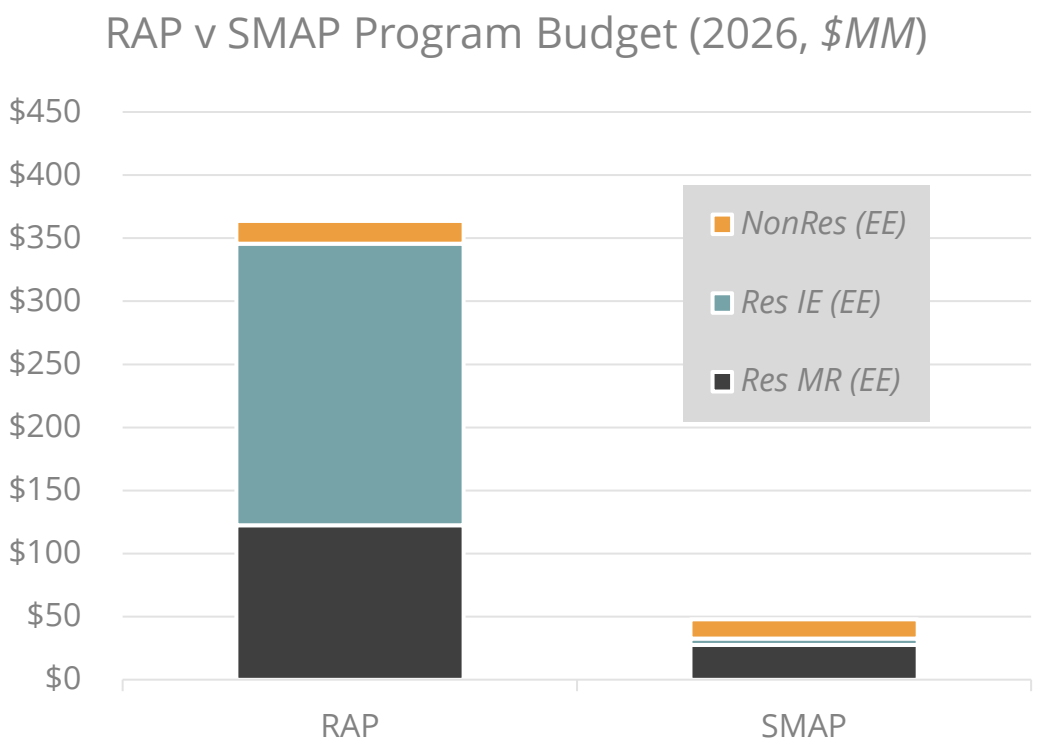


Cum. Ann. Savings by End Use





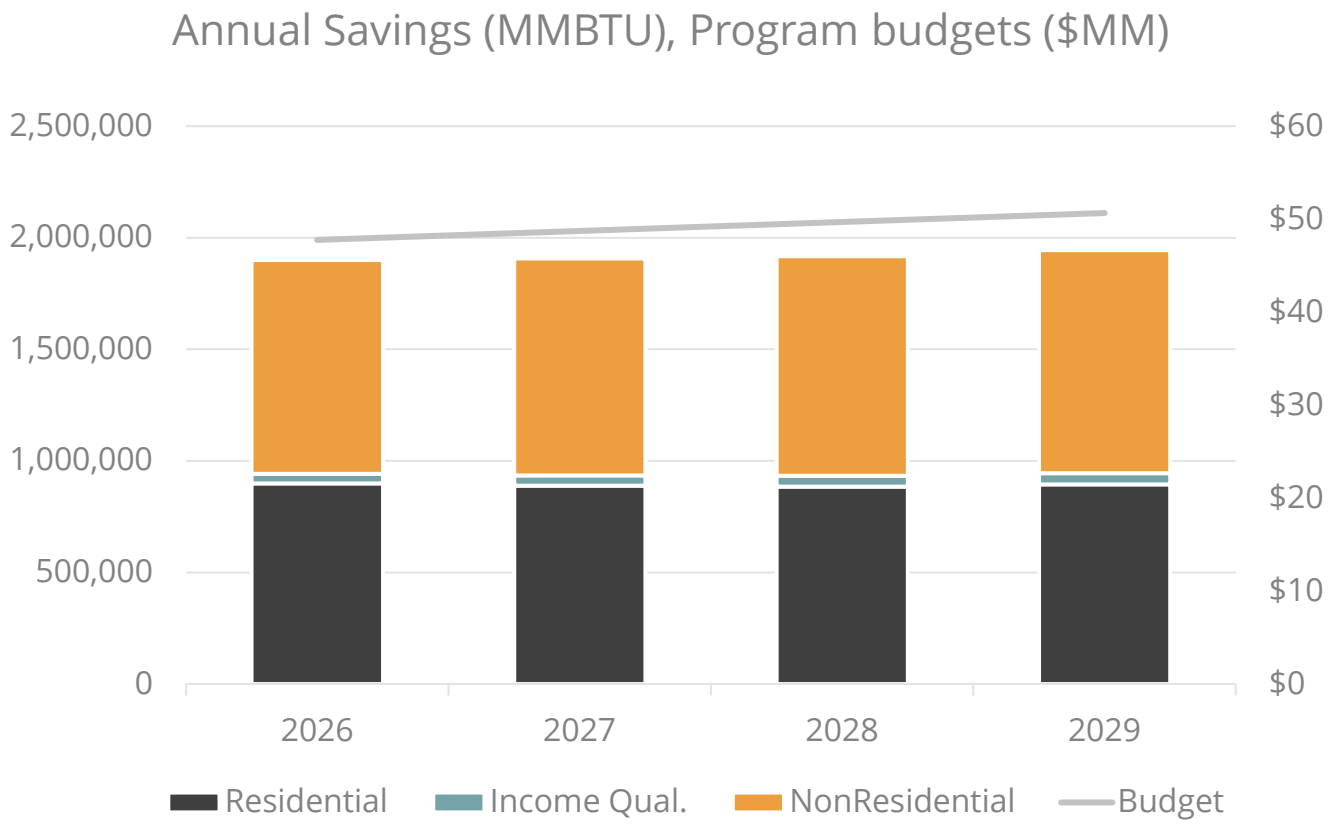
RAP TO SMAP – NICOR (GENERAL)



SMAP PARAMETERS
$50MM for EE programs (w/o) cross-cutting portfolio costs
$32MM for Residential (with IQ)
IQ (IE) spending $5.2MM
Health and safety not included in SMAP scenario
Prioritize IQ spending 75% toward shell measures
Prioritize $6MM of Res market rate for furnaces and thermostats

- ***Substantial opportunity for savings – budget scaling only allows for capturing a portion***
- ***Impact of electric utility electrification will not diminish remaining opportunities, given budgets***
- ***Nonresidential able to achieve close to RAP savings level***

NICOR GAS STATUTORY MAXIMUM (SMAP)

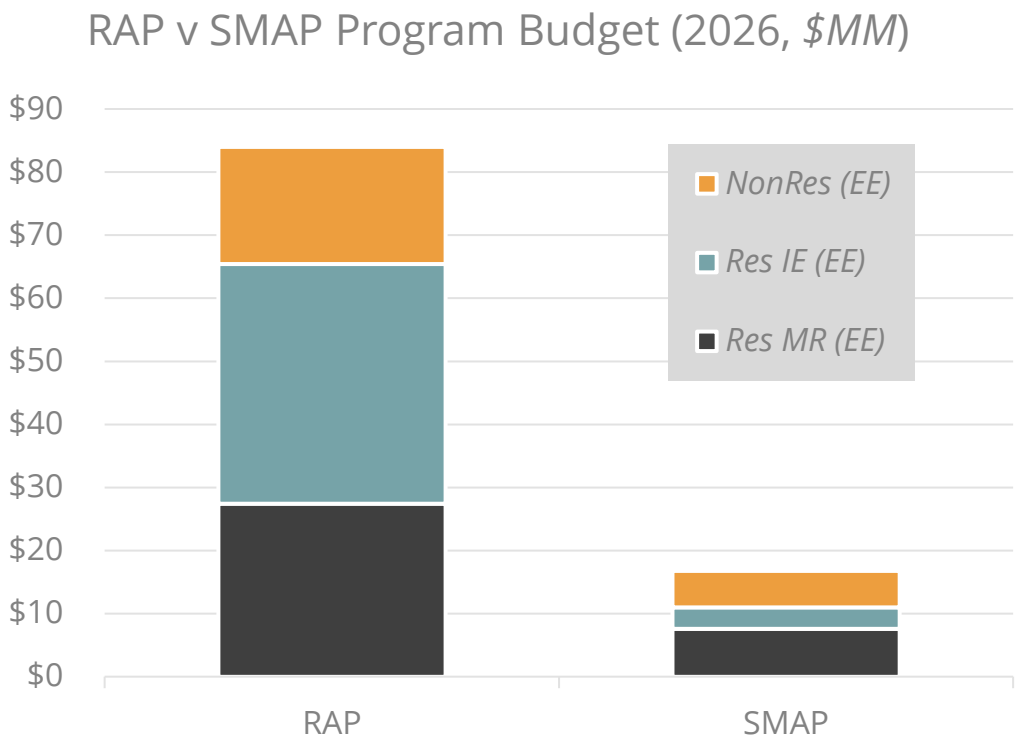


Higher savings due to higher expected overall budget (rises to $60MM)

IQ spending at full cost for measures
- Constrains savings
- Indicates higher acquisition cost
- Other scenarios will use higher budgets for IQ

Primary opportunities under statute
- Nonresidential – lower acquisition cost
- Market rate residential

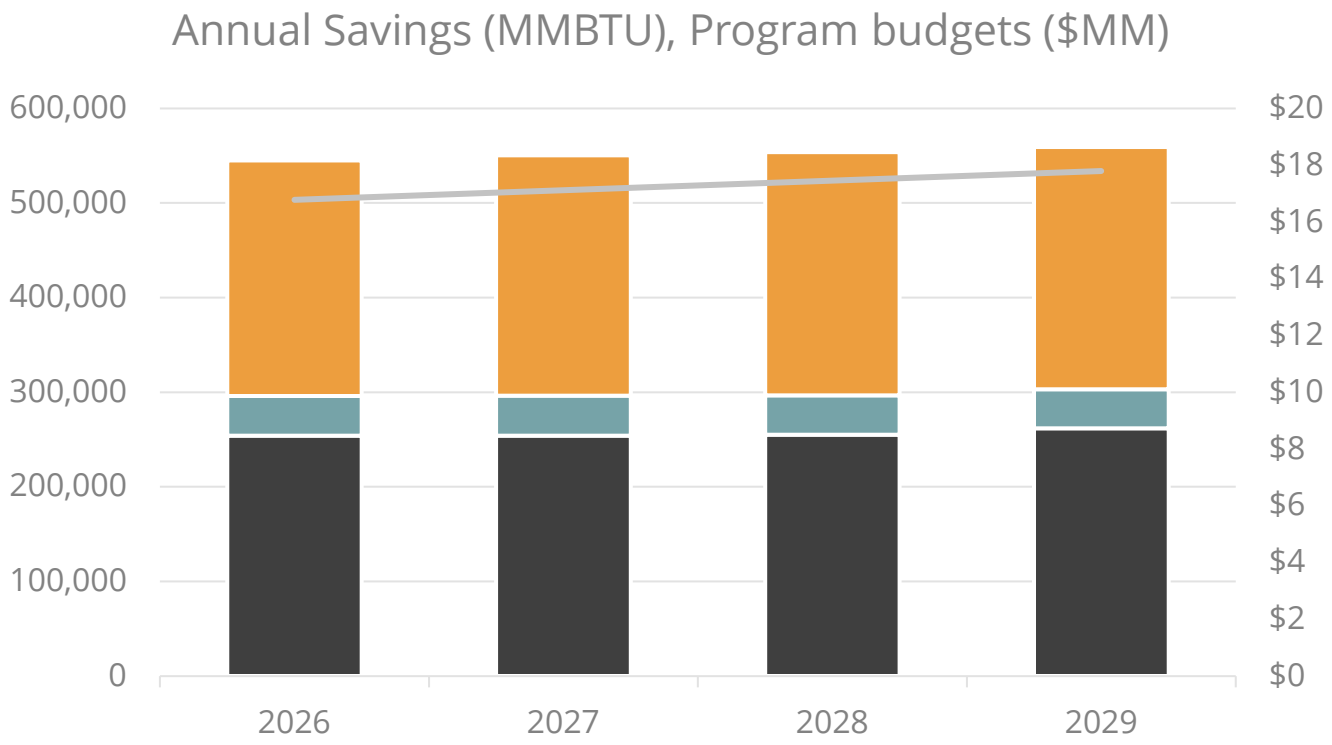
RAP TO SMAP – AMEREN GAS



SMAP PARAMETERS
$17MM for EE programs (w/o) cross-cutting portfolio costs
$11MM for Residential (with IQ)
IQ (IE) spending $3.4MM
Health and safety not included in SMAP scenario
Prioritize IQ spending 75% toward shell measures
Prioritize $2.5MM of Res market rate for furnaces and thermostats

- ***Substantial opportunity for savings – budget scaling only allows for capturing a portion***
- ***Impact of electric utility electrification will not diminish remaining opportunities, given budgets***
- ***Nonresidential able to achieve close to RAP savings level***

AMEREN GAS STATUTORY MAXIMUM (SMAP)



Similar to current spending and savings
- Similar acquisition costs in SMAP
- Some variance due to SMAP IQ budget

IQ spending at full cost for measures
- Constrains savings
- Indicates higher acquisition cost
- Other scenarios will use higher budgets for IQ

Primary opportunities under statute
- Nonresidential – lower acquisition cost
- Market rate residential

TOP MEASURES BY SECTOR

2026-2029 ANNUAL AVERAGE

Residential Measures	% OF RAP	% OF SMAP
ENERGY STAR Furnace	17.3%	27.9%
Advanced thermostat	11.8%	25.8%
Low Flow Showerhead	9.3%	5.4%
Efficient Gas Storage Water Heater	6.2%	3.7%
Duct Sealing	6.2%	3.4%
Gas Furnace Tune-Up	6.1%	3.3%
Emerging Tech - Advanced Windows U-0.10 (Gas heating and central AC)	5.2%	3.2%
Emerging Tech - Advanced Duct Sealing (Gas heating and central AC)	4.7%	2.7%
Pool Covers	4.6%	2.6%
Faucet Aerator	4.4%	2.5%
Energy recovery ventilator	4.3%	2.1%
ENERGY STAR Windows	4.2%	2.8%
Wall Insulation	2.2%	1.5%
Attic Insulation	1.7%	1.2%
Thermostatic Restrictor Valve	1.6%	0.9%

C&I Measures	% OF RAP	% OF SMAP
Small Commercial Thermostats-RET	28.1%	28.4%
High Efficiency Furnace	18.1%	16.8%
RCx	8.3%	7.9%
Tank Insulation	5.8%	6.0%
Space Heating Boiler Tune-up	5.5%	5.2%
Efficient ProcHeat Equipment	5.0%	5.8%
Boiler Chemical Descaling	3.8%	3.8%
Efficient ProcHeat O&M	3.5%	4.0%
Steam Trap Replacement or Repair	3.1%	3.1%
Boiler Lockout/Reset Controls	2.7%	2.9%
Storage Water Heater	2.5%	2.6%
Dishwasher	2.0%	2.1%
Steam Trap Monitoring System	1.6%	1.2%
High Efficiency Pre-Rinse Spray Valve	1.5%	1.5%
Infrared Heaters	1.4%	1.4%

- Heating equipment and controls are key opportunities in both sectors
- Water savings remains important source of savings
- Building shell (including emerging tech) important for residential
- Boiler and process measures important for nonresidential

Thank You!

Questions?