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focus on energy℠
Partnering with Wisconsin utilities



Planning Study
Fifth EWG Meeting

September 12, 2024

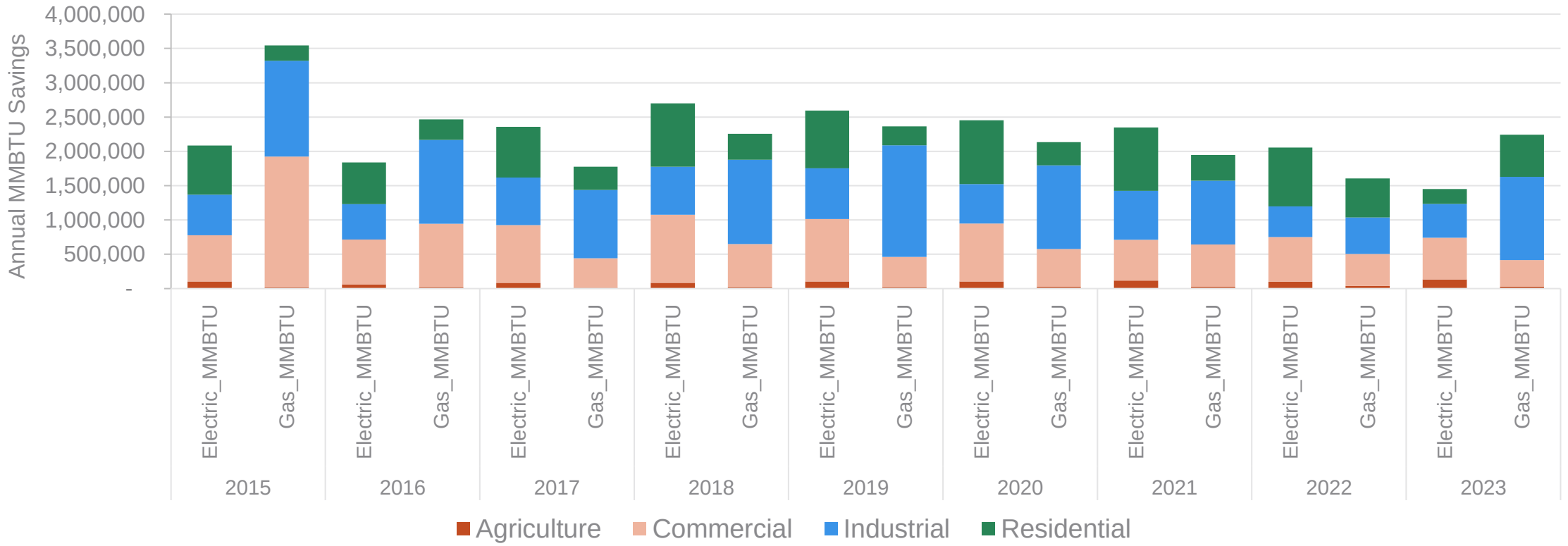
Agenda

- Historical Perspective and Gap Analysis
- Measure List Proposal
  - Residential
  - Commercial
  - Industrial
  - Agricultural
- Follow-Up & Next Steps

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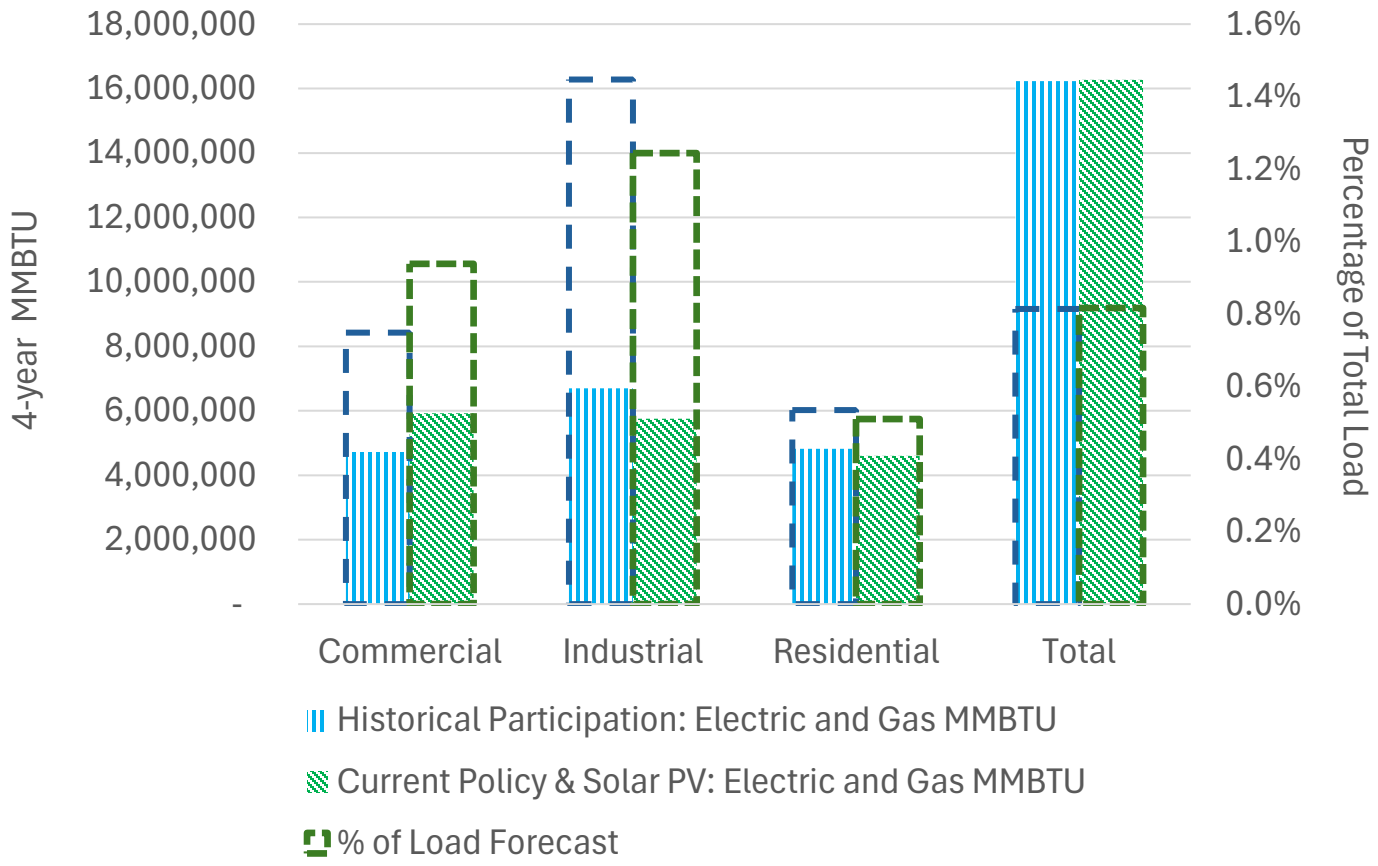
Historical Perspective – Cross Sector

- Past 4 years: industrial & residential gas; commercial electric primary program savings drivers
- Year-to-year variance on savings sources: 2022 industrial gas savings only 40% of 2023 industrial gas savings
- Residential: 2023 gas savings increased significantly due to heat pumps, electric savings decreased due to lighting standards (decrease offset by solar PV ramp)
- Industrial: savings primarily from custom projects & energy recovery for gas, and LEDs and VSDs for electric
- Agriculture: small fraction of overall program savings primarily from LEDs, VSD, fans, and dryers



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Gap Analysis Overview



4-year Current Policy Potential & Base Solar PV forecast (2023-2026) compared to 4-year measure adoption (2020-2023). Comparisons in MMBTU: gas and electric together / separate, by sector and end use

Cross Sector
Potential estimates match actual adoption

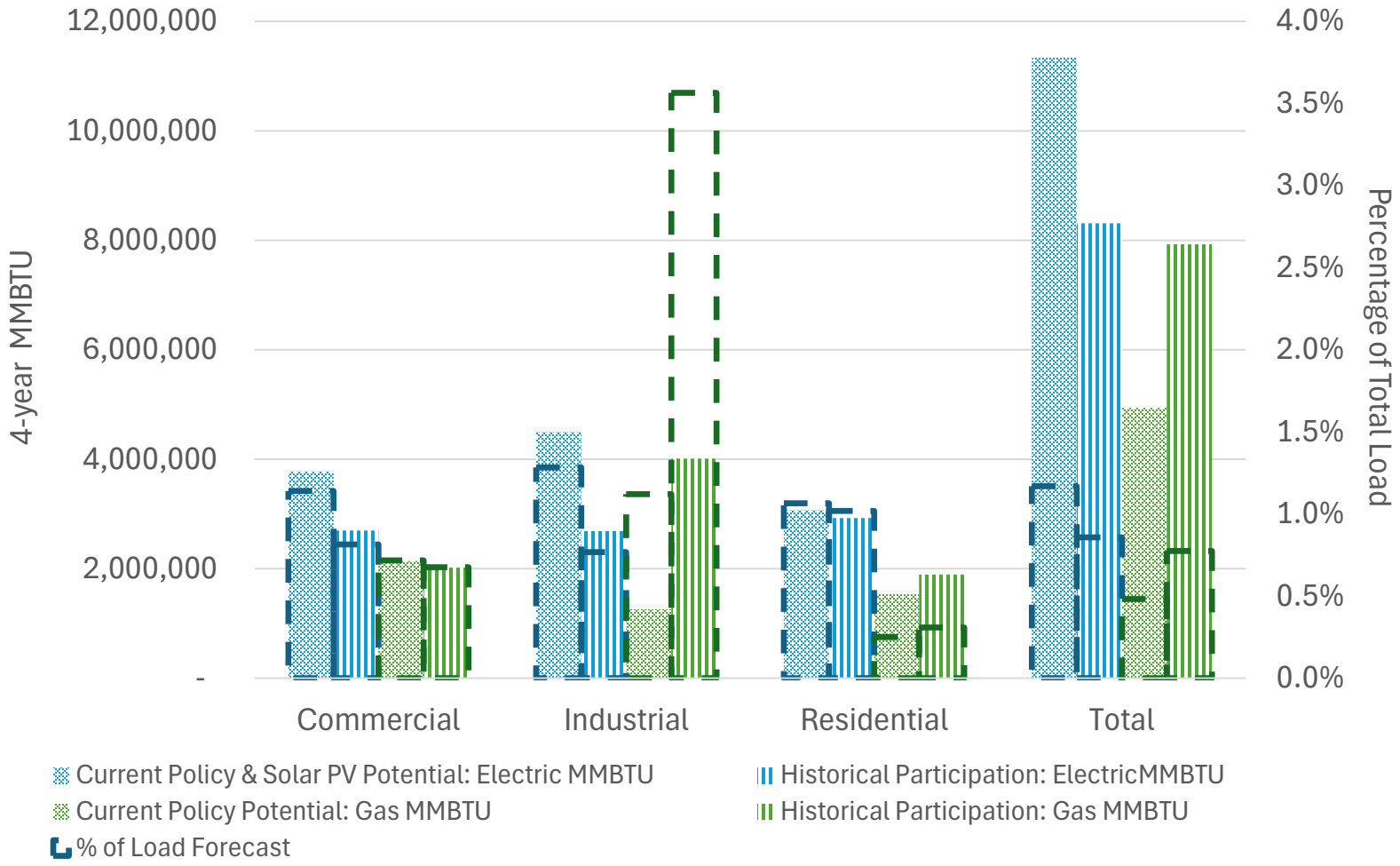
Commercial
Potential study over-estimated adoption

Industrial
Potential study under-estimated adoption

Residential
Potential study under-estimated adoption

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Gap Analysis Overview



Historical adoption = 2020-2023
Potential study = 2023-2026

Fuel Types

Industrial potential over-estimated electric and under-estimated gas adoption significantly => causing gaps across fuels

End Uses

Biggest MMBTU gaps:

- Gas industrial processes under-estimated significantly in potential study: program approaches to generating savings very challenging to align with potential modeling
- Electric water heat: significant amount of savings in potential study aerators and showerheads compared with program savings. Potential study includes clothes washer and heat pump water heater, but these measures not present in program savings as individual measures

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Take Aways from Historical Data & Gap Analysis

Study Objectives:

Understand …

- how focusing on emissions reductions could impact energy savings
- the value of / tradeoffs between focusing on demand reduction versus energy savings
- potential energy, demand, and emission reductions in Wisconsin across customer segments, particularly for income-qualified households
- options for and potential benefits of policy and programmatic changes that promote further fuel switching
- how the Inflation Reduction Act (IRA) could impact programmatic uptake for Focus on Energy programs and the best path to complement its implementation

Contextualize study findings to inform program goals

- Study will develop program scenarios to address research questions associated with study objectives
- Predicting future measure mix scenarios is challenging, given fluctuations in program delivery.
- Considering measures that are likely to be included in future program designs provides flexibility for scenario development
- Including measures that are unlikely to be included in future programs should be reconsidered

Approach

Approach for Draft Measure List Proposal

1. Categorized program measures based on measure names and descriptions and cross referenced with past potential study
2. Reviewed TRM to identify additional measures for future program design
3. Identified measures with electrification applications
4. Cross referenced program measures with IRA offerings
5. Identified measures with demand shifting potential

Where past potential study have focused on every possible measure, this planning study is targeted on program scenarios to analyze potential impacts of transitional program priorities. Therefore, the number of measures will decrease, leading to an overall reduction in technical and economic potential estimates.

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Questions & Next Steps

Questions

1. What are measures that are not on the draft list but have a high likelihood to gain prominence in the portfolio in the coming years? (Data or research to support recommendation highly encouraged)
2. Should any measures be removed from the list because they are unlikely to be part of a future Focus on Energy program design? (Please provide reasoning and/or data)
3. What is the necessary level of conducting analysis and reporting results?
    1. As a measure category (such as reporting all grouping all residential efficient ducted air source heat pumps together)?
    2. By efficiency level (such as ENERGY STAR, advanced efficiency, and premium heat pumps)?
4. Should the study consider any measures to be offered only through specific programs, such as income qualified programs?

Next Steps

1. Finalize measure list and determine appropriate level of analysis: October 2024
2. Conduct measure characterization, including hourly load impacts: October 2024 – April 2025

Residential Measures

End Use Category	4-Year Electric Technical Potential: 2021 Study (MMBTU)	PY19 to PY23 Electric Savings (MMBTU)	4-Year Gas Technical Potential: 2021 Study (MMBTU)	PY19 to PY23 Gas Savings (MMBTU)	Total Measure Categories	Measure Categories with Electrification Applications	Measure Categories with IRA Incentives	Measure Categories with Load Shifting Applications or Demand Reduction Potential
Appliance	3,227,607	929	86,927	-	7	2	1	4
Cooking	5,704	-	98,417	-	3	3	2	-
HVAC	1,696,041	159,414	5,223,723	1,013,315	28	4	11	16
Water Heat	4,582,961	86,370	3,987,863	414,752	11	1	1	2
Lighting	246,491	146	-	-	2	-	-	-
Other	10,412	1,583	68,938	19,053	7	1	-	4
Plug Load	218,224	29,629	-	9,999	2	-	-	-

Notes:

- Draft measure list includes several measures with limited historical savings, but electrification applications
- Load shifting applications include water heater and electric vehicle charger management, as well as appliances with high demand savings potential (such as refrigerator / freezer removal)
- Draft measure list includes a “Program Home” measure since New Homes program is a significant driver of savings

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Commercial Measures

End Use Category	4-Year Electric Technical Potential: 2021 Study (MMBTU)	PY19 to PY23 Electric Savings (MMBTU)	4-Year Gas Technical Potential: 2021 Study (MMBTU)	PY19 to PY23 Gas Savings (MMBTU)	Total Measure Categories	Measure Categories with Electrification Applications	Measure Categories with Load Shifting Applications or Demand Reduction Potential
Air Compressor	21,005	12,541	-	-	6	-	2
Appliance	55,335	122	34,945	226	3	1	-
Cooking	38,929	157	222,904	12,922	10	9	-
Embedded Data Center	1,300	2,545	-	-	4	-	-
HVAC	1,822,218	234,781	5,827,785	1,146,643	54	6	17
HVAC and Lighting	2,435	7,015	-	19	1	-	-
Lighting	2,371,276	1,319,552	-	-	14	-	3
Other	909	598	3,972	-	7	1	1
Plug Load	21,006	-	-	-	1	-	-
Refrigeration	430,530	137,207	-	142,319	14	-	-
Water Heat	323,230	505	135,941	25,016	7	3	-

Notes:

- Draft measure list includes HVAC measures with load reduction potential and load shifting applications (such as air compressor and electric vehicle charging load shifting)
- Draft measure list includes new “Custom Project” measures across end uses to align with program implementation

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Industrial Measures

End Use Category	Total Measure Categories	Measure Categories with Electrification Applications	Measure Categories with Load Shifting Applications or Demand Reduction Potential
Boilers & Burners	4	-	-
Compressed Air, Vacuum Pumps	12	-	1
HVAC	18	-	-
Lighting	5	-	-
Motor	6	-	-
New Construction	1	-	-
Other	2	-	-
Process	22	10	-
Refrigeration	3	-	-
Renewable Energy	1	-	-
Streetlighting	1	-	-

Notes:

- Industrial measures are highly customized, draft measure list includes several broader customer measure categories
- Electrification opportunities focused on industrial processes through measures such as electric arc furnaces or electric infrared heaters that Focus has not previously offered

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Agricultural Measures

End Use Category	4-Year Electric Technical Potential: 2021 Study (MMBTU)	PY19 to PY23 Electric Savings (MMBTU)	4-Year Gas Technical Potential: 2021 Study (MMBTU)	PY19 to PY23 Gas Savings (MMBTU)	Total Measure Categories	Measure Categories with Electrification Applications
Dairy	39,493	60,341	-	-	4	-
HVAC	105,771	17,242	2,761	5,703	11	2
Irrigation	2,704	33,186	-	-	3	-
Lighting	64,223	167,806	-	-	5	-
Other	5,808	8,076	76,873	80,271	7	1
Water Heat	-	-	12,783	-	2	2

Notes:

- Draft measure list includes several custom projects to reflect opportunities to pursue individualized approaches
- Agricultural electrification potential focused on HVAC, Grain Heaters, and Water Heat

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Thank You and Discussion

Next Steps:

- Cadmus to send out meeting notes, slides, and discussion questions to EWG
- EWG please provide written feedback by September 19, 2024
- Cadmus will circulate summarized EWG feedback by September 26, 2024
- Stakeholder Meeting: September 26, 2024 (online)

Next EWG Meeting:

- January 2025: Market Characterization & Primary Data Collection Results
- Written feedback will be collected after the meeting

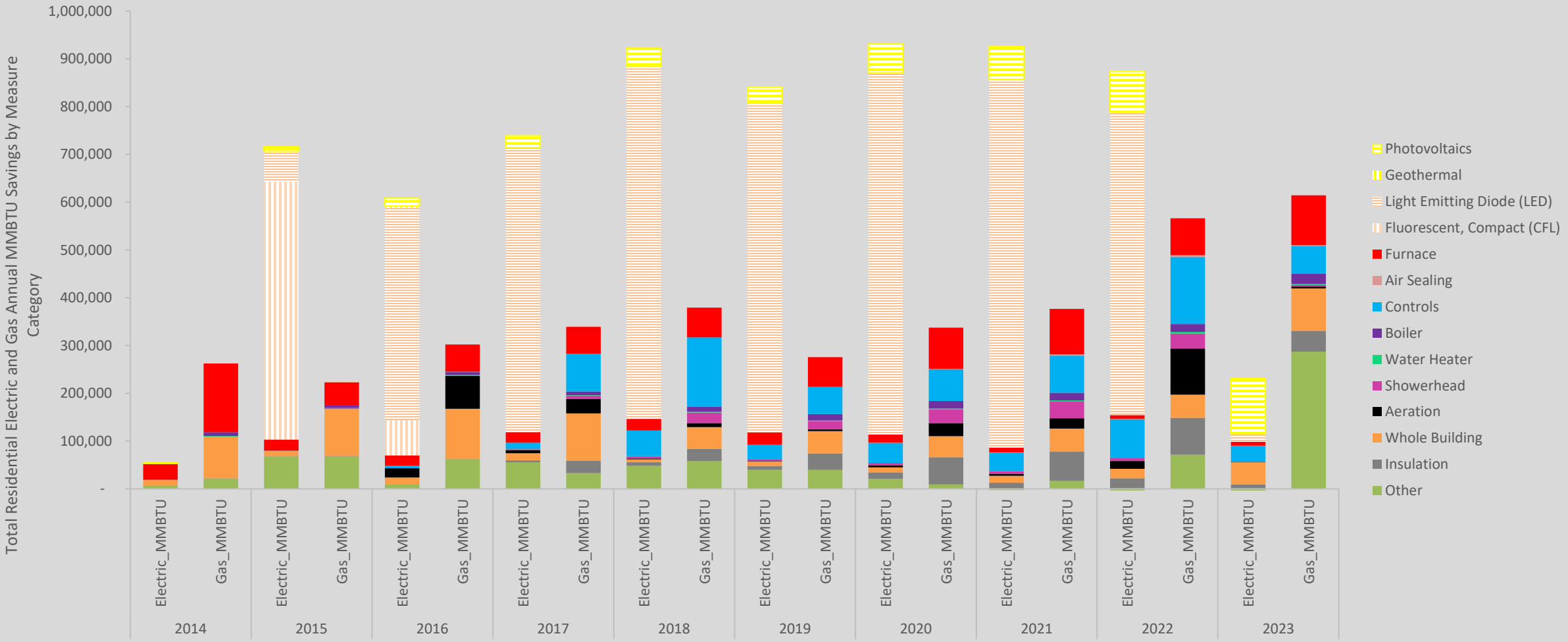
Your input is important, please send us feedback:

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Casandra Guillen at Cadmus (Casandra.Guillen@cadmusgroup.com)
Mitch Horrie at PSC (Mitch.Horrie@wisconsin.gov)

Appendix: Historical Savings by Measure Group

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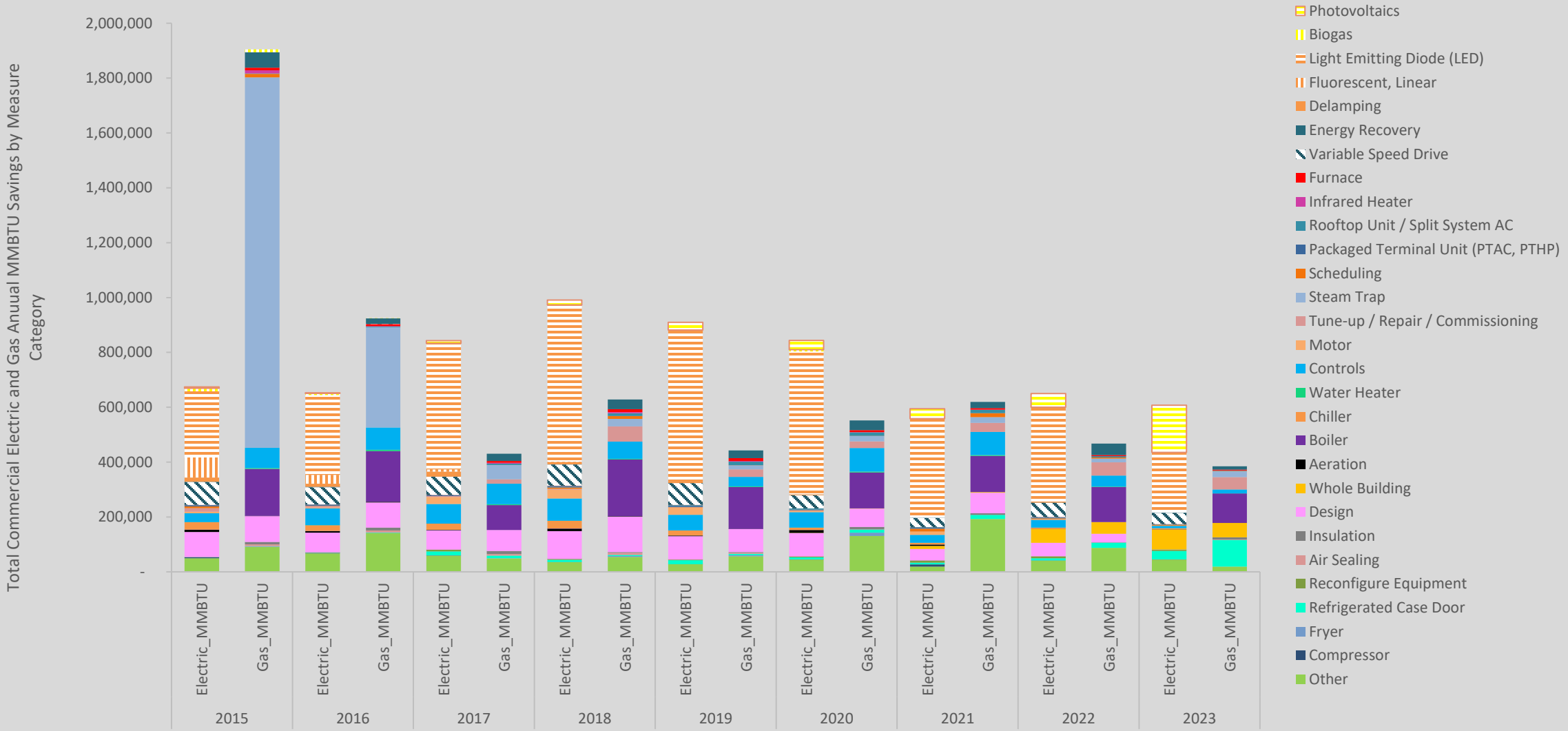
Historical Perspective – Residential



43% of 2023 “Other” savings = Heat Pumps

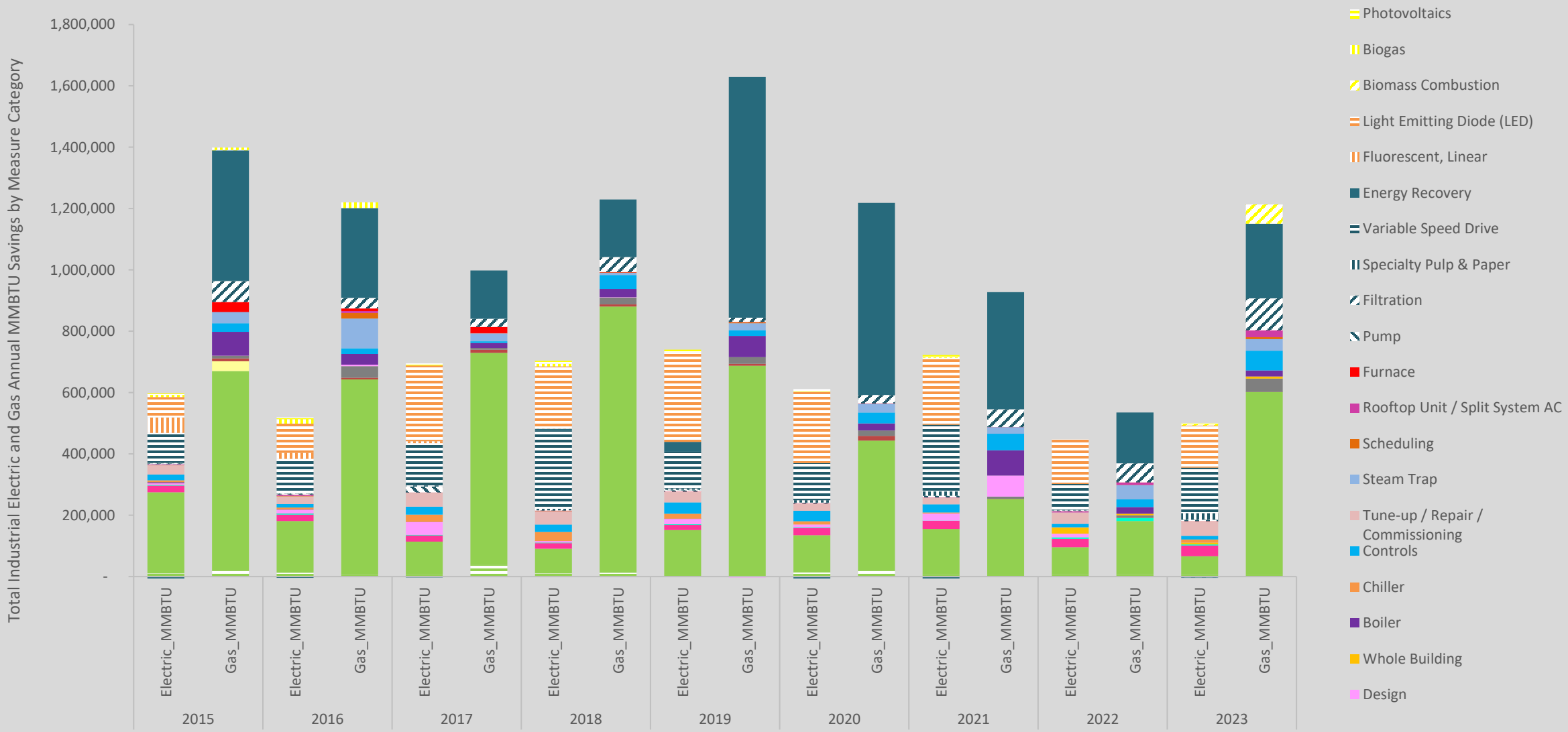
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Historical Perspective – Commercial



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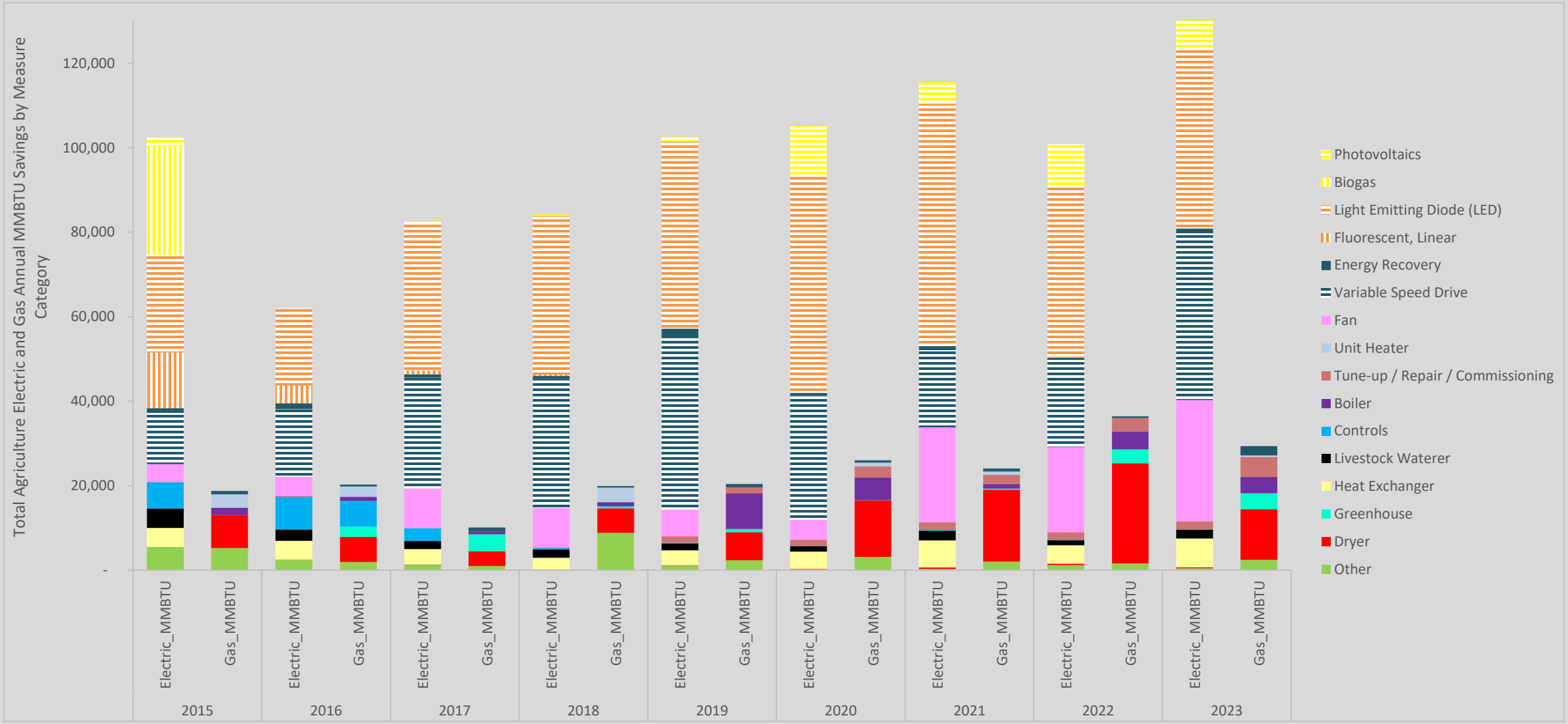
Historical Perspective – Industrial



*Note: 80% "Other" industrial measure category total MMBTU savings are from the custom industrial process measure.

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Historical Perspective – Agriculture



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