Presentation Purpose

Objective: Share with the EWR Collaboration a summary of findings and recommendations from the C&I Market Characterization study completed in 2019 and 2020.

Process: Detailed analysis of the results from on-sites and customer surveys with a stratified sample of C&I customers in the Consumers Energy service territory.

Structure: This presentation includes the following:

- Background
- Methodology & Sampling
- Key Findings & Recommendations

COMMERCIAL AND INDUSTRIAL MARKET CHARACTERIZATION RESULTS

MPSC EWR Collaborative Meeting
November 16, 2021

Presented by Jeremy Kraft, TRC

Consumers Energy Count on Us TRC

Research Background

What is market characterization research?

A | Studies the **penetration, saturation, and efficiency levels** of equipment among Consumers Energy's commercial and industrial (C&I) customers.

How is this research used?

A | Used to inform **potential studies** and assist in **program design and planning**. Results compared to 2015 study to **identify trends.**

Business Type	Share Among All C&I Customers
Education	2.3%
Grocery	1.5%
Health	5.7%
Industrial	5.2%
Lodging	1.0%
Office	31.2%
Other/Misc.	5.1%
Restaurant	3.5%
Retail	8.0%
Warehouse	4.7%
Total	68.1%

Definition: Penetration Calculations

There are a few key terms we will use throughout this presentation:

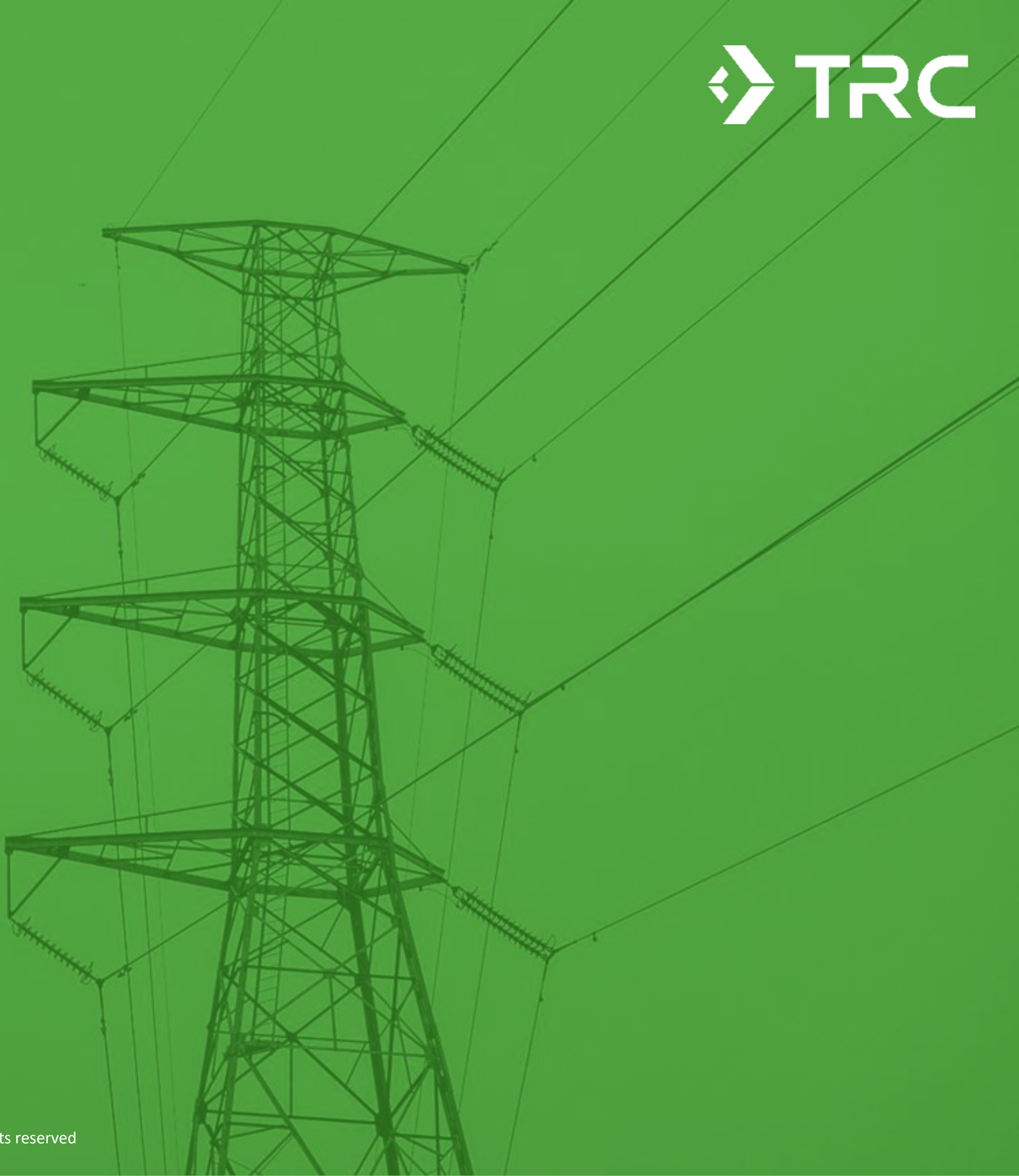
MEASURE **PENETRATION** = $\dfrac{Sum\ of\ sites\ with\ measure}{Number\ of\ sites}$

MEASURE **SATURATION** = $\dfrac{Sum\ of\ all\ measures\ across\ all\ sites}{Sum\ of\ all\ applications\ across\ all\ sites}$

Agenda

1. Methodology & Sampling
2. Key Findings & Recommendations
3. Detailed Findings:
    - On-site field visits (existing equipment)
    - Online survey (attitudes)

Methodology & Sampling



Methodology

OCT - DEC 2019:

On-site visits to inventory existing equipment, including heating, ventilation, and air conditioning (HVAC), lighting, envelope, water heating, refrigeration, cooking, process/steam

SAMPLE:

225

C&I customers

OCT 2019 - FEB 2020:

Follow-up online surveys with customers from on-sites to assess attitudes and purchase decisions, including:

- Attitudes and barriers toward energy efficiency
- Past and planned actions to improve energy efficiency
- Customer awareness of energy efficiency programs

SAMPLE:

145

C&I customers from on-sites

Stratification and Weighting

To gather data from a mix of customers, C&I customers were stratified by:

Business type

Usage (low or high)

Results were then weighted by these categories to be representative of the C&I population.

Sampling

The sample included the same business types that were included in 2015, but the **industrial business type was added in the most recent round**.

Business Type	NAICS Description*
Education	Educational Services
Grocery	Food and Beverage Stores
Health	Health Care and Social Assistance
Industrial	Manufacturing
Lodging	Accommodation
Office	Information, Finance and Insurance, Real Estate Rental and Leasing, Professional, Scientific, and Technical Services, Management of Companies and Enterprises, Administrative and Support Services, Public Administration, Office
Other/Misc.	Construction, Arts, Entertainment, and Recreation, Other Services (except Public Administration)
Restaurant	Food Services and Drinking Places
Retail	Retail Trade
Warehouse	Wholesale Trade, Warehouse, Warehousing and Storage

Added

* The North American Industry Classification System (NAICS) is used by the United States, Canada, and Mexico to classify businesses by industry

Stratification and Weighting

We compared our sample representativeness to the population for:

GEOGRAPHY: Northern/Western vs Southern/Eastern

SERVICE TYPE: Gas/electric/combo

USAGE: Mean/median kWh and MCF

PARTICIPATION: Participants vs. non-participants

Except for usage, **our sample was fairly representative** (i.e., similar proportions of respondents across categories for each of the above, compared to the population). For this reason, we weighted results by usage.

Limitations

A few key limitations are important to consider before we review the results.

SELF SELECTION	Unclear how those who agreed to participate might differ from those who did not participate.
SMALL BUSINESS TYPE SAMPLE SIZES	While overall results are weighted to be representative of the population – **results specific to each business type should be interpreted with caution** due to small sample sizes.
ATTITUDES SURVEY DESIGN	The design of the Attitudes survey resulted in even smaller sample sizes in some areas of the detailed analysis.

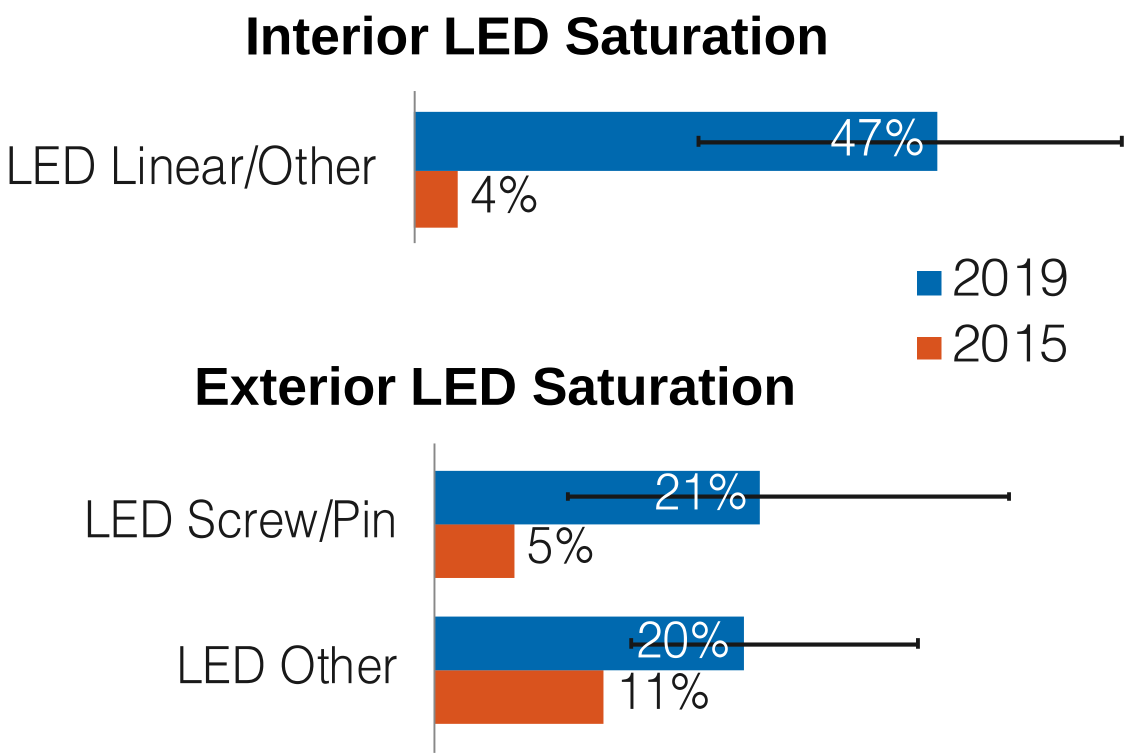
Key Findings & Recommendations

On-site Key Finding: Lighting

The saturation of both interior and exterior light emitting diodes (LEDs) has increased substantially since 2015.

↓ The **saturation** of fluorescent T8s, T12s, high-intensity discharge (HID), incandescent, and interior compact fluorescents (CFLs) *decreased*

↑ The **saturation** of exterior LEDs *increased*



Black line indicates 90% confidence interval

Survey Key Finding: Lighting

Lighting is both the **most common 'completed' and 'intended'** project type.

- **47%** of online survey respondents completed a lighting project within the past two years
- **59%** of survey respondents are somewhat or very likely to complete a lighting project in the next two years

Recommendation: Lighting

While the **saturation** and **penetration** of LEDs have increased, there is remaining potential in the market due to the variety of lighting types in C&I facilities. For example, the **saturation** of fluorescent lamps in health, retail, and warehouse facilities is all above 50%.

★ **Recommendation: Continue offering LED incentives.**

- Promote efficient lighting in exterior applications.
- Focus on replacing Fluorescent T8 with LEDs for interior applications.

On-site Key Finding: Water Heating & Refrigeration

Finding: There is **relatively low saturation** of instantaneous water heaters and high efficiency refrigeration equipment.

- We did not see any instantaneous water heaters on-site.
- High efficiency refrigeration equipment such as heat recovery systems, high efficiency evaporator fans, and energy star refrigerators and freezers were not present at many sites.

Recommendation: Water Heating & Refrigeration

Finding: There is **relatively low saturation** of instantaneous water heaters and high efficiency refrigeration equipment.

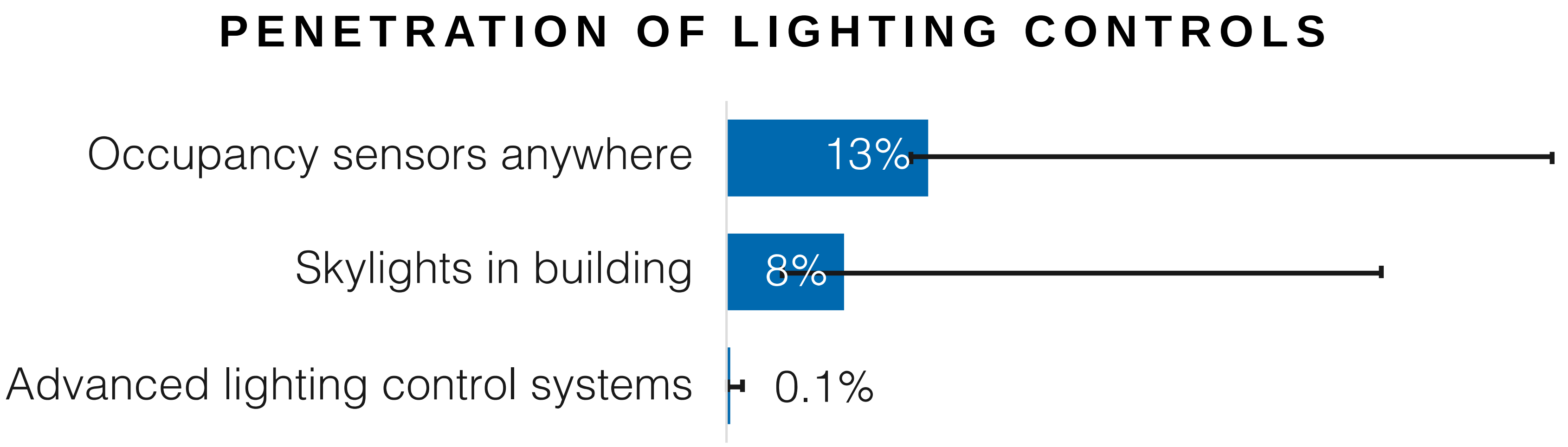
★ **Recommendation: Promote specific equipment with low saturation.**

- → Promote high efficiency refrigeration equipment.
- → Promote instantaneous and high-efficiency water heaters.

On-site Key Finding: Controls

The **penetration of lighting controls remains low** and presents an energy efficiency opportunity for Consumers Energy's programs.

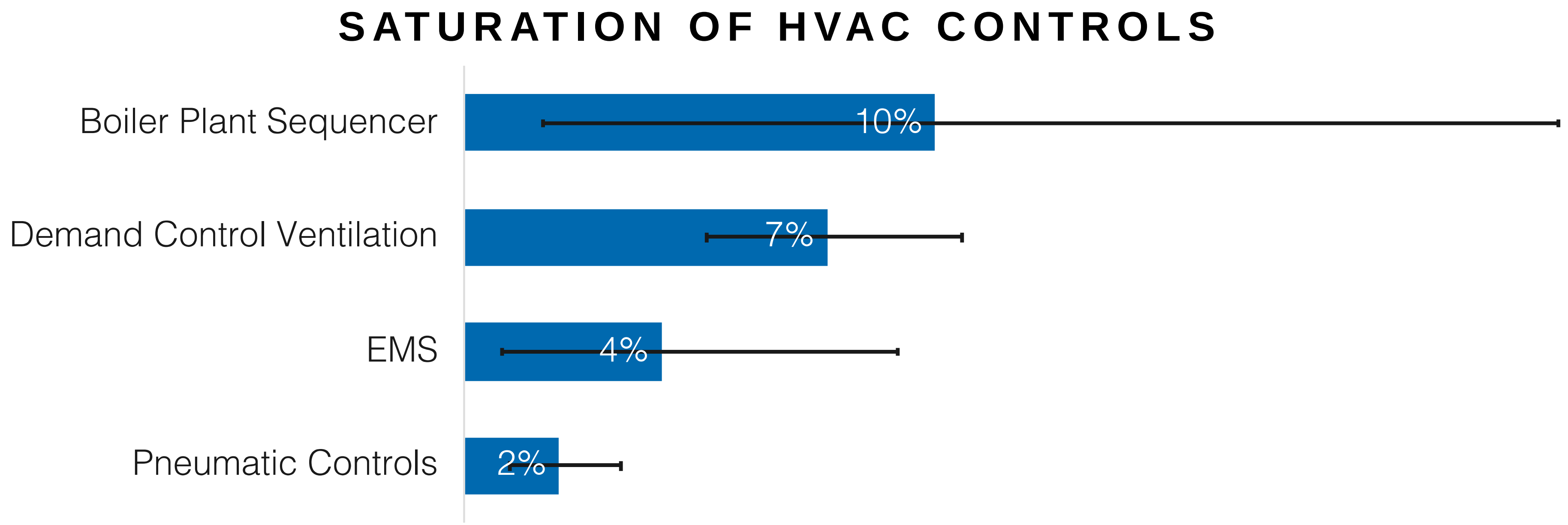
→ Of the sites visited, 13% of facilities had occupancy controls and only one had advanced lighting controls. None had controls near skylights.



On-site Key Finding: Controls

Across all equipment types, **controls represent an opportunity** for Consumers Energy programs.

→ The saturation of **HVAC** and refrigeration controls were less than 30% in most cases, and substantially less is some cases.



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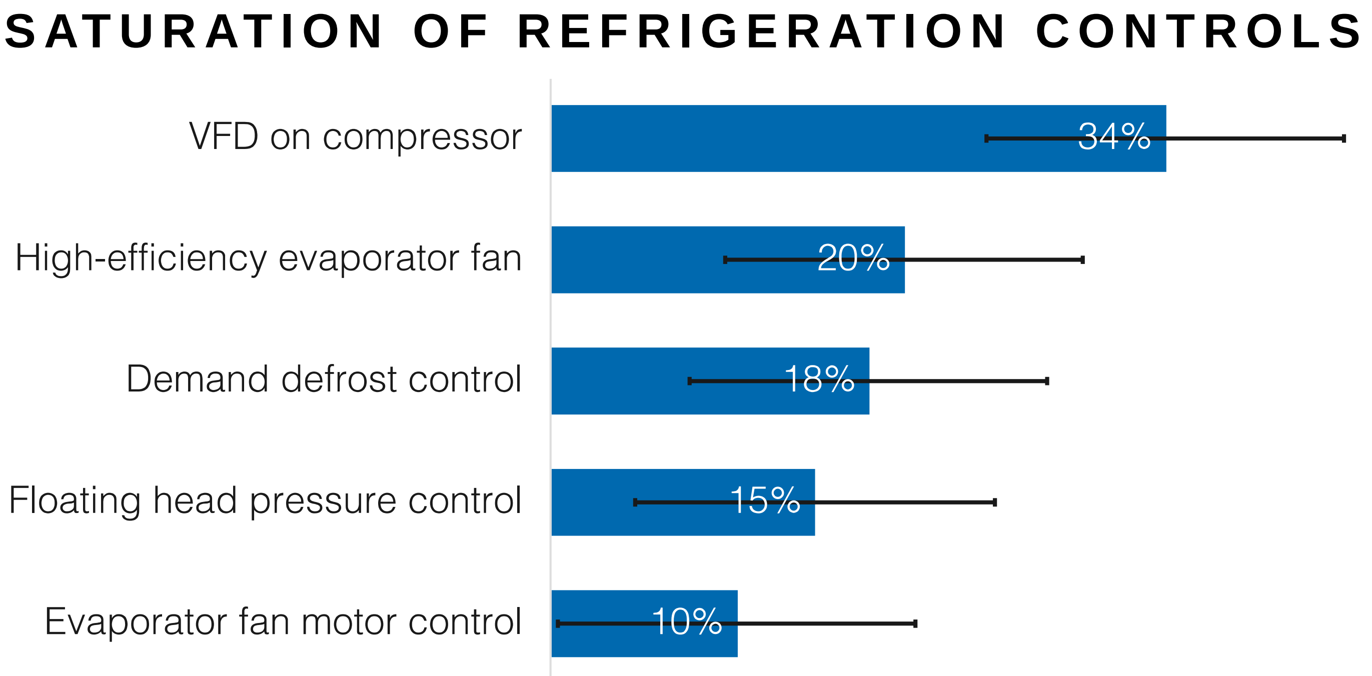


Recommendation: Controls

Finding: The **saturation of HVAC and refrigeration controls** were less than 30% in most cases, and substantially less is some cases.

★ Recommendation: Promote controls on major equipment.

- → Promote controls across lighting, HVAC, and refrigeration equipment.
- → Promote demand-controlled ventilation (DCV).

On-site Key Finding: VFD Saturation

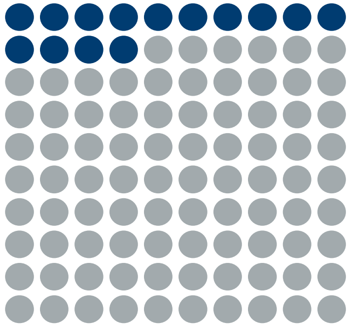
VFD **saturation** was **below one-third** in the applications noted below, indicating opportunities for increased installations in these applications.

Business Type	Pumps	Fans	Boilers	Compressors	Air Handler Fan
Health			●		●
Industrial	●	●			
Education	●	●	●		●
Grocery		●		●	
Restaurant		●			●
Retail		●			

Survey Key Finding: VFDs

Finding: Online survey respondents said they would **need an incentive to install a VFD.**

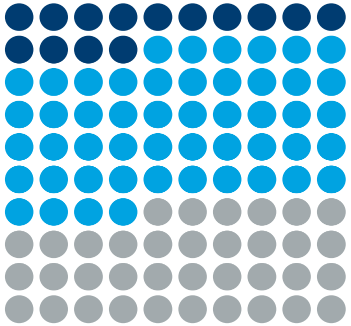
WITHOUT REBATES



14%

would consider installing

WITH **50%** REBATE



64%

would consider installing

Recommendation: VFDs

Finding: Most facilities have low saturation of VFDs and customers reported they need an incentive to install them.

★ **Recommendation: Continue offering VFD rebates and promote them on applicable equipment.**

- → Focus on grocery, restaurant, retail business types.
- → Focus on HVAC fans, air handler fans, and boilers.

Survey Key Finding: Awareness

While knowledge of using energy efficiency to save money has increased over time, there is **opportunity to increase knowledge of the energy efficiency programs offered by Consumers Energy.**

- → Level of awareness in-line with DSM portfolios at peer utilities.
- → Employee turn-over, roles changes, and competing priorities are mitigating factors in maintaining awareness.
- → Supports importance of investments in customer communication and education regarding EWR programs and their benefits.

51%	32%	17%
Yes, I have heard of the programs	No, I have not heard of the programs	Don't know

Survey Key Finding: Awareness

While knowledge of using energy efficiency to save money has increased over time, there is **opportunity to increase knowledge of the energy efficiency programs offered by Consumers Energy.**

- → Of the respondents who were aware, they rated their knowledge of Consumers Energy programs a mean rating of 4.3.

Survey Key Finding: Attitudes & Purchases

Lack of knowledge about rebates was the most reported reason for not acquiring a rebate on completed high efficiency projects.

A few respondents (14%) said they **did not have the time** to apply for the rebate.

A few respondents (9%) said their **equipment did not qualify.**

Survey Key Finding: Attitudes & Purchases

Lack of knowledge about rebates was the most reported reason for not acquiring a rebate on completed high efficiency projects.

CUSTOMERS LESS LIKELY TO KNOW ABOUT REBATES

CUSTOMERS WITH LOW USAGE

GAS CUSTOMERS

On-site and Survey Key Finding: Grocery

The **Grocery segment was one of the segments with the lowest awareness** of Consumers Energy programs, and respondents are likely to select standard efficiency options when purchasing new equipment.

SATURATION IS LOW FOR:	Refrigeration controls, like demand defrost and floating head pressure
RESPONDENTS ARE CONSIDERING:	New compressors, new cases, and door gasket seals

Recommendation: Awareness

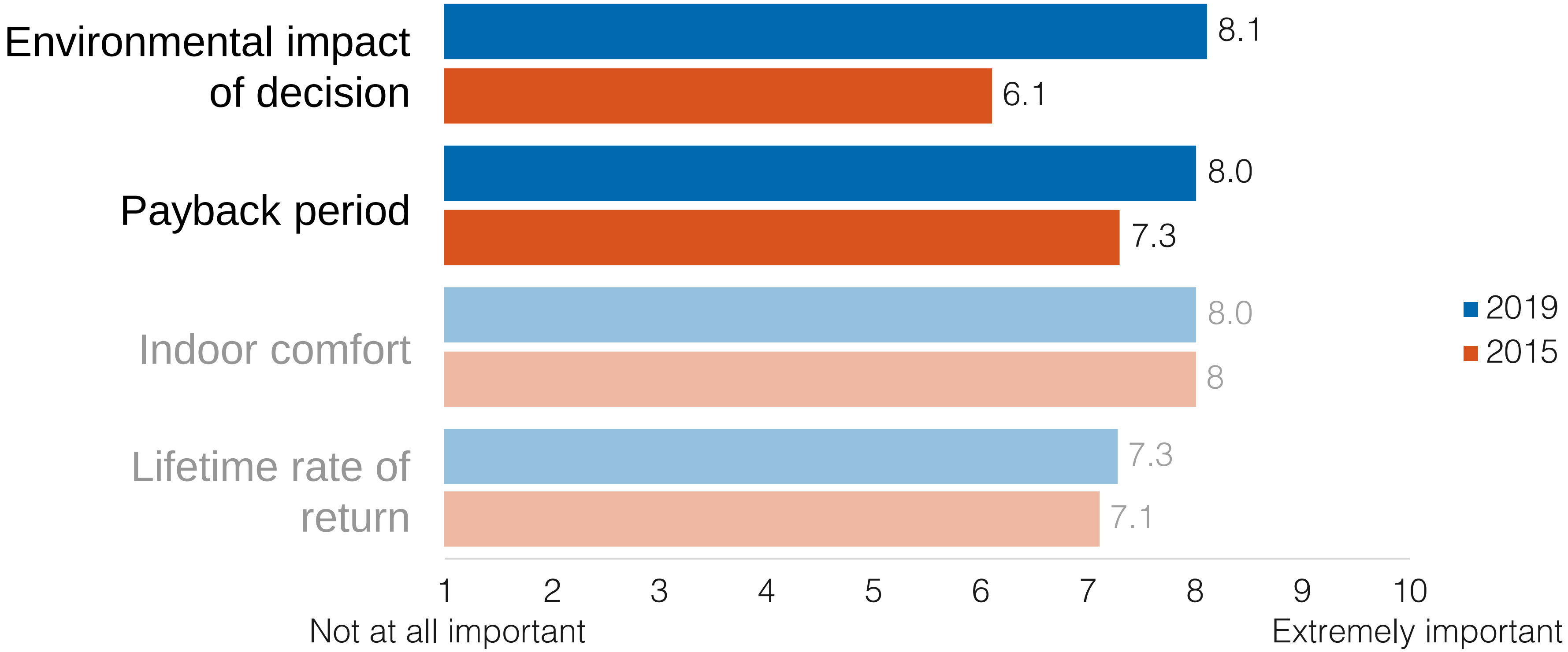
Finding: Overall, awareness of Consumers Energy programs among the general C&I population was 51%. There are opportunities to target awareness in specific customer segments and geographies.

★ **Recommendation: To increase awareness of programs, target the following groups, as they had the lowest awareness:**

- → Retail, Lodging, Health and Grocery facilities
- → Smaller towns
- → Gas-only customers
- → Customers in South and Eastern Michigan

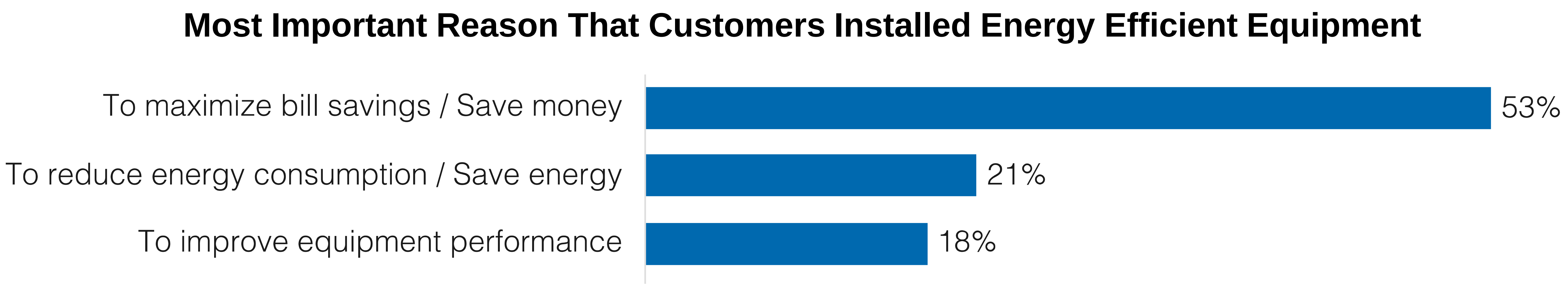
Survey Key Finding: Decision Making

When asking customers about specific decision-making factors, they report that **environmental impact and payback period** are the most important factors.



Recommendation: Decision Making

Finding: Even though environmental impact had the largest increase in mean importance on decision-making since the 2015 survey, **saving money was still the most important factor** to those who replaced equipment in the last two years.



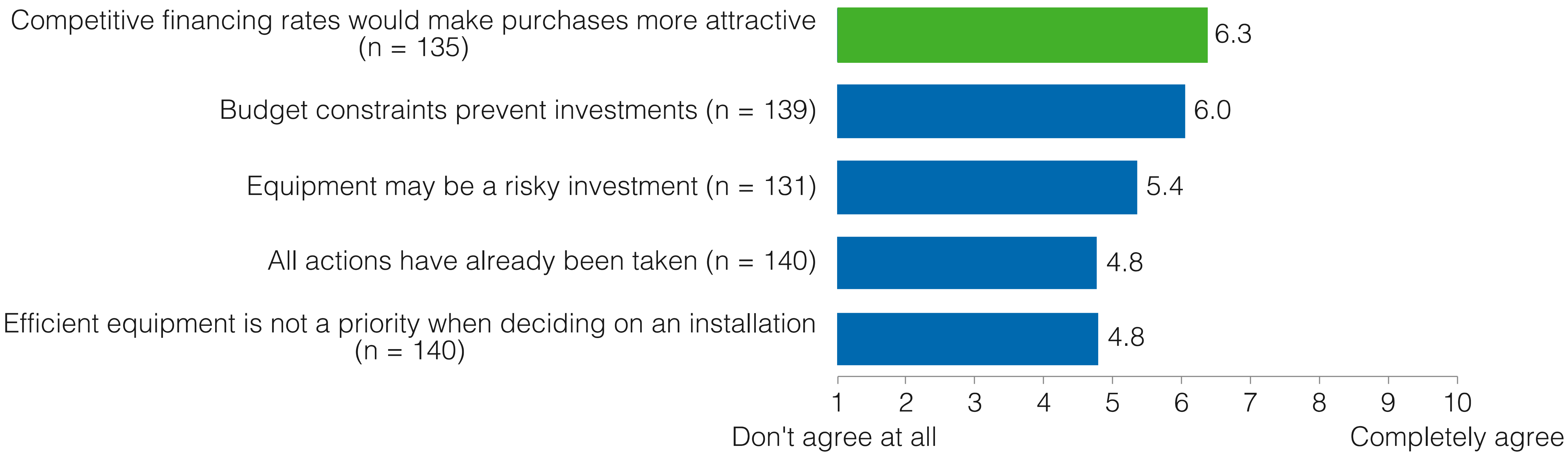
Recommendation: Decision Making

Finding: Even though environmental impact had the largest increase in mean importance on decision-making since the 2015 survey, **saving money was still the most important factor** to those who replaced equipment in the last two years.

★ **Recommendation: Continue to pair monetary benefits and environmental benefits of efficient equipment in program marketing.**

Recommendation: Decision Making

Finding: Of all potential barriers and solutions we asked customers about, respondents most strongly agreed that **competitive financing would make energy-efficient purchases more attractive**.



Recommendation: Decision Making

Finding: Of all potential barriers and solutions we asked customers about, respondents most strongly agreed that competitive financing would make energy-efficient purchases more attractive.

★ **Recommendation: Continue educating business customers on financing options for energy efficiency investments.**

- → In past non-participant research, we found that customers who needed financing found it to be an important barrier.
- → Michigan Saves and other EWR financing options are important tools for overcoming this barrier for some customers, especially during economic slowdowns.

Full Report Available

Additional detail is available in the full electronic report and appendices that Consumers Energy provided Michigan Public Service Commission as part of **Case No. U-20865**.

Link to Docket:
https://mi-psc.force.com/s/global-search/U-20865

Thank You

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