

2020 MASSACHUSETTS COMMERCIAL & INDUSTRIAL CUSTOMER PROFILE STUDY



EVERSOURCE



nationalgrid



RESULTS BRIEF

MA21X25-B-CICPS

Contents

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An insider look at the Massachusetts C&I energy efficiency landscape

This results brief presents an overview of the Massachusetts Commercial and Industrial (C&I) customer population and energy efficiency program activity.

DNV publishes the C&I Customer Profile Study (CCPS) to present analysis of Massachusetts Program Administrators' (PAs') billing and tracking data, and third-party data. This study characterizes the state's energy efficiency customers according to metrics such as customer usage, savings, and program participation across all PAs. Findings are presented at different analysis grains including the account level, project level, and location level.

This C&I results brief serves as a companion to the publicly available combined C&I and Residential Customer Profile Dashboard. DNV created a separate results brief spotlighting the residential data. The results brief is designed to provide users with key summary statistics on 2020 program performance and show them where to go on the dashboard to further investigate, interact with, and download the data.

All savings values in this results brief are gross annual savings. Any unknown locations are excluded from the location-based analyses. For accounts with only a partial year of consumption information, total annual usage is extrapolated by multiplying the mean daily weather-normalized consumption by the number of days for which actual usage is not available, then adding this product to the actual reported usage for the remainder of the year. As a result of this extrapolation, usage totals may differ from other reported sources.

Definitions of the metrics used in this results brief can be found on the last page of this document and on the MA Customer Profile Dashboard at <https://insight.dnv.com/MACustomerProfile/report/989>



2020 statewide performance*

Electric

404,237
billing accounts

25,087 GWh
consumption

883 GWh
gross savings

165,719
billing accounts

140,331
thousand MMBTU
consumption

1,138
thousand MMBTU
gross savings

5.9%
account participation
rate

3.4%
population savings achieved

\$191 million
incentives

2.2%
account participation
rate

0.7%
population savings achieved

\$29 million
incentives

*These achievements reflect only PA-supplied electric and gas gross savings, and do not include additional fuel savings (i.e., oil, propane, etc.) or interactive effects.

C&I energy efficiency programs

The PAs develop, assess, and roll out energy efficiency programs in three-year cycles.
The 2019-2021 C&I programs include:



C&I New Buildings

- C&I New Buildings & Major Renovations

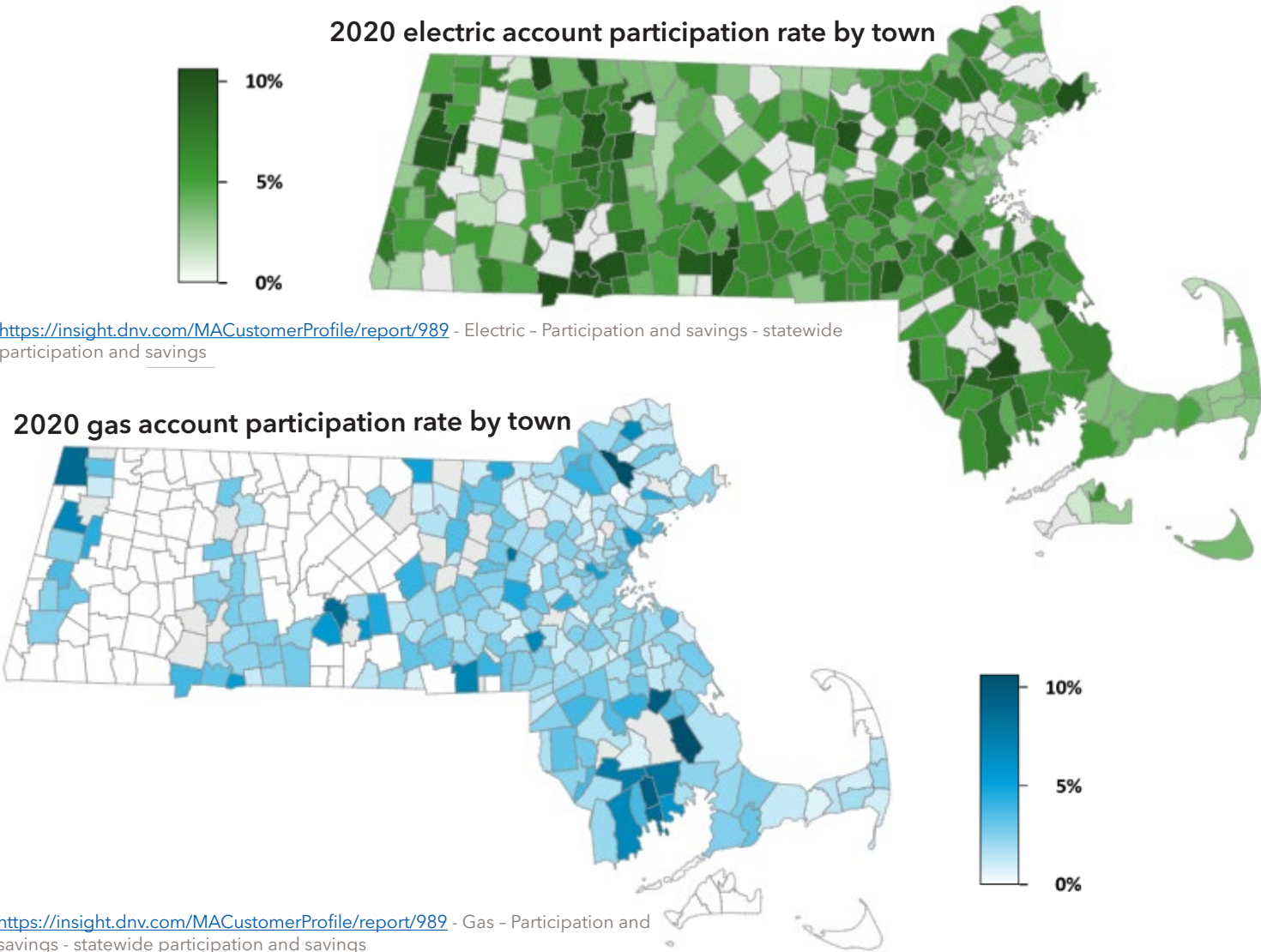


C&I Existing Buildings

- C&I Existing Building Retrofit
- C&I New & Replacement Equipment
- C&I Active Demand Reduction

Electric and gas geographic participation in 2020

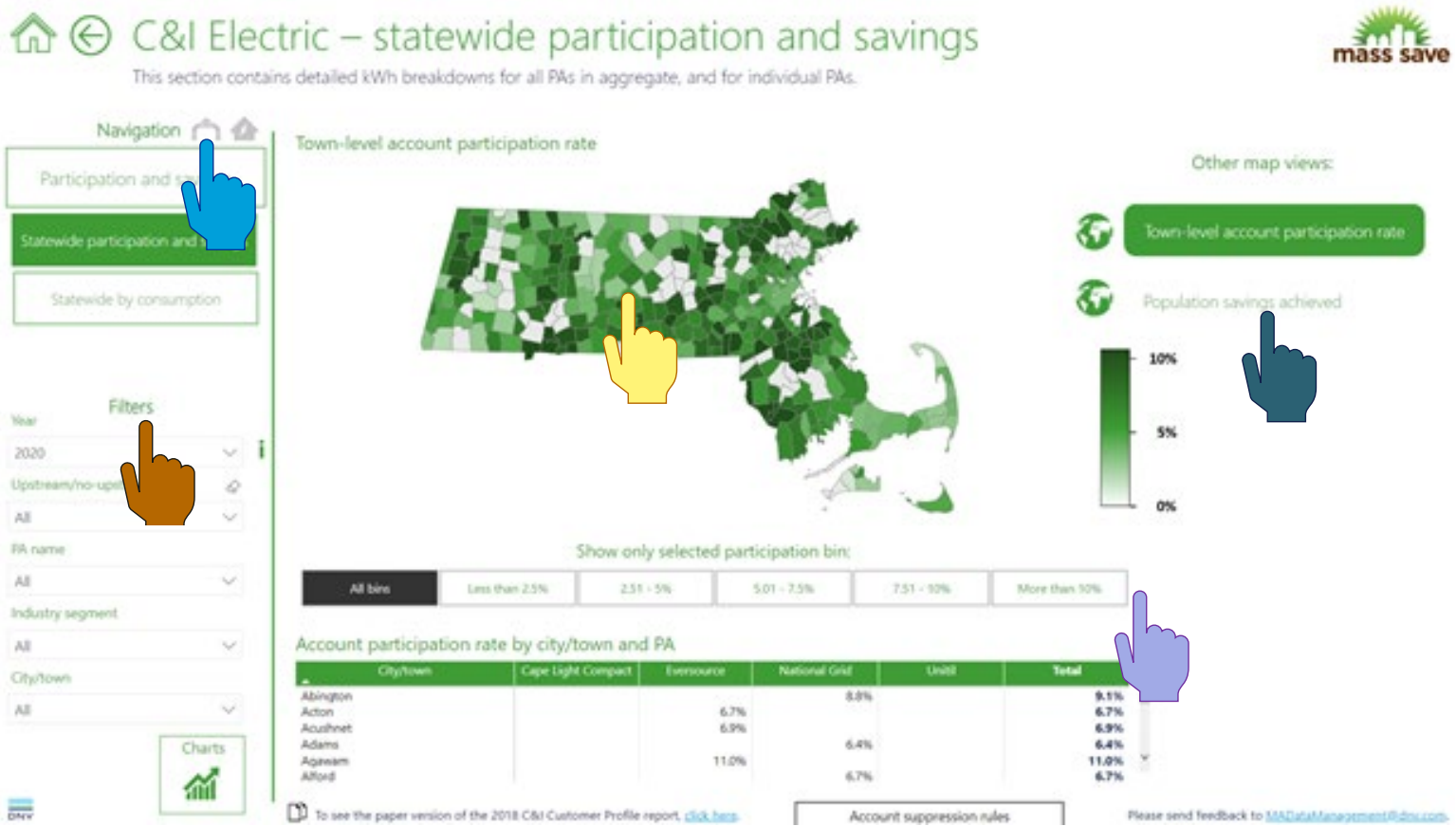
The maps below show electric and gas account participation rates by town in 2020. These maps are drawn from the MA Customer Profile Dashboard.



Visit the MA Customer Profile Dashboard to interact

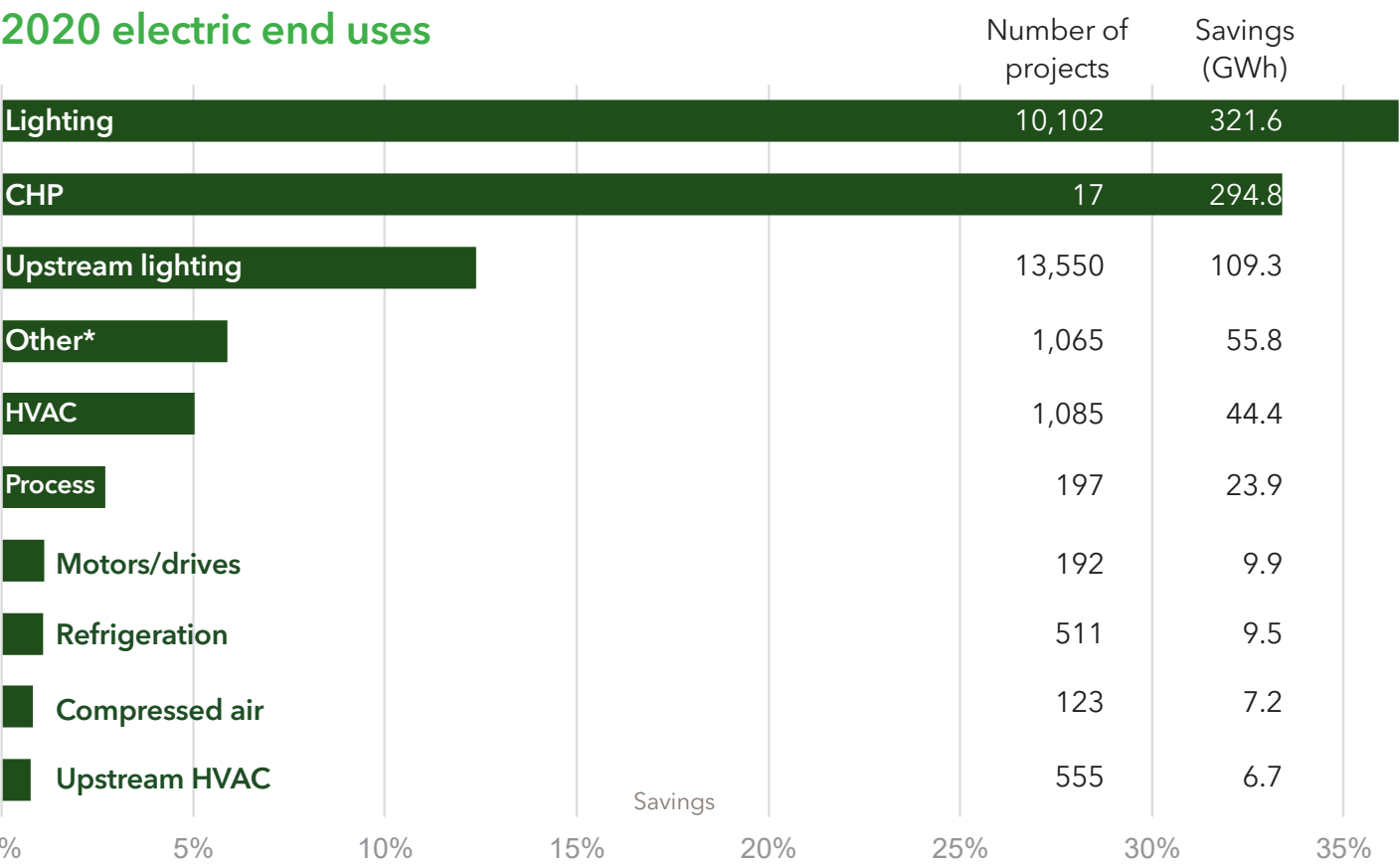
Users who visit the dashboard online can interact with these results to go deeper into the data.

- Hover over any town to see town-level participation data.
- Filter the data by year, PA, industry segment, and upstream participation.
- View population savings achieved through any of these filters.
- Toggle between electric and gas.
- Export the underlying data to an Excel file.



Participation summary by end use

2020 electric end uses

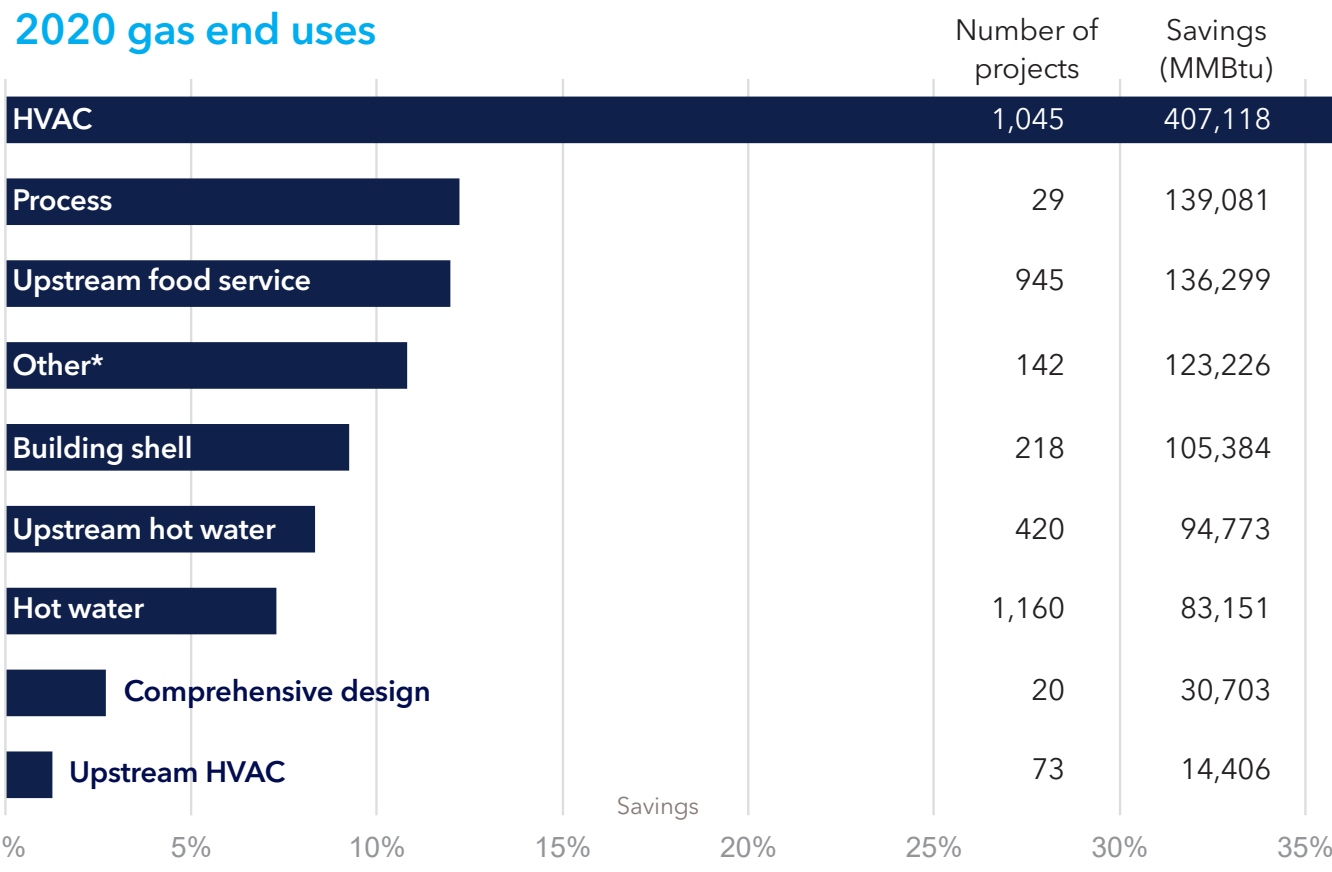


* "Other" includes end uses with smaller contributions to savings, such as food service, building shell, comprehensive design, hot water, and behavior.

<https://insight.dnv.com/MACustomerProfile/report/989> - Electric - End uses

Users can visit the dashboard to delve more deeply into end uses. View incentives paid by end use, incentives paid per kWh or therm saved, number of projects for each end use, and more.

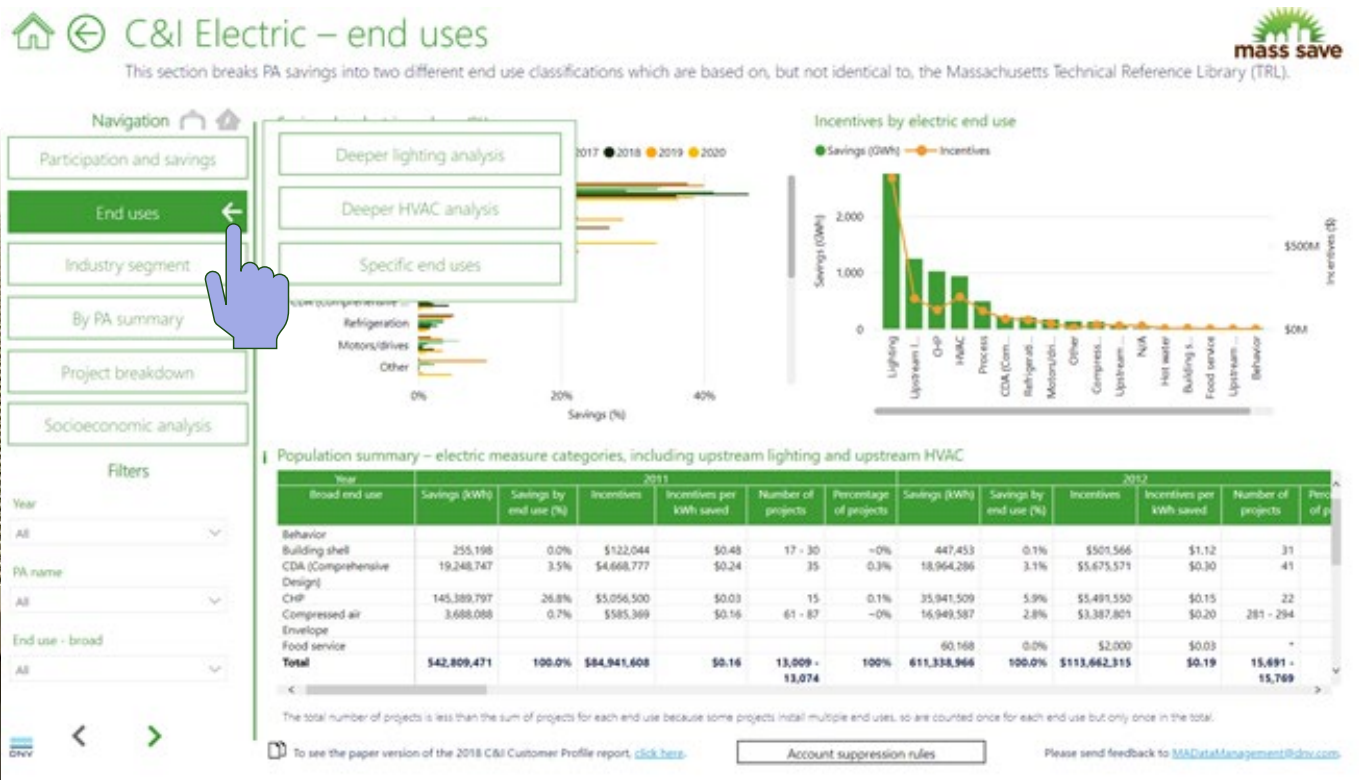
2020 gas end uses



* "Other" includes end uses with smaller contributions to savings, such as downstream food service, lighting, and refrigeration.

<https://insight.dnv.com/MACustomerProfile/report/989> - Gas - End uses

Click on End uses in the navigation pane to access deeper lighting analysis, deeper HVAC analysis, and specific end uses.

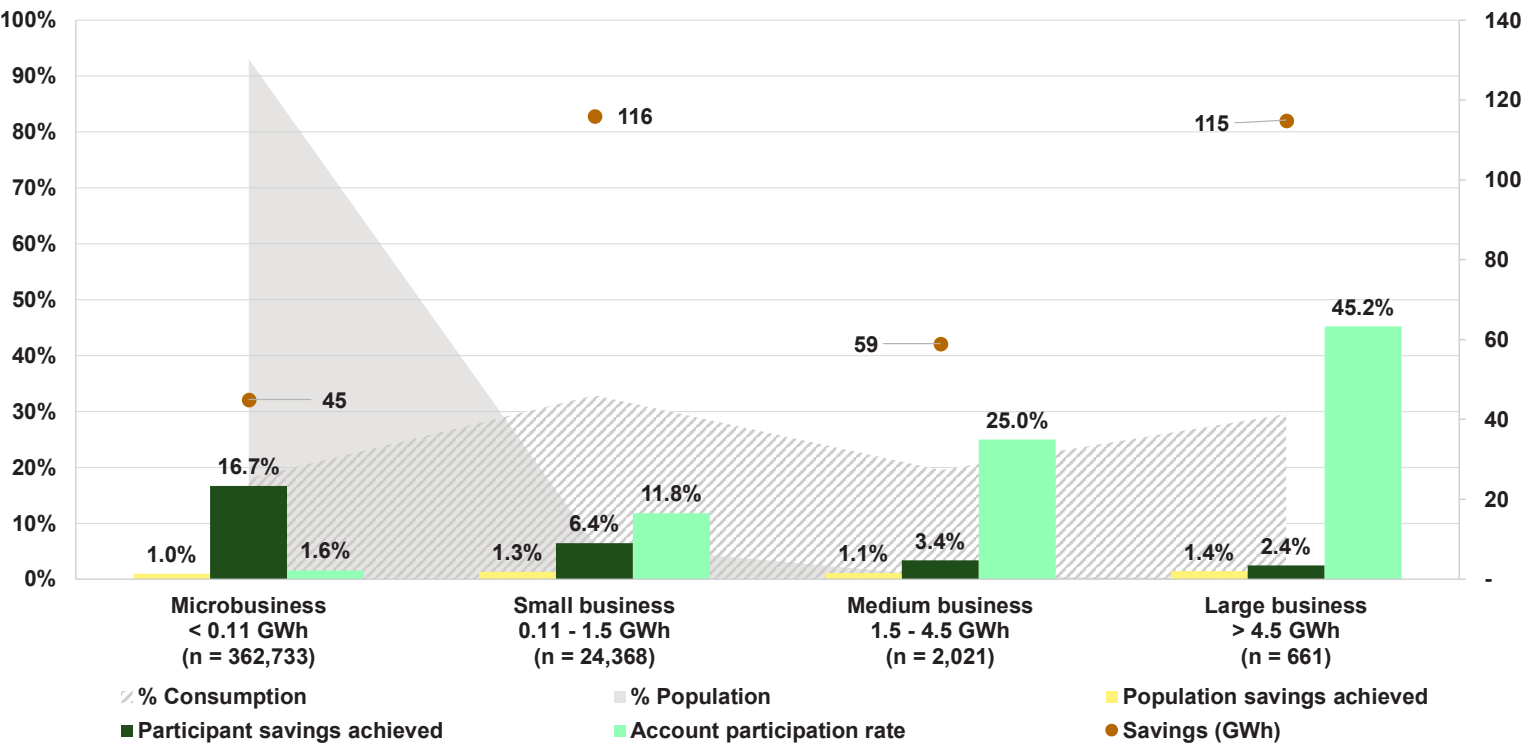


Participation and savings by consumption size

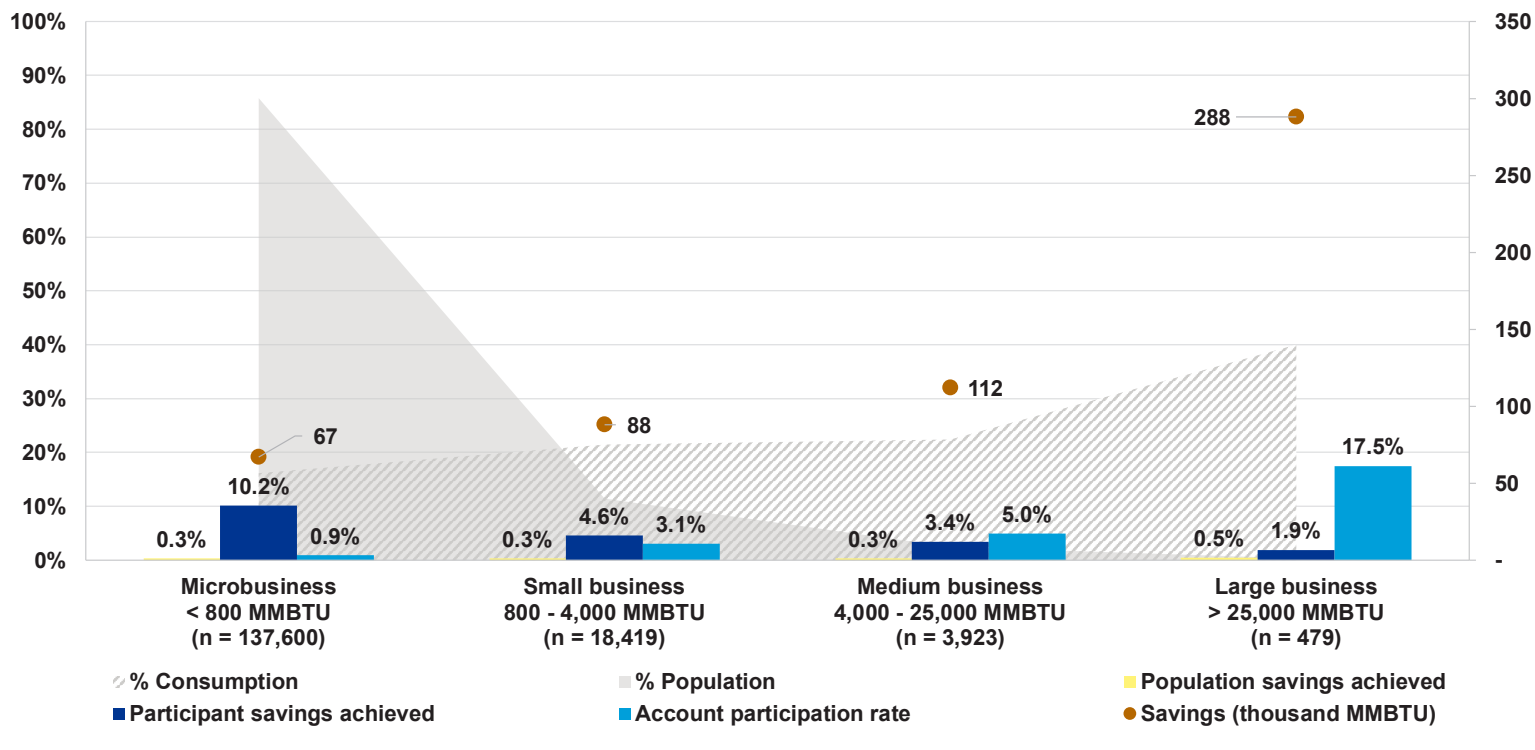
The figures below display program savings by consumption size, exploring differences in participation rates and population savings achieved. The solid gray shading in each figure shows the percentage of the population represented by each consumption bin size (microbusinesses make up the highest proportion of the population, as shown by the solid gray shading on the left). The patterned shading shows the percentage of total consumption represented by each consumption bin size.

These figures show that for electric and gas customers, participation rates increase as consumption bin size increases (e.g., 1.6% of electric microbusinesses and 45.2% of electric large businesses participated in 2020). Participant savings achieved shows the opposite trend. Consistent with 2019, electric small businesses contribute the largest gross savings (116 GWh) with 11.8% of customers participating in 2020. Gas small businesses participated at lower rates in 2020.

2020 participation, savings achieved, and total savings (GWh) by consumption size, electric



2020 participation, savings achieved, and total savings (thousand MMBtu) by consumption size, gas



Navigation

Participation and savings

Statewide participation and savings

Statewide by consumption

Filters

Year

PA name

Industry segment

Charts

Narrow

Broad

Business size bins

Savings (kWh) by business size bins

Consumption by business size bins

Consumption bin	Year	Participating accounts	Billing accounts	Savings (GWh)	Consumption (GWh)	Incentives	Account participation rate	Population savings achieved (%)	Participant savings achieved (%)	Contribution ratio
Microbusiness	2011	3,616	305,761	33	4,646	\$8,341,977	1.2%	0.7%	21.41%	0.44
Small businesses	2011	2,260	28,264	106	9,552	\$23,074,508	8.0%	1.1%	11.36%	0.69
Medium businesses	2011	437	2,249	58	5,606	\$10,126,632	19.4%	1.0%	5.08%	0.64
Large businesses	2011	272	832	133	9,819	\$22,298,049	32.7%	1.4%	3.09%	0.84
Microbusiness	2012	3,693	297,455	35	4,302	\$11,060,366	1.2%	0.8%	22.96%	0.46
Small businesses	2012	2,693	25,565	126	8,658	\$32,303,861	10.5%	1.3%	13.47%	0.80
Medium businesses	2012	532	2,067	83	5,154	\$13,981,020	25.7%	1.5%	7.48%	0.90
Large businesses	2012	302	749	168	9,100	\$27,675,133	40.3%	1.7%	3.93%	1.04
Microbusiness	2013	5,183	300,088	41	4,521	\$15,298,828	1.7%	0.9%	26.70%	0.48
Total		68,047	653,737	4,465	276,351	\$1,163,440,419	10.4%	1.8%	5.61%	0.74

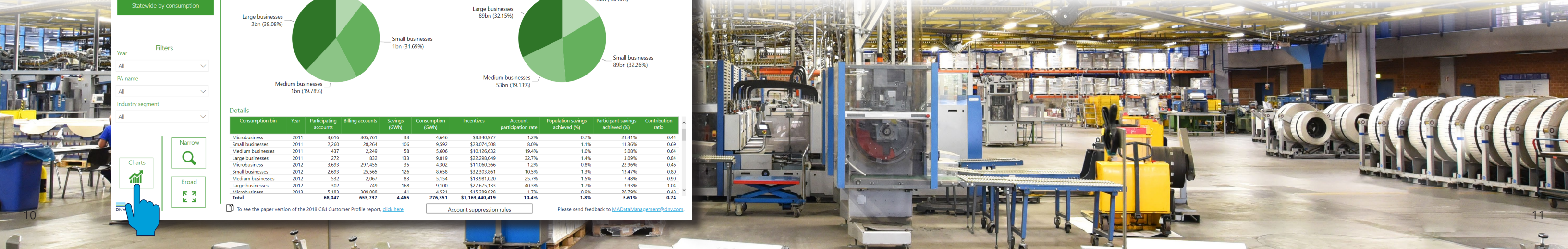
Details

Account suppression rules

Please send feedback to IMDataManagement@dmv.com

Users can visit the dashboard to explore participation and savings by consumption in more detail. View consumption, savings, and population savings achieved by size bin in chart form.

Or click on the Details button to view view consumption bin details in table form.





Participating accounts and locations

The tables below summarize electric and gas participation by year for each PA, at both the account level and the location level, which reflects individual account turnover at a location as well as multiple meters at the same site. Overall participation decreased in 2020 for both electric and gas accounts and locations, a likely impact of the COVID-19 pandemic.

Electric PA program participants per year, and participating locations 2015-2020

PA	Participating accounts						Participating locations					
	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
Cape Light Compact	1,521	1,310	875	1,399	996	934	948	923	634	1,258	926	863
Eversource	12,006	11,636	10,001	11,107	11,519	11,216	8,638	9,533	8,327	9,535	10,205	9,580
National Grid	11,694	11,143	9,869	11,869	12,046	11,500	8,979	9,311	7,264	10,678	11,250	10,003
Unitil	175	164	127	177	195	166	183	177	131	167	184	166
Electric total	25,396	24,253	20,872	24,552	24,756	23,816	18,748	19,944	16,356	21,638	22,565	20,612

<https://insight.dnv.com/MACustomerProfile/report/989> - Electric & Gas Executive Summaries – Participation & savings

Gas PA program participants per year, and participating locations 2015-2020

PA	Participating accounts						Participating locations					
	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
Berkshire	104	106	89	106	125	136	97	88	75	100	118	130
Columbia	1,131	763	676	778	979	806	264	668	582	712	853	728
Eversource	673	663	1,018	954	927	1,038	586	556	867	954	923	976
Liberty	45	304	196	183	138	80	37	256	167	180	137	73
National Grid	1,358	1,555	1,985	1,929	2,377	1,555	1,194	1,484	1,664	1,844	2,192	1,446
Unitil	18	29	39	57	52	19	17	30	37	54	52	19
Gas total	3,329	3,420	4,003	4,007	4,598	3,634	2,195	3,082	3,392	3,844	4,275	3,372

Program and population savings

These tables show the annual electric and gas savings and population savings achieved by year for each PA.

Electric PA program savings and population savings achieved per year 2015-2020

PA	Savings (GWh)						Population savings achieved					
	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
Cape Light Compact	26	19	14	16	14	26	3.1%	2.6%	1.8%	2.1%	1.7%	3.4%
Eversource	480	426	400	431	379	549	3.4%	3.1%	2.7%	3.0%	2.6%	3.9%
National Grid	395	342	309	324	388	305	3.3%	2.8%	2.7%	2.9%	3.5%	2.9%
Unitil	6	5	4	9	6	3	2.3%	1.6%	1.5%	4.3%	2.1%	1.4%
Electric total	907	792	727	780	787	883	3.3%	2.9%	2.6%	2.9%	3.0%	3.4%

<https://insight.dnv.com/MACustomerProfile/report/989> - Electric & Gas Executive Summaries – Participation & savings

Gas PA program savings and population savings achieved per year 2015-2020

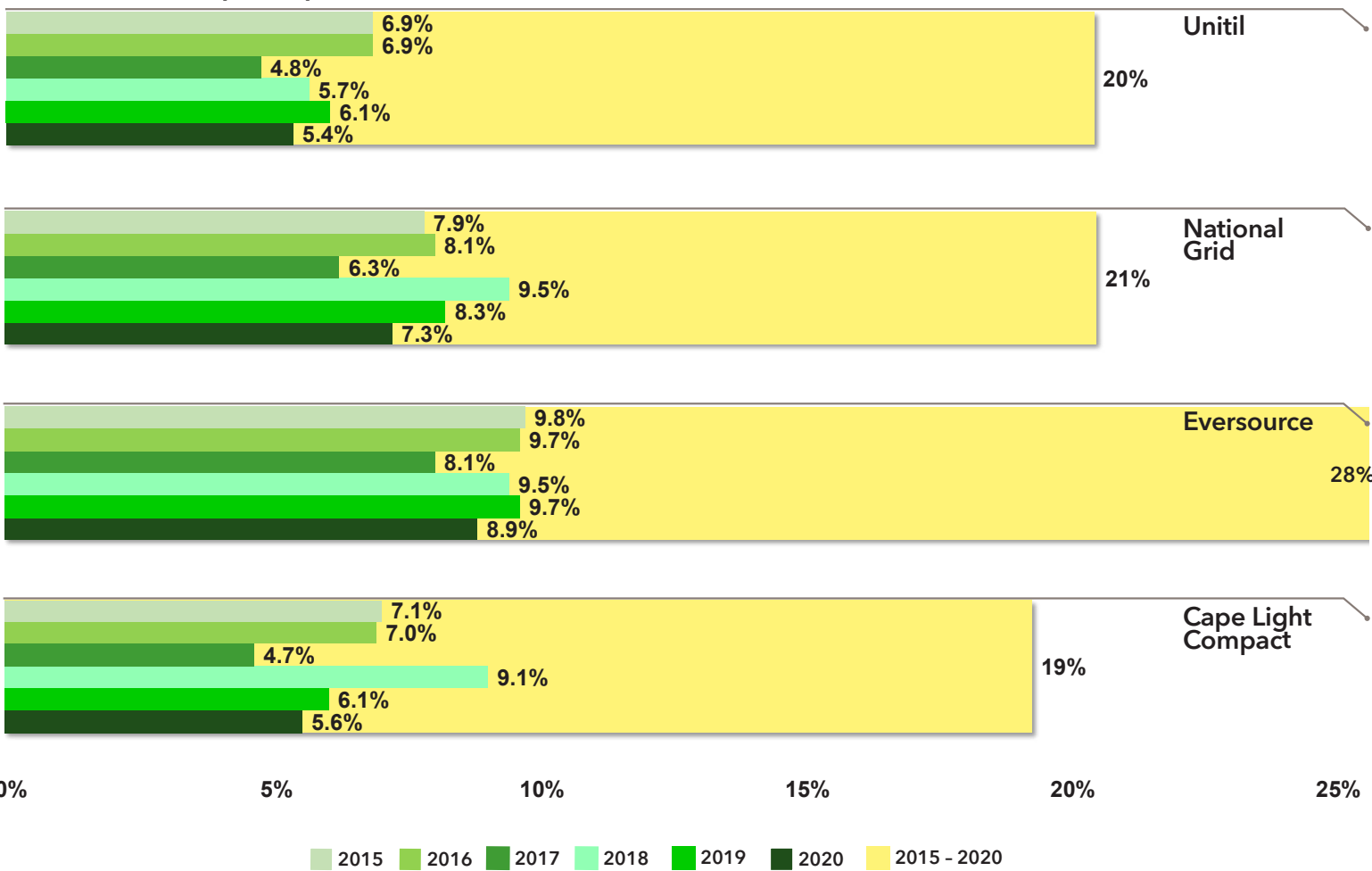
PA	Savings (thousand MMBTU)						Population savings achieved					
	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
Berkshire	11	24	25	23	21	18	0.3%	0.6%	0.7%	0.6%	0.5%	0.4%
Columbia	168	187	139	272	169	220	0.7%	1.0%	0.5%	0.9%	0.6%	0.8%
Eversource	435	436	496	482	331	273	0.9%	1.0%	1.2%	1.0%	0.7%	0.6%
Liberty	6	20	22	17	35	13	0.2%	0.7%	0.9%	0.6%	1.3%	0.5%
National Grid	568	764	676	742	687	571	0.8%	1.1%	1.1%	1.1%	1.0%	0.8%
Unitil	24	8	20	33	11	43	1.6%	0.5%	1.5%	2.6%	0.8%	3.0%
Gas total	1,212	1,439	1,378	1,569	1,254	1,138	0.8%	1.0%	1.0%	1.1%	0.8%	0.7%

Location participation rates

Electric

These charts show time series electric participation rates by PA at the location level. These include 6-year market penetration rates, showing total participation from 2015 to 2020.

Electric location participation rates

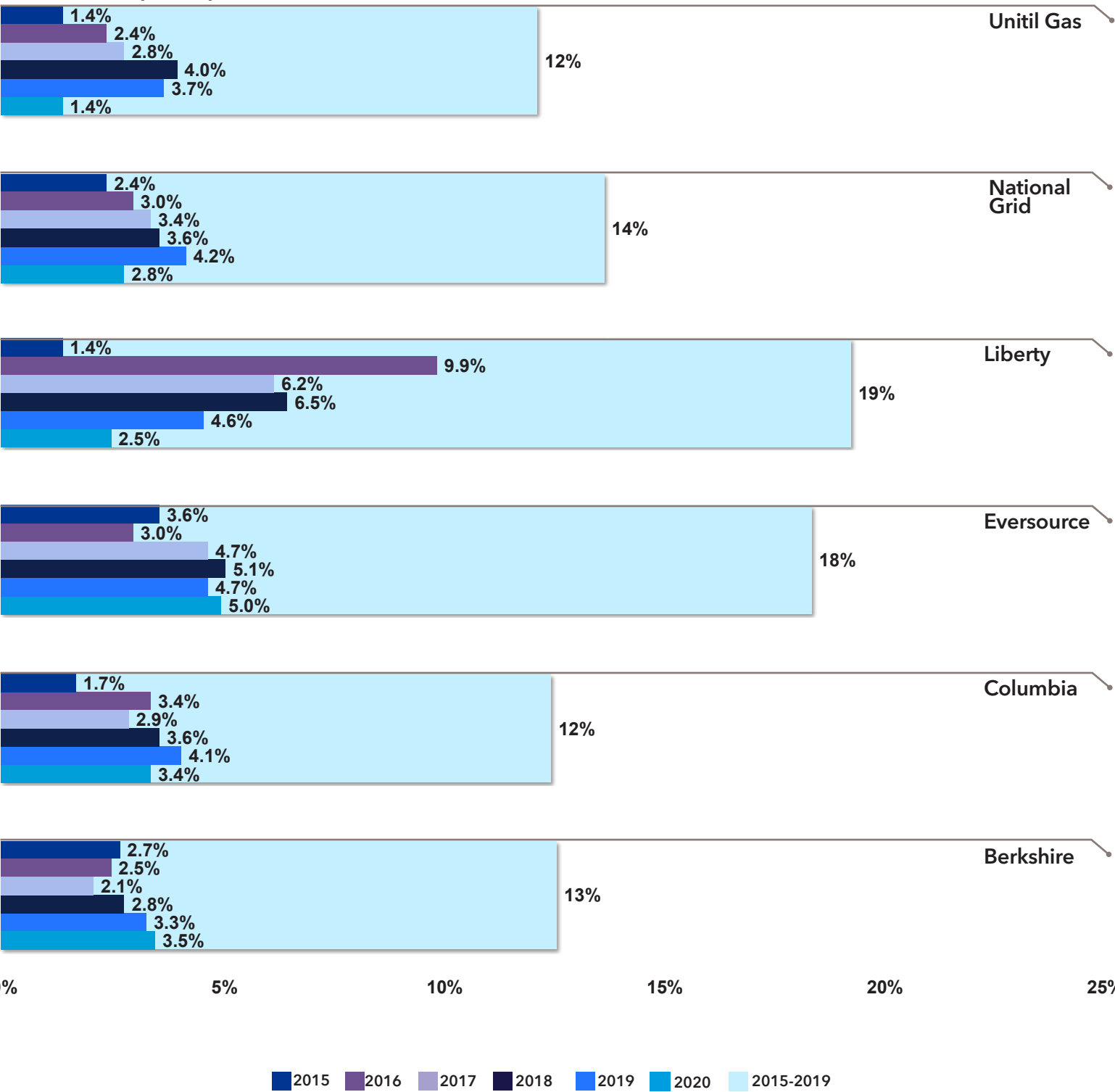


Location participation rates

Gas

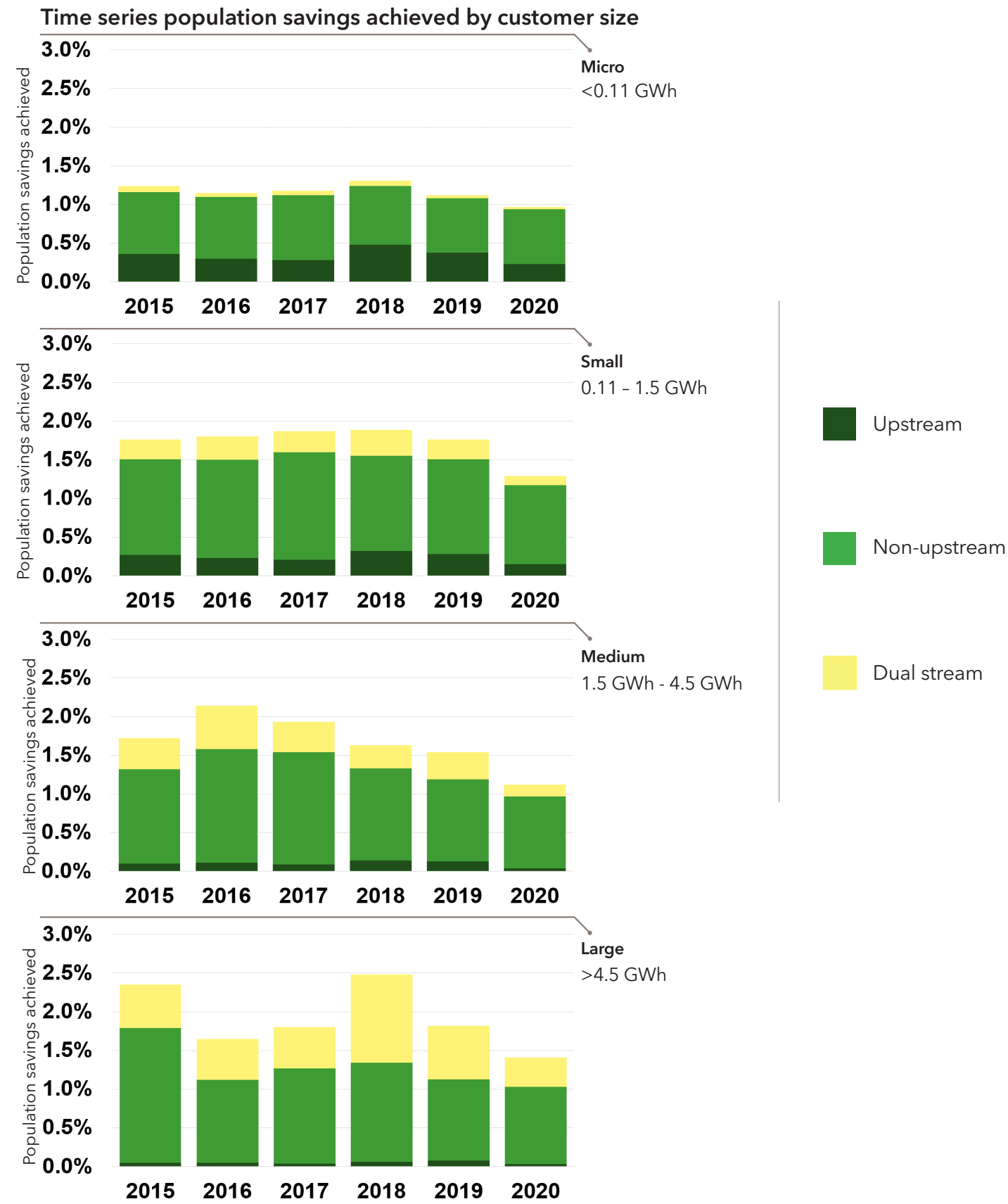
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Gas location participation rates



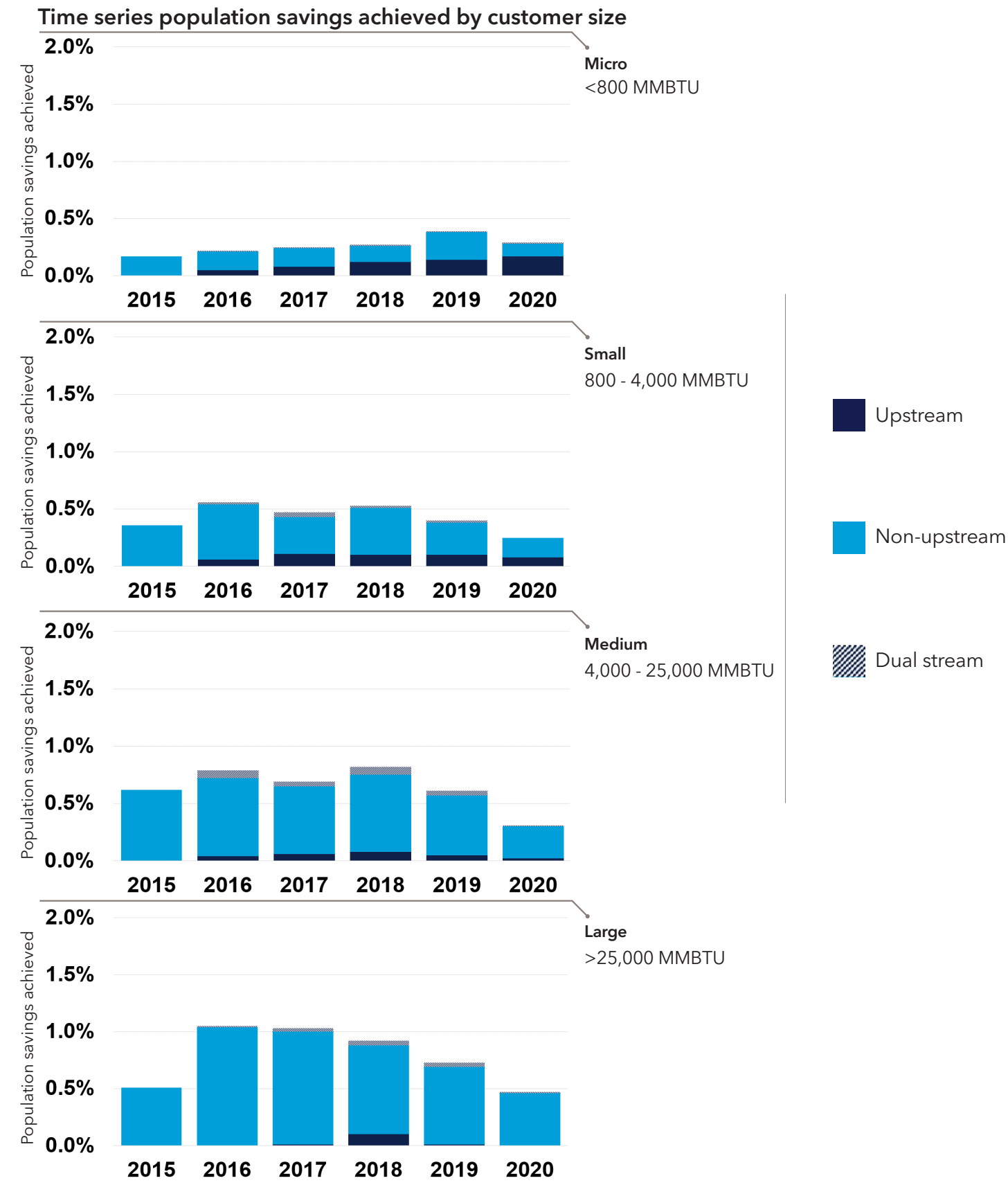
Electric analysis by consumption size

The following graphs display time-series electric participation rates and population savings achieved by consumption size bin and delivery channel, including upstream (participating distributors), non-upstream (participating end-users) and dual stream accounts (both distributors and end-users participating in the same year).



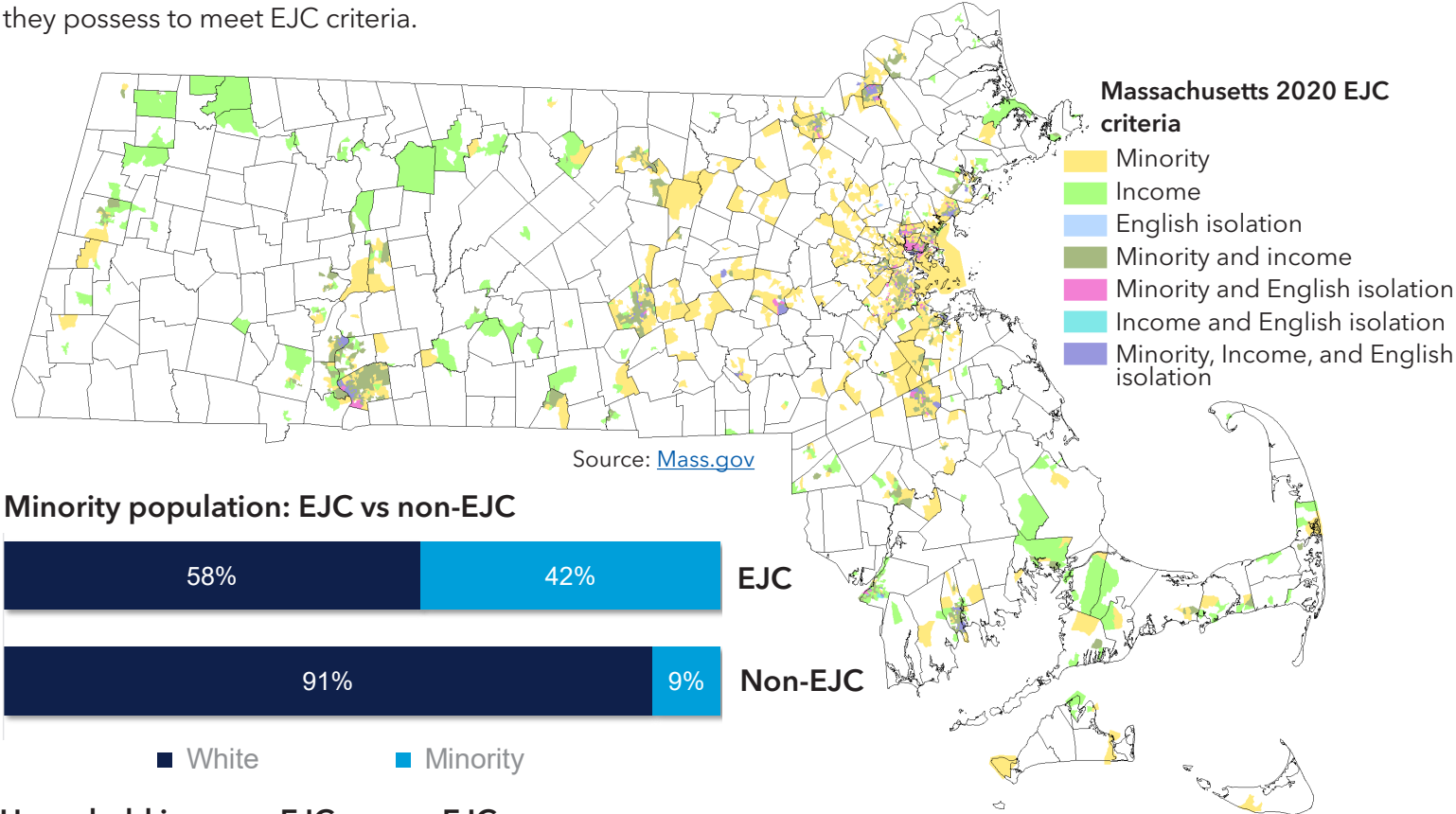
Gas analysis by consumption size

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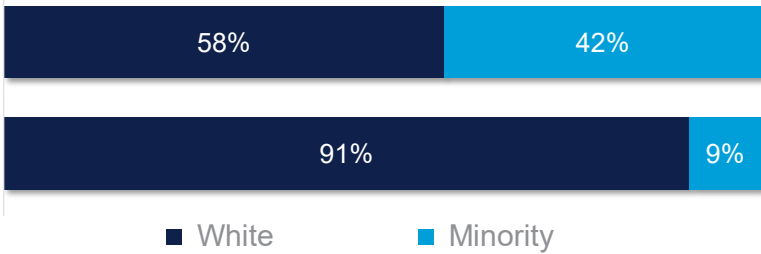


A closer look at small and micro businesses in Environmental Justice Communities (EJC)

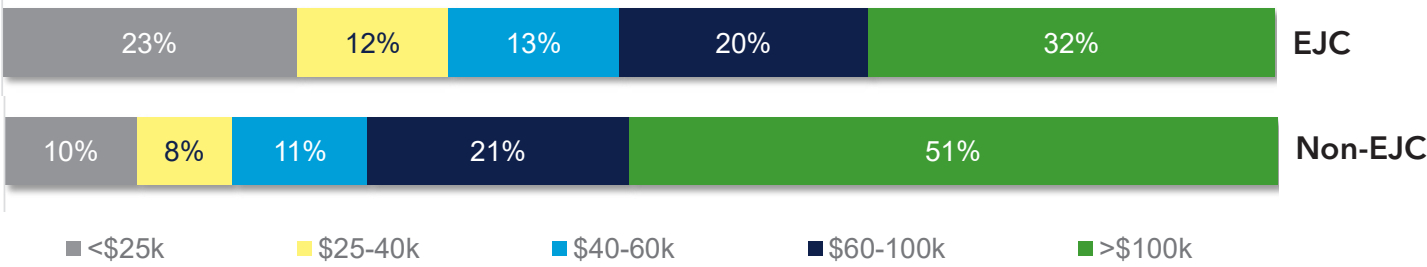
The Massachusetts Executive Office of Energy and Environmental Affairs (EEA) assigns EJC status to a Census block group if a certain percentage of its population meets the [state's criteria](#) for income level, minority status, and/or English isolation (households lacking English language proficiency).* This page presents selected demographic information for EJCs and non-EJCs, drawn from the US Census Bureau's [American Community Survey \(ACS\) data](#) for 2020. The map below shows all EJC block groups in Massachusetts, color-coded according to which characteristics they possess to meet EJC criteria.



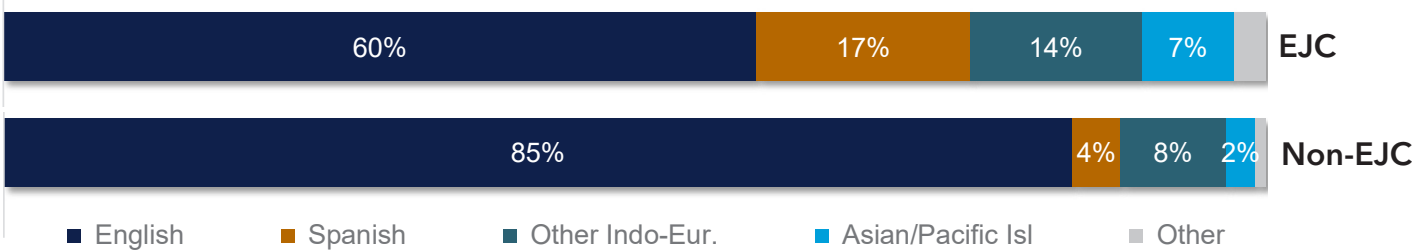
Minority population: EJC vs non-EJC



Household income: EJC vs non-EJC



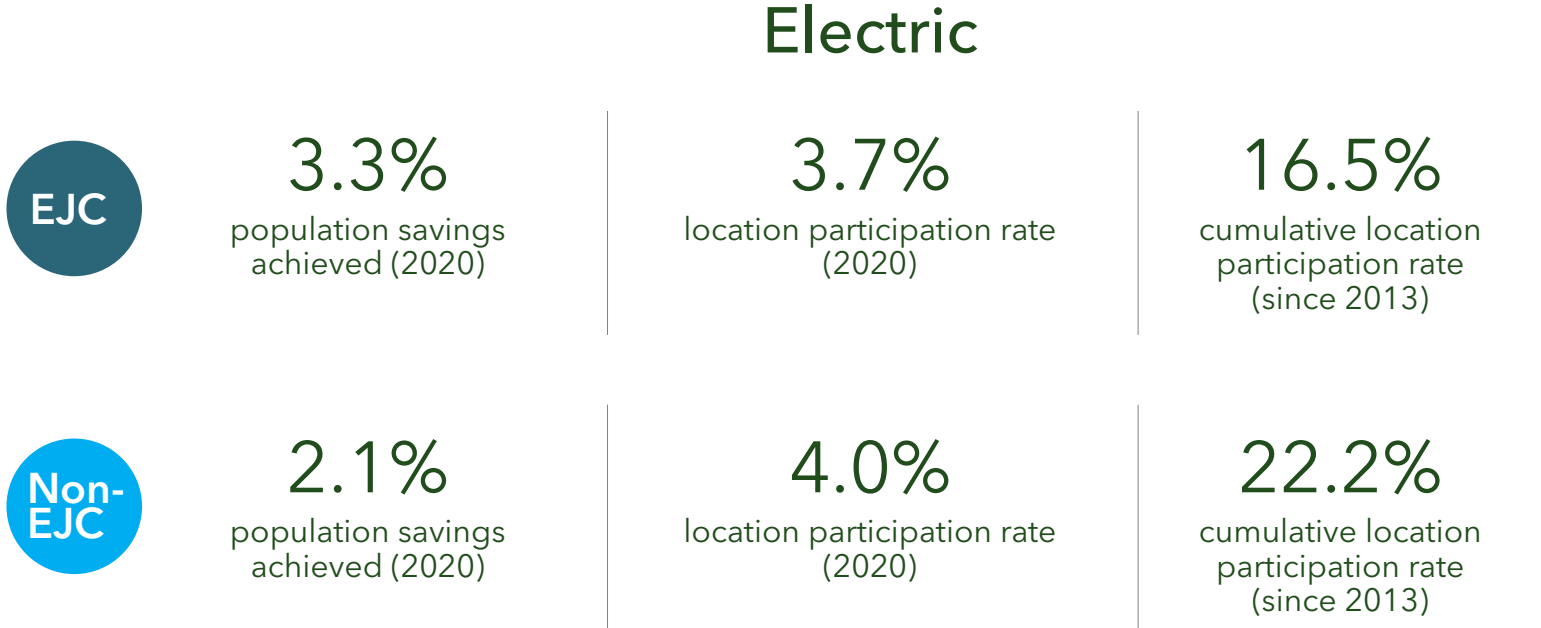
Language spoken: EJC vs non-EJC



*The MA Department of Public Utilities (DPU) has a separate set of criteria defining Targeted Hard-to-Reach Communities; see p. 97-98 in the [DPU Order on the PAs' 2022-2024 Three-Year Plans](#) (D.P.U. 21-120 through D.P.U. 21-129).

Summary of program performance for small and micro businesses

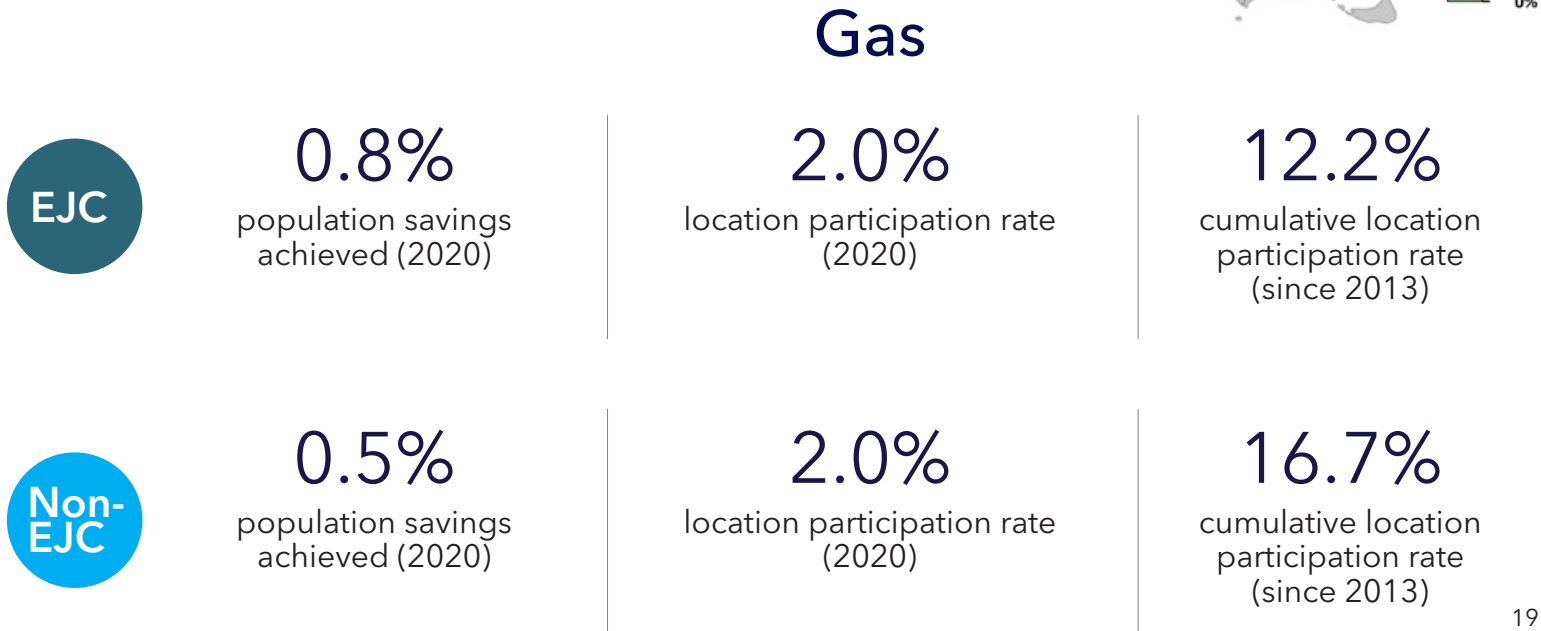
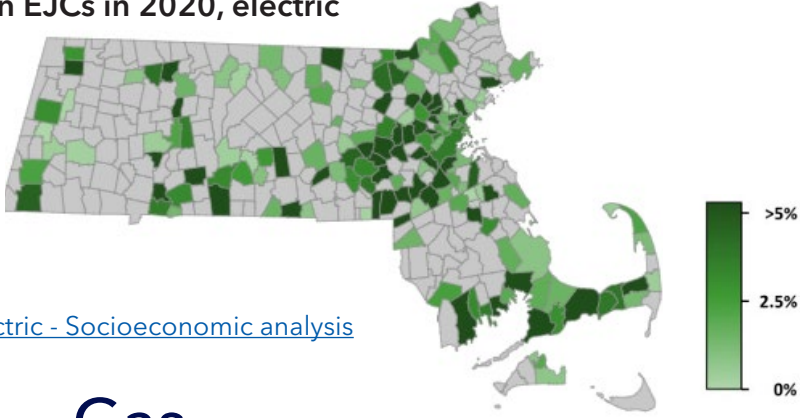
This page provides comparisons of key Mass Save program participation metrics for small and micro C&I customers located in EJCs.



The map to the right, drawn from the [MA Customer Profile Dashboard](#), shows population savings achieved for small and micro businesses at the block group level in all towns containing EJC block groups. Users can visit the Socioeconomic Analysis section of the dashboard to further investigate differences between EJCs and non-EJCs by block group.

<https://insight.dnv.com/MACustomerProfile/report/989 - Electric - Socioeconomic analysis>

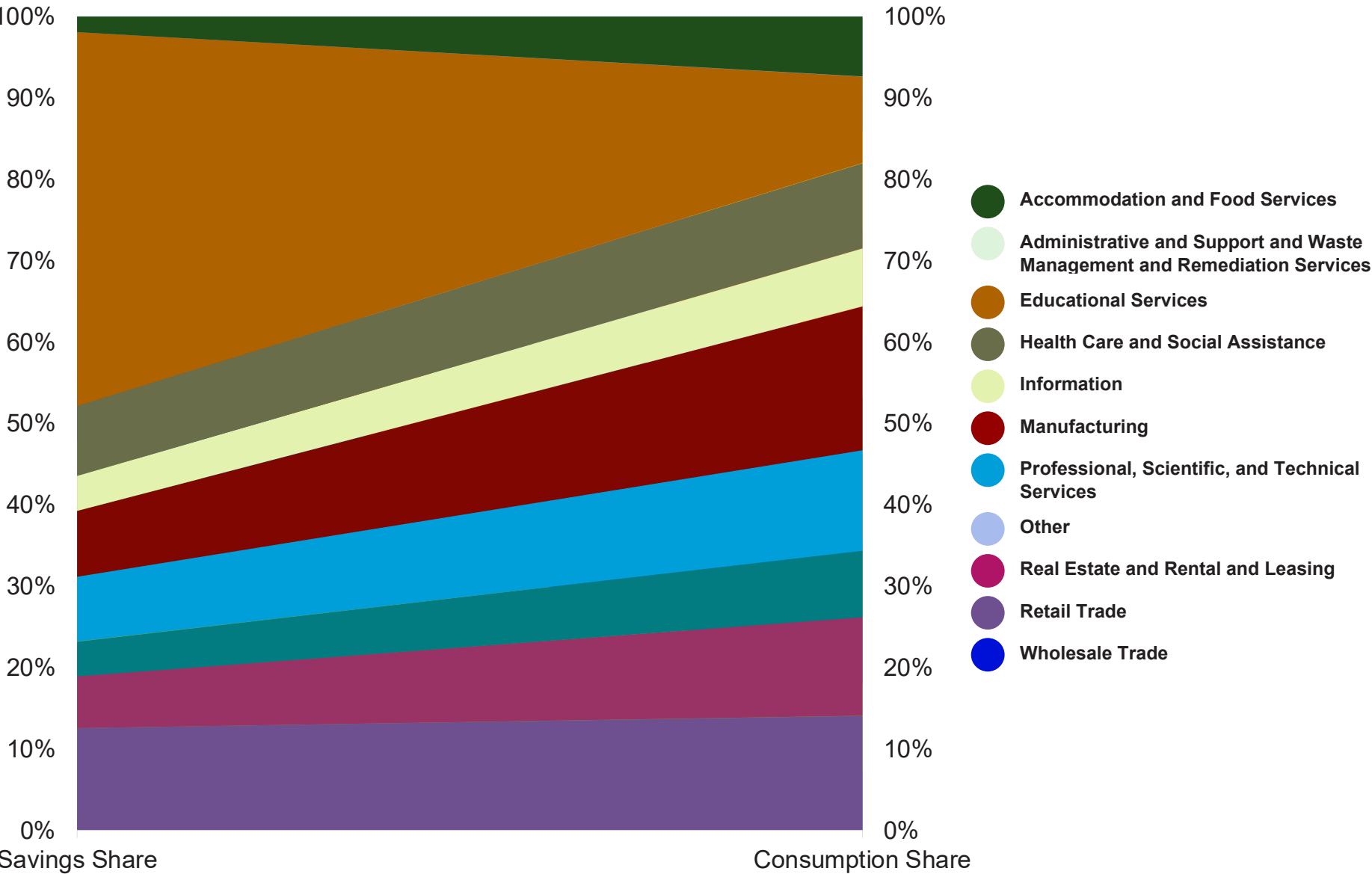
Population savings achieved for small/microbusinesses in EJCs in 2020, electric



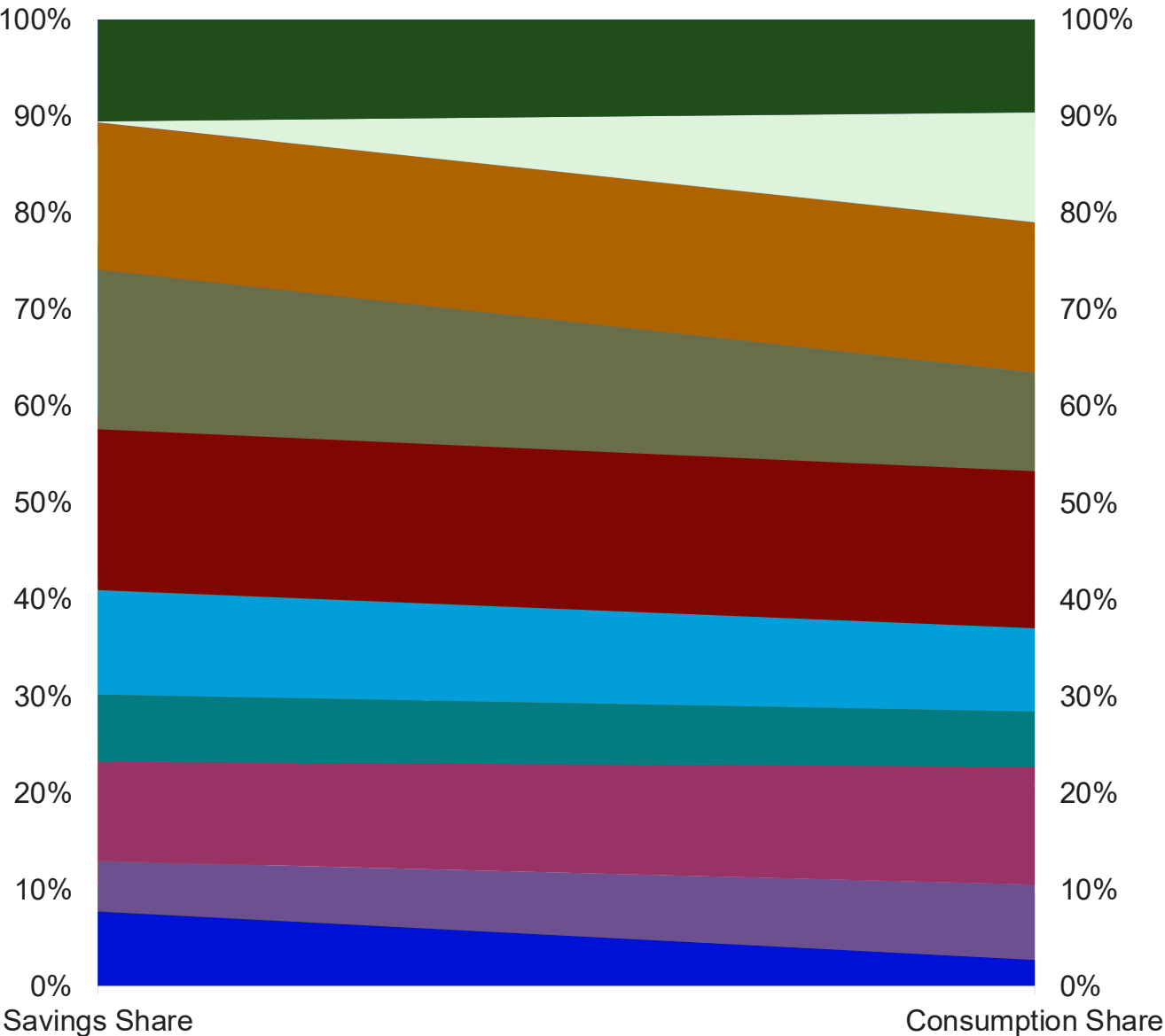
Population savings by industry segment

These charts present shares of savings relative to shares of consumption for each industry segment in 2020. To focus on the larger contributors, some smaller industry segments were consolidated into “Other.” If the width of the bar is wider on the left than the right for a particular segment, this means that this segment contributed a larger share toward savings than it did toward consumption. On the electric side, the Educational Services segment includes several CHP projects that contributed a total of nearly 250 GWh of savings, about 86% of total savings for the segment.

Electric 2020 share of consumption to share of savings by industry segment



Gas 2020 share of consumption to share of savings by industry segment



Users can visit the dashboard to explore industry segments in more detail. View incentives paid by industry, savings, participation, consumption, and more.

Navigation

Participation and savings

End uses

Industry segment

By PA summary

Project breakdown

Socioeconomic analysis

Filters

Year

All

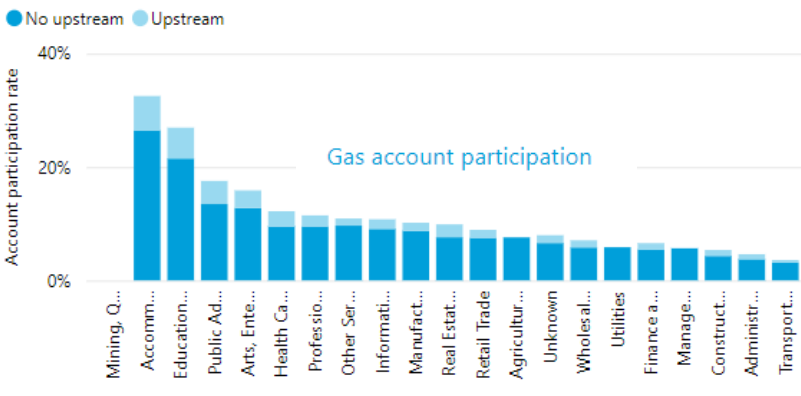
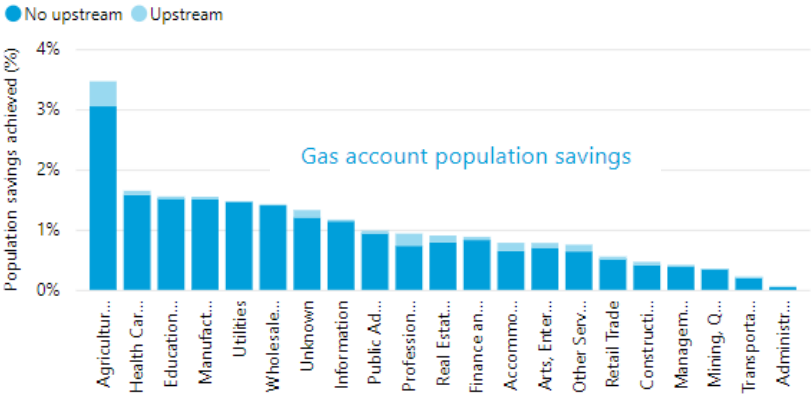
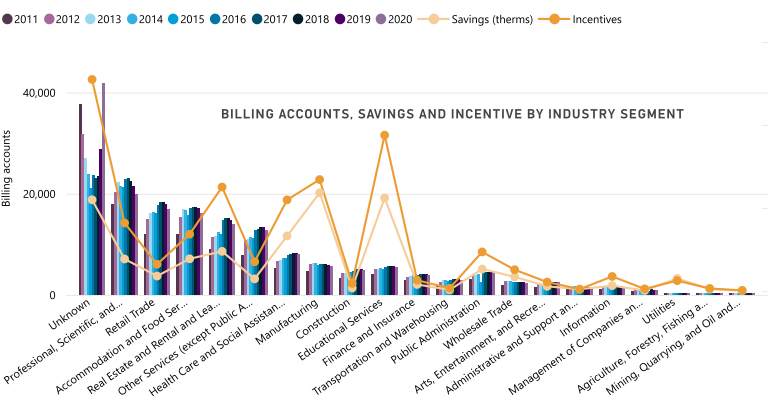
PA name

All

Industry segment

All

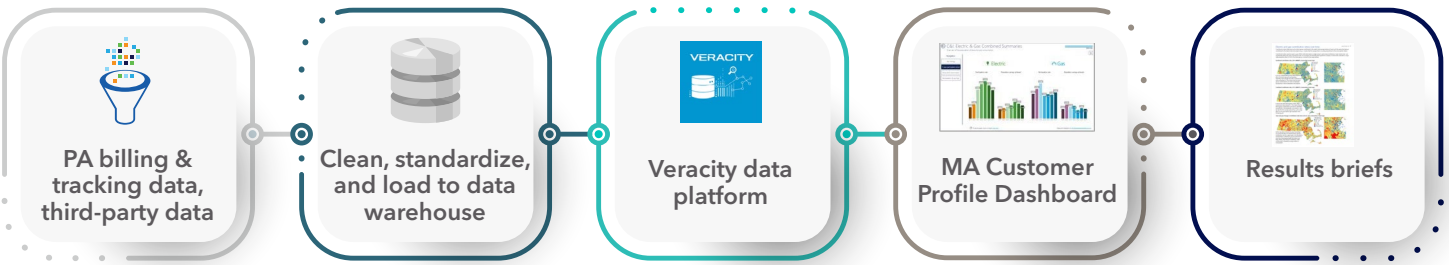
Previous



The MA Customer Profile Dashboard

Readers can delve more deeply into Massachusetts energy data by exploring the combined [MA Customer Profile Dashboard](#), which allows users to view data by category (e.g., fuel, end use, industry segment), filter data on selected variables (e.g., program year, city, upstream sales, etc.), view data at increasingly granular levels (e.g., broad end use to specific end use to measure), and download data to an Excel file. The dashboard is continuously updated as we learn more about customers through new information and data sources, and provides users with data back to 2011. For the sake of readability, the results brief reports on program years 2015-2020 only, and reflects the numbers that were available at the time of publication.

DNV follows an ISO 27001-certified process to obtain data extracted from the PAs, clean and transform it into a standard format, and load it into the relational data warehouse, where it is combined with third-party data. Once data is loaded to the data warehouse, it is reflected in the privacy-controlled Veracity dashboard immediately, and can be queried and used for PA reporting, ad hoc analysis, and evaluation contractor sharing.



MA Customer Profile

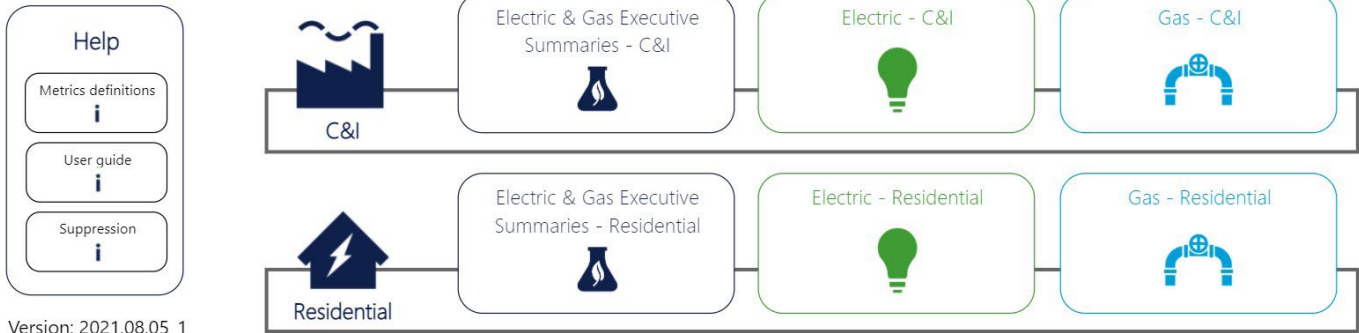
Massachusetts Program Administrators and Energy Efficiency Advisory Council

DNV publishes annual statewide analyses of the Massachusetts Program Administrators' (PAs) commercial and industrial (C&I) and residential **billing and tracking data**, and third-party data, in the C&I and Residential Customer Profile Studies. These comprehensive studies characterize the state's energy efficiency customers according to metrics such as **customer usage, savings, and program participation** across all PAs. Findings are presented at different analysis grains including the **account level, project level, and location level**. This dashboard allows users to view these findings at a high level and to drill down into any finding using selected filters. **All savings values in this report are gross annual savings.** For accounts with only a partial year of consumption information, **total annual usage is extrapolated** by multiplying the mean daily weather-normalized consumption by the number of days for which actual usage is not available, then adding this product to the actual reported usage for the remainder of the year. As a result of this extrapolation, **usage totals may differ from other reported sources.**

[Feedback & Questions](#)

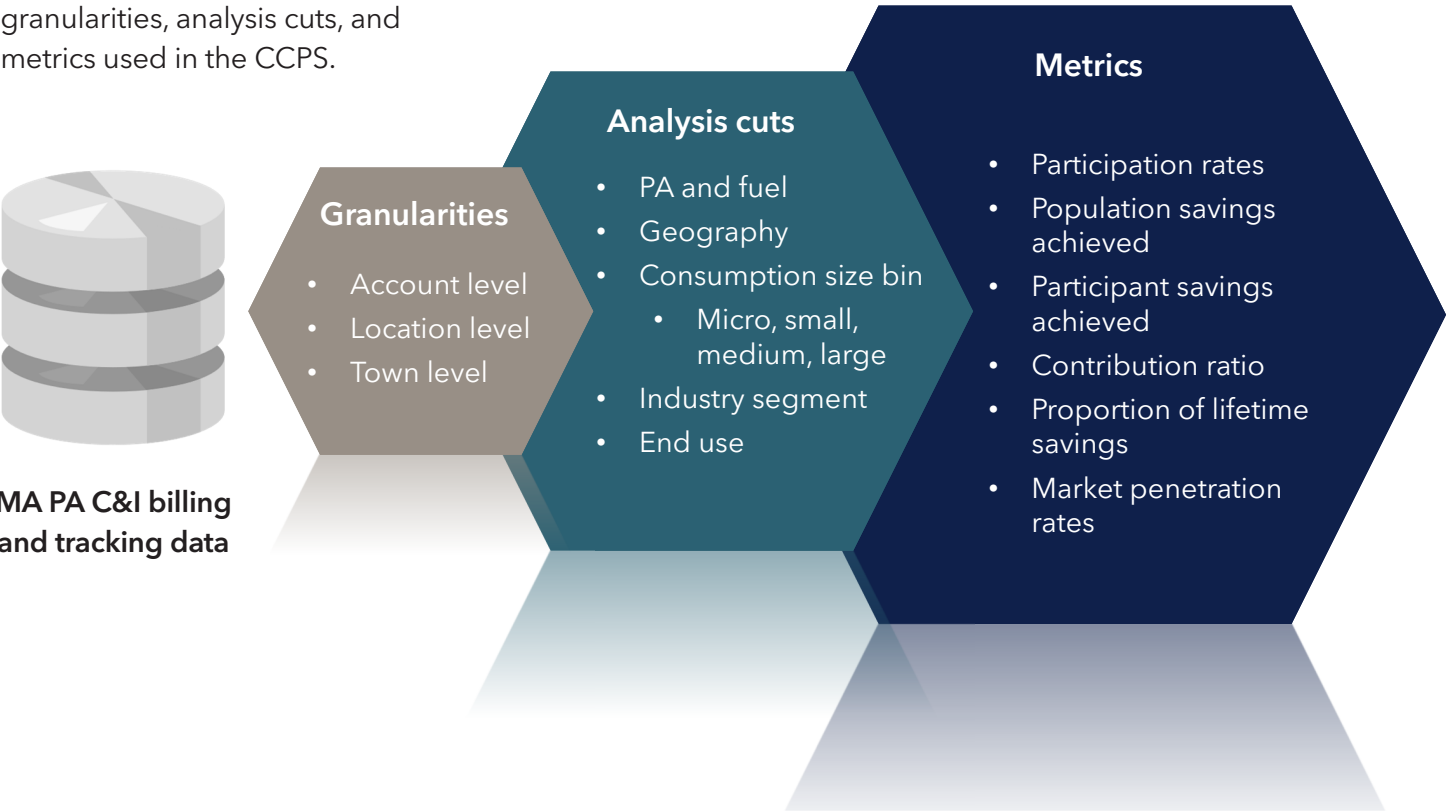
DNV - Energy Systems

Get in touch with us: MADataManagement@dnv.com. For further information please visit our [website](#).



Version: 2021.08.05_1

The graphic below shows the granularities, analysis cuts, and metrics used in the CCPS.



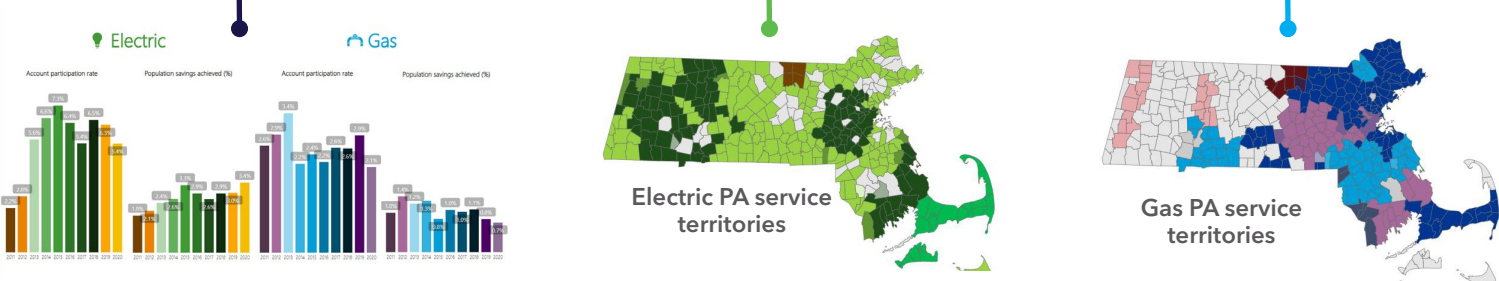
Dashboard executive summary features:

- Key findings
- 10-year participation trends
- Accounts & consumption
- Participation & savings

Dashboard electric and gas sections with parallel structure features:

- Participation & savings
- End uses
- Industry segments
- By PA summary
- Project breakdowns

A user guide to the dashboard is available in PDF on the Mass Save Data website at https://www.masssavedata.com/TRL/UserGuide_MA_CPS.pdf and as an interactive version on the dashboard home page, accessible by clicking on the user guide icon.





Metrics definitions

Account participation rate - The ratio of participating accounts to billing accounts within a given analysis population (industry segment, PA, etc.)

Consumption - Reflects the energy use of accounts in the PAs' billing systems

Incentives - Money paid to participants by PAs to encourage participation in energy efficiency programs

Location participation rate - The ratio of participating locations to billing locations based on primary street address

Participant savings achieved - The ratio of participants' energy savings to their total consumption within a given analysis population (industry segment, PA, etc.)

Penetration rate - This is an expansion of the account participation metric that is not isolated to a single year. It can answer questions such as, "What percentage of the PAs' accounts participated in an efficiency program over the past 6 years?"

Population savings achieved - This metric looks at the energy savings of energy efficiency participants within a specific analysis population (e.g., industry segment, PA, etc.) relative to the consumption of the total analysis population.

Savings - Reflects gross energy savings achieved by accounts participating in energy efficiency programs

About DNV

DNV serves the Massachusetts electric and gas program administrators (PAs) as the stewards of their residential, commercial, and industrial billing and program tracking data. We follow ISO 27001 standards to obtain PA-provided data extracted from their internal systems; clean, enhance and transform the data into a standard format; and load it to the data warehouse. We supplement the PA billing and program tracking data with third-party datasets containing demographic, firmographic, financial, and building characteristic attributes. Data is available to the PAs at all times, and upon request and PA approval, can be provided to evaluation contractors for analysis in a consistent, documented format. Additionally, DNV performs annual customer profiling and ad hoc analysis for the PAs and Energy Efficiency Advisory Council (EEAC) to yield insights into population and participation trends in MA energy efficiency landscape and inform PA and EEAC decision-making.

DNV

101 Station Landing
Suite 520
Medford, MA 02155

www.dnv.com