Brewers Association
2017 - 2021
Sustainability
Benchmarking

BA
BREWERS
ASSOCIATION
®

acknowledgements

This project has been made possible with the support of the Brewer's Association℠ (BA) Sustainability Subcommittee as well as all the individual breweries that submitted benchmarking data.

Special thanks goes out to those breweries that submitted complete sets of data through the turbulent years from 2017 through 2021. Their contribution allows for full five-year observations which benefit the entire industry.

Sustainability Subcommittee

The Sustainability Subcommittee serves the Brewers Association purpose by helping current members and future generations to brew the highest quality beers in a manner that strengthens the value of our businesses, increases the resiliency of the natural environment and agricultural systems that provide brewing ingredients, and enhances the lives of our workforce and the communities we call home.

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San Diego, Calif.

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a five-year retrospective

When the Brewers Association (BA) started its benchmarking program in 2014, no one could have anticipated the full-scale disruption that was coming in the spring of 2020 with the COVID-19 pandemic. While the BA put these annual sustainability reports on hold and most of the industry went into survival mode over the past few years, there were still breweries using the tool to track and manage their operations. So, while this report pulls data from fewer breweries than in years past, we feel the trends tell an important story of the past five years.

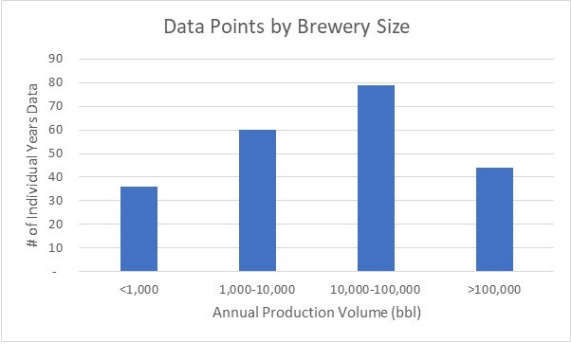
Brewery participation in the sustainability benchmarking project involves entering monthly usage and cost data for sustainability key performance indicators (KPIs). While participation has slowed through the pandemic years, the information submitted through the years creates a more robust dataset for pulling out trends.

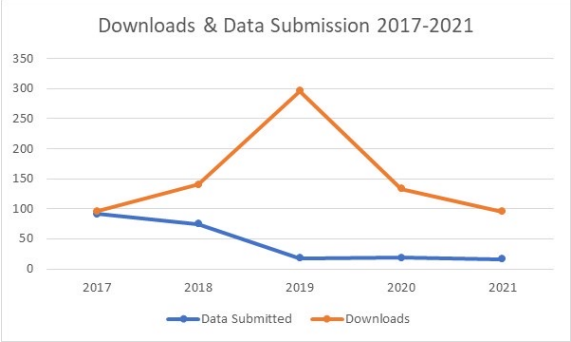
Releasing a Microsoft Excel-based tool in July 2019 led to significant uptake (measured by downloads) in the short-term but has begun to tail off. It's uncertain whether this is due to the pandemic, breweries reusing the tool year-over-year without downloading the new version, or some other factors. Along with additional downloads has come a reduction in data submitted, likely because it is another step that wasn't required when using the web-based version of the tool.

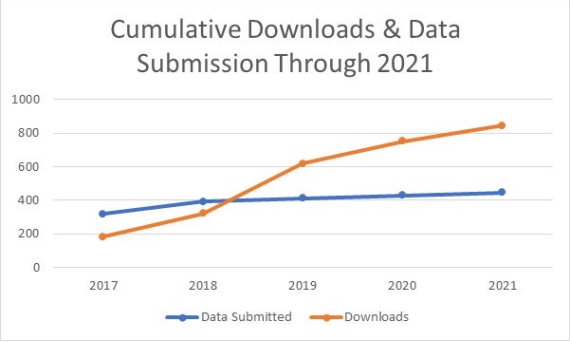
This deviation over time between downloads and submissions is trending in the wrong direction in the pursuit of valuable data for these sorts of industry analyses. The BA is committed to improving this trend in the coming years by working with membership to improve the user experience of the benchmarking program from start to finish.

To be included in this report, a brewery must have submitted at least twelve months of complete data for the identified list of KPIs. We are pleased to report that 10 breweries submitted complete data sets for all five years of interest in this report and an additional 4 breweries submitted complete data sets for four years.

This report analyzes 219 individual years' data across breweries ranging from production of just over 100 bbl annually to well over 500,000 bbl annually. The chart below shows the spread of data points used in this dataset by the size of brewery.





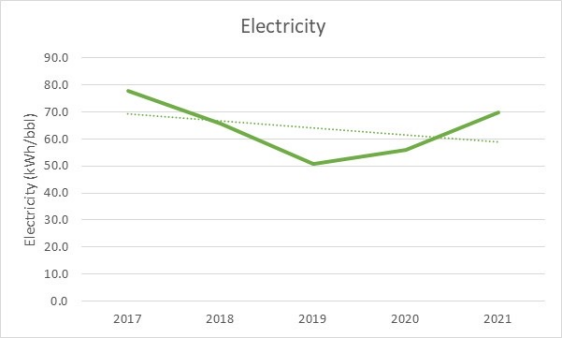


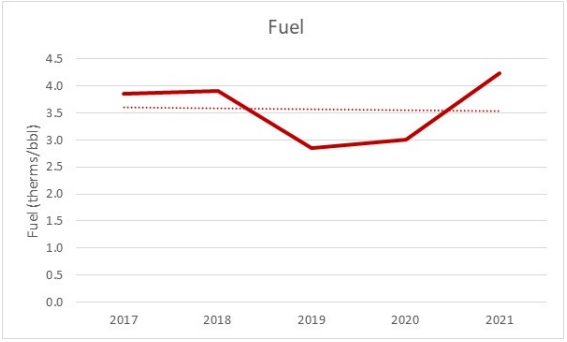
observations

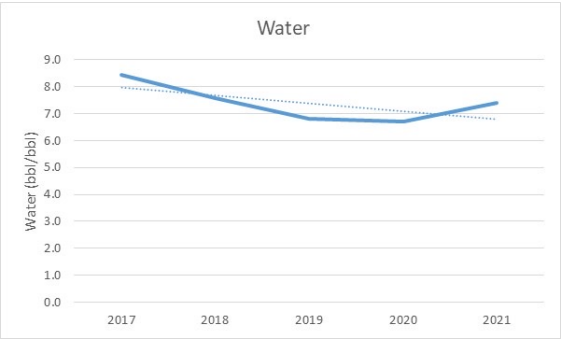
One of the most obvious trends between 2017-2021 was the impact that the COVID-19 pandemic had on the sustainability performance of craft breweries. The charts below show the average KPI performance of breweries of all sizes that submitted their data.

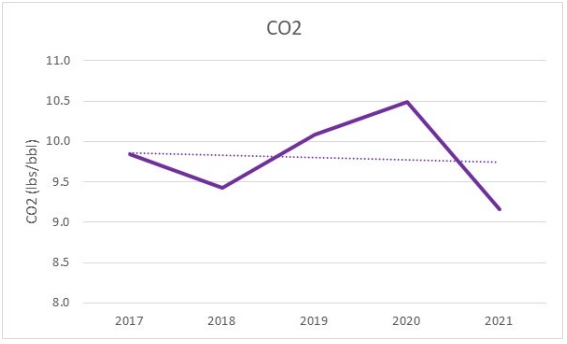
An encouraging note is that, while many of these KPIs saw increases throughout the pandemic years, all but waste to landfill was still trending in the right direction over the five-year period.

Note that the dotted line in each graph is the five-year trend line for these performance metrics. This helps visualize the change over time.









observations (cont)

When diving into the data to compare, there is evidence that the consistent use of the benchmarking tool is correlated with better performance along sustainability KPIs (and, importantly, with associated cost savings). The table below shows the total average cost savings between breweries that participated for 4-5 years over the period of interest versus breweries that participated 3 or fewer years in the benchmarking program.

Brewery Size (bbl/yr)	Regular User Cost/bbl	Infrequent User Cost/bbl	Cost Savings/bbl*	Est. Annual Cost Savings*
<1,000	$44.90	$47.85	$2.95	$1,519
1,000-10,000	$36.36	$22.38	-$13.98	-$73,918
10,000-100,000	$9.72	$10.98	$1.26	$49,406
>100,000	$5.19	$6.95	$1.75	$575,605
All Sizes	$16.63	$19.58	$2.95	$245,472

* From regular use

This is to say that for an average brewery that produces 500 bbl per year, they could expect a cost savings of $1,519 annually on their sustainability-related utilities. The data shows this trend across breweries of all sizes except the category producing between 1,000-10,000 bbl annually. The data shows that this is due to two breweries of this size who participate in the benchmarking project consistently, but that also operate in areas of particularly high utility cost.

While there are any number of factors that can be driving these overall results (remember, correlation is not the same as causation), it does stand to reason that the breweries that prioritize monitoring and measurement are the ones who are also able to improve their performance.

The table below shows the relative medians and means for the different KPIs as reported by breweries of different sizes. Green medians represent those that are lower than the mean for the same KPI and size. This is good because it means there are a few outliers pulling the mean values up, but more of the data set is actually performing better than that mean. Red is the opposite meaning there are a few top performers, but the majority of the breweries are performing worse than the mean.

The takeaway here is that, in most cases, the median value for a KPI by brewery size is lower than the mean for that same KPI and size. Overall, this is a good thing as the bulk of breweries are favoring better performance in their peer group. Encouraging the continuation of this trend should help keep moving the industry forward on sustainability performance

			<1,000	1,000-10,000	10,000-100,000	>100,000
Electricity	kWh/bbl	Mean	197	77	23	21
		Median	188	62	25	20
Fuel	therms/bbl	Mean	9.1	4.2	1.9	1.3
		Median	8.1	2.7	1.9	1.2
Water	bbl/bbl	Mean	16.8	9.1	4.7	4.6
		Median	17.7	7.5	3.9	4.6
CO2	lbs/bbl	Mean	9.3	10.6	12.4	7.8
		Median	9.2	10.2	11.5	9.2
Waste	lbs/bbl	Mean	11.5	3.4	1.9	0.9
		Median	8.8	3.6	0.8	0.4

benchmarking results

Efficiency charts for water, electricity, natural gas, solid waste and purchased CO_2 by production size (bbl packaged) were generated to create a five-year snapshot of participating breweries. These charts provide a quick and simple way to review the performance of participating breweries in terms of the bottom 25%, middle 50%, and top 25% for each respective environmental attribute. This review is a critical step in setting realistic stretch goals and targets.

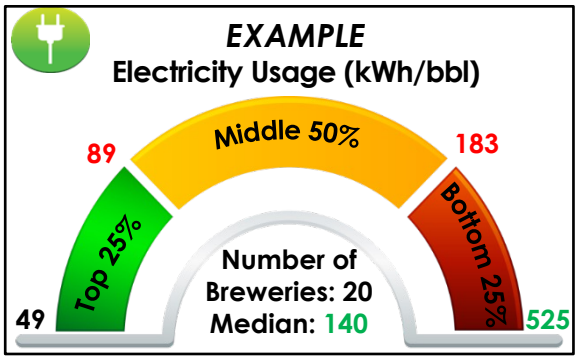
Production size categories used in the analysis are:

- Less than 1,000 bbl/yr
- 1,000-10,000 bbl/yr
- 10,000-100,000 bbl/yr
- Greater than 100,000 bbl/yr

In addition to the usage and waste efficiency charts, there are also charts outlining the average cost per barrel associated with each sustainability related KPI. These charts provide a sense of which KPIs are adding to the incremental costs per barrel of beer.

The solid waste disposed metric does not include spent grains, demolition debris or any other recycled waste streams.

This five-year block of data provides the basis for the goal setting function in the BA Sustainability Benchmarking tool. Each year, a new five-year rolling average will be calculated and updated into the Microsoft Excel based tool.



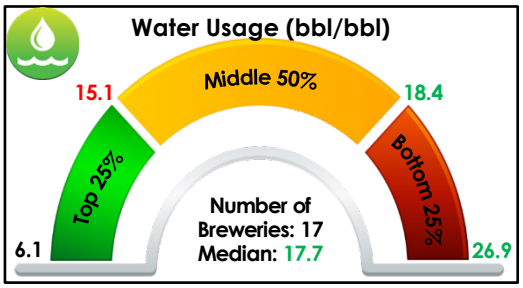
The figure above is an example of an efficiency chart used to show the top 25%, the middle 50%, and the bottom 25% of performers in production categories. A separate chart is created for each of the five KPIs analyzed in this update. In this case, a brewery operating at 75 kWh/bbl would be in the top 25% of peer breweries. This graphic is meant to stimulate awareness of peer efficiency so best practices can be shared, and the overall sector can continue to improve.

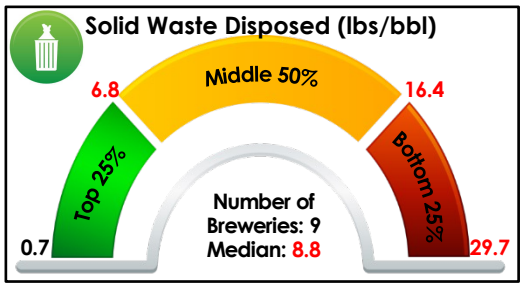
The color-coding of values is a comparison against values from the previous benchmarking sustainability report which used data from 2014-2018. Green numbers represent better performance, red indicates worse performance, and black text is for values that have remained unchanged.

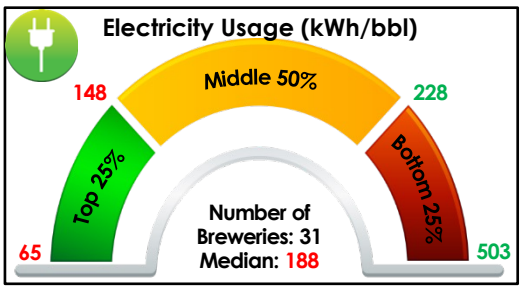
All data is self-reported and submitted by participating breweries to the Brewers Association for aggregation and analysis. Although gross outliers are flagged for review, the Brewers Association does not validate, or challenge data reported by breweries.

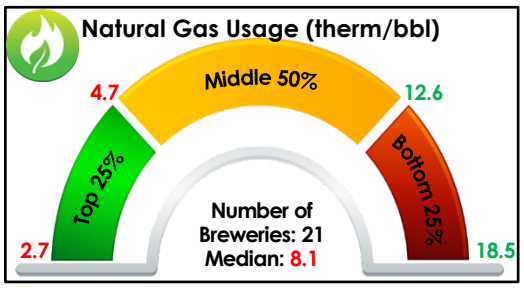
0-1,000 bbl/year

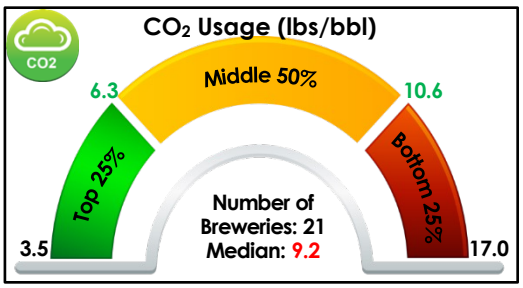
Usage Efficiency (2017-2021)



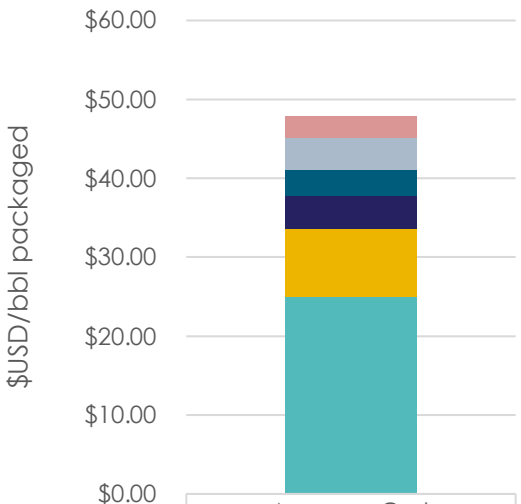








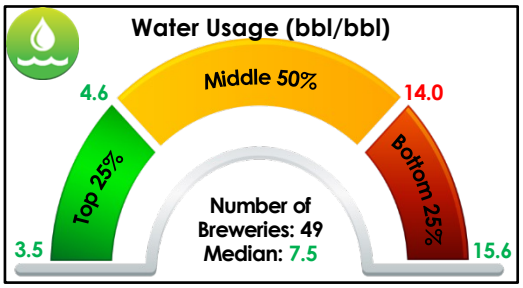
Cost Efficiency (2017-2021)

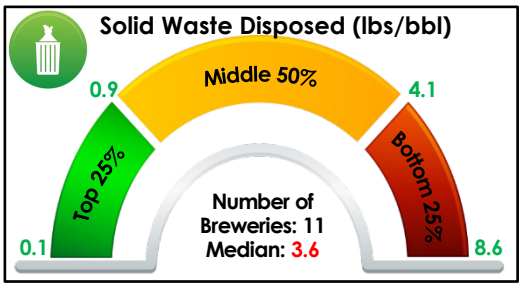


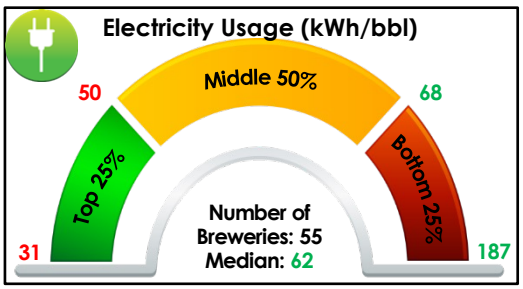
	Average Cost
Solid Waste	$2.80
CO2	$3.99
Water	$3.31
Wastewater	$4.24
Natural Gas	$8.57
Electricity	$25.00

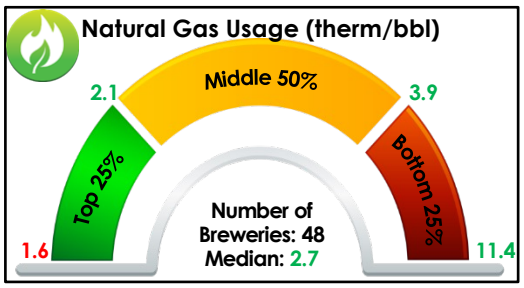
1,000-10,000 bbl/year

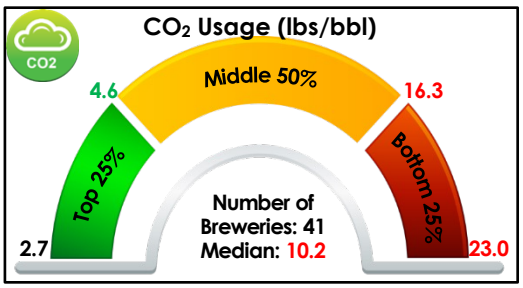
Usage Efficiency (2017-2021)









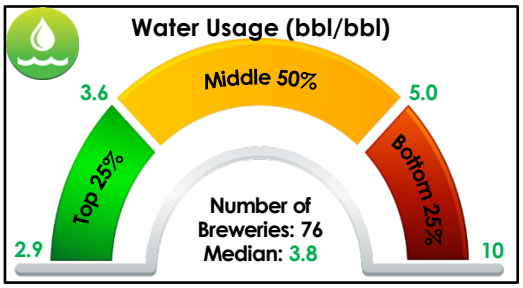


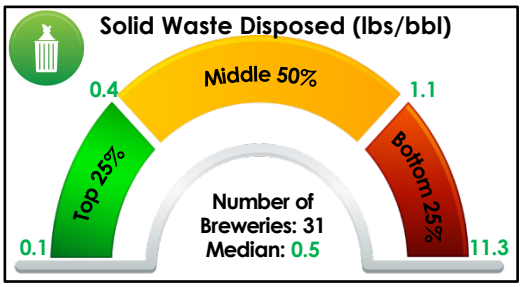
Cost Efficiency (2017-2021)

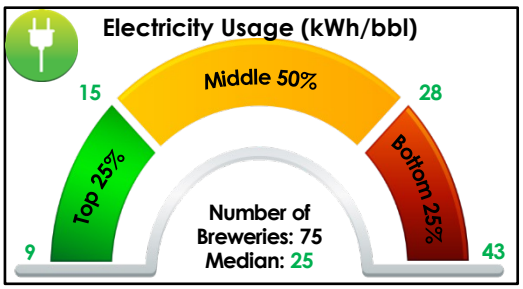
	Average Cost
Solid Waste	$3.28
CO2	$3.43
Water	$2.25
Wastewater	$3.48
Natural Gas	$4.76
Electricity	$9.43

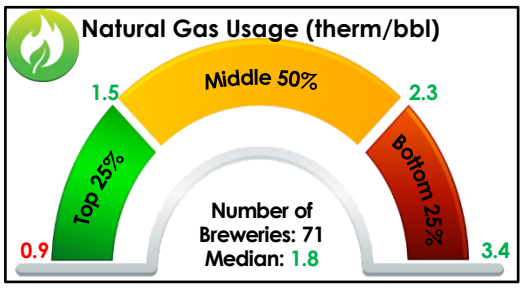
10,000-100,000 bbl/year

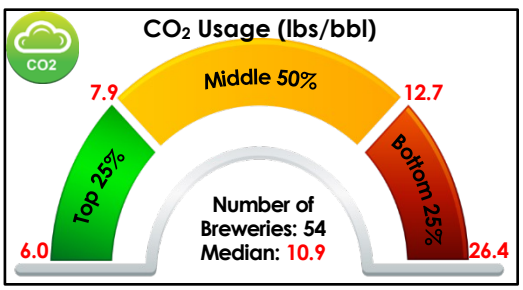
Usage Efficiency (2017-2021)



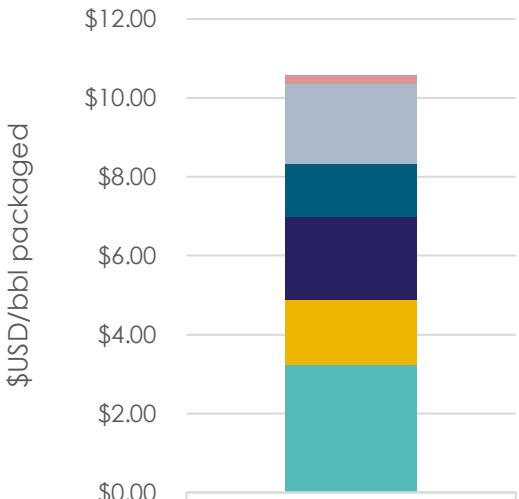








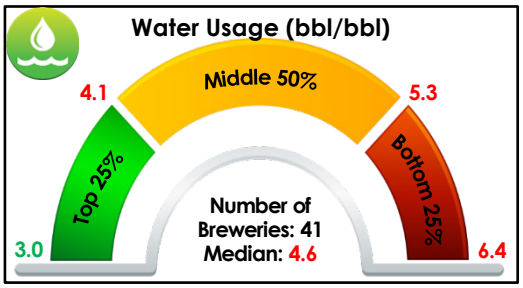
Cost Efficiency (2017-2021)

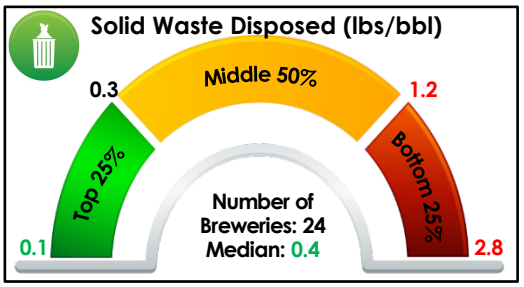


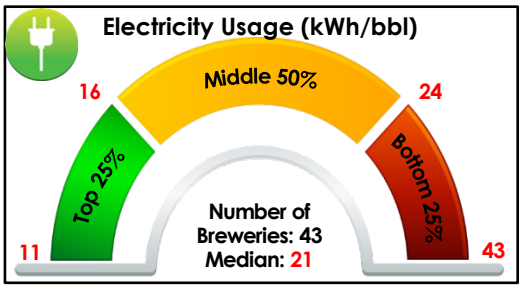
	Average Cost
Solid Waste	$0.21
CO2	$2.04
Water	$1.32
Wastewater	$2.13
Natural Gas	$1.62
Electricity	$3.25

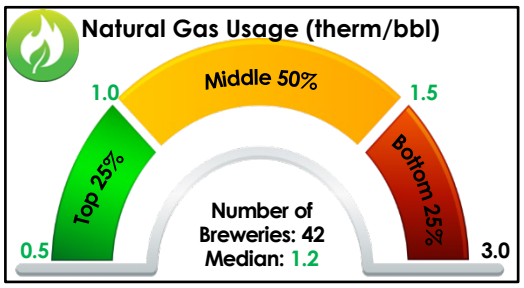
100,000+ bbl/year

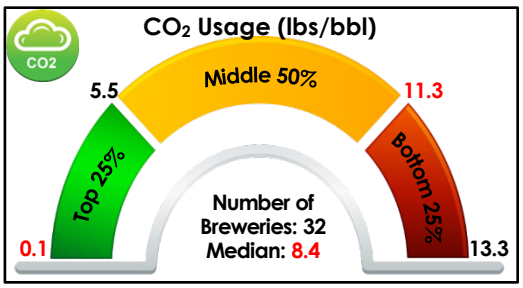
Usage Efficiency (2017-2021)











Cost Efficiency (2017-2021)

	Average Cost
Solid Waste	$0.10
CO2	$0.79
Water	$0.65
Wastewater	$1.55
Natural Gas	$0.77
Electricity	$2.01

participating breweries

Five years of data

Allagash Brewing Co

Brewery Vivant

Deschutes Brewery

Firestone Walker Brewing Co

Half Acre Beer Co

HiHO Brewing Co.

Monday Night Brewing

Sierra Nevada Brewing Co (2 Facilities)

Upslope Brewing Company (2 Facilities)

Four years of data

Angel City Brewery

Creature Comforts Brewing Co.

Rhinegeist Brewery

The Alchemist - Stowe

participating breweries (cont)

One to three years of data

Alaskan Brewing Co.
Alchemist Cannery
Atlantic Brewing Company
Avery Brewing Co
Bale Breaker Brewing Company
Bear Republic Brewing Company
Bell's Brewery Inc.
Beltway Brewing Company
Bhramari Brewing Company
Birdsong Brewing Co.
Blue Point Brewing Company
Borderlands Brewing Co.
Breckenridge Brewery
Cahaba Brewing Company
Caldera Brewing Company
Confluence Brewing Company
Denver Beer Co
Dry Dock Brewing Co (2 Facilities)
Exile Brewing Co.
Flying Fish Brewing Co
Fort George Brewery
Founders Brewing Co
Franklin Street Brewing Company
Fremont Brewing (2 Facilities)
Georgetown Brewing Co
Gilded Goat Brewing Company
Great Central Brewing Company
Great Divide Brewing Co
Great Lakes Brewing Co
Hi-Wire Brewing
Hopworks Urban Brewery
Horse & Dragon Brewing Company
Industrial Arts Brewing
Intersect Brewing
Ironwood Brewing Co.
Jackie O's Brewery
KettleHouse Brewing Co (2 Facilities)
Kona Brewing Hawaii
Land-Grant Brewing Company
Lazy Beach Brewing
Little Fish Brewing Company
Lucky Hare Brewing Company, Inc.
MadTree Brewing
Maine Beer Company
Marble Brewery
Market Garden Brewery
Maui Brewing
Milkhouse Brewery at Stillpoint Farm
Monday Night Brewing
Mother's Brewing Co
Mount Hood Brewing Company
Mully's Brewery
New Belgium Brewing Company (2 Facilities)
Ninkaski Brewing Co
North Coast Brewing Co Inc.
Odell Brewing Co
O'Fallon Brewery
Oskar Blues Brewery
Potosi Brewing Company
Pueblo Vida Brewing Company
Raquette River Brewing
Revolution Brewing
Roadhouse Brewing Co.
Rockingham Brewing Company
Silver City Brewery
SingleSpeed Brewing
SKA Brewing
Societe Brewing Company

participating breweries (cont)

One to three years of data (cont)

Stillmank Brewing Co.

Stone Arch Brewpub

Sudwerk Brewing Co.

Switchback Brewing Company

UpCountry Brewing Company

Upland Brewing Co

Upper Hand Brewery

Walking Man Brewing

Warped Wing Brewing Company

Widmer Brothers Brewing

Wolf's Ridge Brewing

Wooly Pig Farm Brewery

Wormtown Brewery

Worth Brewing Company

Worthy Brewing Co.

Zipline Brewing Co

resources available

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Questions?
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benchmarking@brewersassociation.org