



Boston Trust Walden

Principled Investing.

Measuring the Carbon Impact of an Investment Portfolio

Beyond Footprints

The Task Force on Climate-related Financial Disclosure (TCFD) provides a framework for how to identify, assess, and manage climate-related risks and opportunities.

Read Boston Trust Walden's [response](#) to learn more about how we integrate climate risk into investment decision-making and active ownership efforts.

Investors, businesses, governments, and regulators have a vested interest in understanding and managing climate-related investment risk. One tool to evaluate climate-related investment risk in an investment portfolio is to measure the carbon emissions and intensity from the operations of companies in the portfolio relative to a given benchmark, such as the Russell 1000® Index.

For several years, Boston Trust Walden has sought to disclose the carbon impact of model investment portfolios. We formerly used a *carbon footprint* metric that captured total carbon emissions of a representative portfolio normalized by the market value of the portfolio, expressed in tons of CO₂ equivalent per million dollars invested. In 2018, we began measuring the *weighted average carbon intensity* of a model portfolio to ascertain the portfolio's exposure to carbon-intensive companies, expressed in tons of CO₂ equivalent per million dollars of revenue.

We made the decision to change to the weighted average carbon intensity metric in 2018 as recommended by the Task Force on Climate-related Financial Disclosure (TCFD). According to the TCFD, this metric was (and continues to be) more applicable across asset classes and easier to understand.

In this paper we summarize the challenges and benefits of relying on carbon metrics. We also report on the carbon intensity of model portfolios across investment strategies in 2020 and share results from companies we are engaging that have committed to reduce carbon emissions.

BENEFITS

Measuring the carbon impact of an investment portfolio serves three important goals:

- **Risk Management**

It can help investment managers and other stakeholders identify exposures to potential financial risks resulting from the carbon emissions and intensity associated with the operations of companies held in the portfolio. This analysis can inform stakeholder engagement with companies or lead to a reevaluation of the company's position in the portfolio.

- **Transparency**

Publishing an investment portfolio's weighted average carbon intensity provides a mechanism to communicate to stakeholders how an investor is managing carbon risk and contributing (or not, as the case may be) to solutions.

- **Signaling**

In 2021, the International Energy Agency estimated low-carbon investment would need to grow more than three times by 2030 to achieve net zero global emissions by 2050.¹ A robust and transparent policy framework is necessary to provide investors with the confidence needed to allocate that capital. Carbon intensity results can send a message to policy makers and companies alike that investors recognize climate-related risks and opportunities.

The weighted average carbon intensity metric is quantifiable, simple to calculate, and can be easily compared to another investment portfolio or benchmark. However, as with all metrics, the details matter and we urge caution in interpreting the metric.

¹ <https://www.iea.org/reports/net-zero-by-2050>

We advise caution in interpreting and acting upon carbon intensity results as they are only one indicator of climate-related investment risk.

CHALLENGES

Shortcomings of methodologies for measuring carbon impact call for caution before acting upon the results. Just as an investor would be ill-advised to buy or sell a stock based on a single financial metric, investors should consider more than just the weighted average carbon intensity of a portfolio as one indicator of exposure to climate-related investment risk.

Underrepresented Value Chain Impacts

In many cases, the carbon emissions associated with the materials used to make a product, or those attributed to lifetime use of a product, (2 of 15 categories referred to as “Scope 3” emissions), represent much larger contributions to a company’s carbon intensity than the emissions currently captured by most methodologies. For example, the Ford Motor Company reports carbon emissions of about 3.7 million metric tons associated with the production of the 5.3 million vehicles it sold in 2019. Ford estimates this is only about 3% of the total carbon impact associated with the vehicles brought to market in 2019. 75% of the total carbon impact—or 25 times Ford’s emissions according to the company’s estimates—stem from the use of the vehicles over their lifetime. However, under most methodologies, only the 3.7 million metric tons of emissions would be accounted for. This means the carbon intensity of automotive manufacturers, oil and gas companies, and numerous other companies may be materially understated.

The obverse is true as well: Most methodologies do not capture the *benefits* associated with products—potentially overstating a company’s carbon intensity. For example, Air Products is an industrial gas provider that profiles as a highly carbon-intensive company. However, according to Air Products’ 2021 Sustainability Report, the company’s products enabled its customers to avoid 72 million metric tons of CO₂ in 2020—equivalent to the emissions of 16 million cars and three times Air Products’ direct and indirect CO₂ emissions.

Obscured Goals and Targets

One of the pillars of Boston Trust Walden’s climate engagement strategy is to ask companies to set greenhouse gas (GHG) emissions reduction goals based on widely accepted scientific research. Specifically, we ask companies to set goals aligned with the Paris Climate Agreement, which aims to limit the increase in the global average temperature to below 2 °C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels. To achieve this goal, carbon emissions should be reduced to net zero by mid-century or sooner.

Many companies have now set science-based emissions reduction goals, but their carbon intensity does not reflect the real world impact of these goals (if they are met); the metric captures only a snapshot of a single point in time. For instance, in the Ford Motor Company example above we noted most of the carbon impact is unaccounted for. Current methodologies also fail to note that Ford has set an aspirational goal of achieving carbon neutrality from the use of vehicles no later than 2050. Presumably a better measure would be the present value of the future carbon burden, but such data is not yet available systematically.

There is no reduction
in carbon emissions
until a company
meaningfully
changes its board
oversight and
business practices.

Uncertain Economic Implications

If one motivation for carbon impact measurement is to understand potential financial risk, the result must be assessed in a broad context, including a company's competitive position in its value chain. If there is a price on carbon and a company buys carbon-intensive inputs, is it going to be forced to pay more for its inputs? Are there readily available lower carbon substitutes for the company's inputs? If the company is the producer of a carbon-intensive good or provider of a carbon-intensive service, is it able to pass any additional costs on to its customers? Are there other, lower carbon products that will take market share? Carbon intensity metrics may alert investors to potential risk, but more thorough analysis is necessary.

Disconnect from Real World Impact

If an investor chooses to sell a company or avoid an industry because of its carbon intensity, it may help manage financial risk to the portfolio. However, this decision does not directly lead to a reduction in carbon emitted into the atmosphere. There is no reduction in carbon emissions until a company meaningfully changes its business practices.

Insufficient Performance Benchmarks

Investors tend to focus on the portfolio's carbon intensity (or footprint) as a performance measure relative to peers and benchmarks. Since benchmark comparisons are relative and do not represent absolute improvement, if the benchmark's carbon intensity deteriorated and the portfolio's did not, it would appear as if the portfolio's carbon intensity had improved. However, this improvement would not be witnessed in the real economy and there would be no change to the actual carbon emitted into the atmosphere.

Data Gaps

The availability, accuracy, and comparability of carbon data is improving but continues to present challenges. In 2020, CDP received over 9,600 total responses across all its disclosure programs, representing over 50% of global market value. However, reporting gaps remain among companies with smaller market capitalization, often due to limited resources. Tools are being developed to help address the market cap-based bias in disclosure, including new guidance from the Science-based Targets Initiative (SBTI), specifically to streamline the emissions measurement and target setting process for small and medium-sized enterprises.²

² <https://sciencebasedtargets.org/blog/smoothing-the-way-for-small-and-medium-sized-businesses-to-set-science-based-climate-targets>

BOSTON TRUST WALDEN'S ANALYSIS

The investment strategies below represent the majority of Boston Trust Walden's assets under management as of year-end 2020. Consistent with previous years, the carbon intensity of each model portfolio compares favorably to respective benchmarks, ranging from 33% to 71% less carbon-intensive.

BOSTON TRUST WALDEN RESULTS WEIGHTED AVERAGE CARBON INTENSITY (tCO₂e/\$MILLION SALES)

	Small Cap	SMID Cap	Mid Cap	Large Cap Core	Fossil Fuel Free Large Cap Core
Carbon Intensity—Boston Trust Walden	82	62	59	79	89
Carbon Intensity—Benchmark	126	158	200	135	135
Carbon Intensity (relative to benchmark*)	-33%	-61%	-71%	-41%	-34%
Attribution: Sector Allocation	21	42	60	2	-7
Attribution: Stock Selection	-62	-138	-202	-58	-40
#1 Contributing Stock	IDA	RPM	PKG	APD	APD
#2 Contributing Stock	COR	PKG	RPM	COP	UNP
#3 Contributing Stock	CPK	COR	OGS	UNP	UPS

Source: Boston Trust Walden, MSCI

*In order, the benchmarks are as follows: Russell 2000®, Russell 2500™, Russell Midcap®, Russell 1000®, Russell 1000®.

We applied the most recent available carbon data (12/31/19) to portfolios as of 12/31/20. The metrics above are based on the strategy's model portfolio and are not actual results from a client portfolio.

Past performance does not guarantee future results. The holdings of any particular account may vary based on any investment restrictions applicable to the account. This information is for illustrative purposes only to demonstrate process and is subject to change at any time.

The securities identified do not represent all the securities purchased, sold, or held for accounts and should not be interpreted as a recommendation. There is no guarantee that holding the securities identified was or will be profitable.

Utility company IDACORP and real estate investment trust CoreSite Realty are the largest contributors to the Boston Trust Walden Small Cap strategy's carbon intensity. Chesapeake Utility Corporation is also a top three emitter in the strategy. To provide context around their relative contribution, IDACORP's emissions intensity is nearly three times that of CoreSite Realty (based on available data). We also note that IDACORP is making a strategic shift from fossil fuels to renewables, and aims to help their customers move to 100% clean energy by 2045.

Building materials firm RPM International, Packaging Corporation of America, and CoreSite Realty comprise the top three emitters in the Boston Trust Walden SMID Cap strategy. For context, RPM International and Packaging Corporation of America have roughly the same intensity.

The Boston Trust Walden SMID Cap and Mid Cap strategies have the best relative performance of the investment strategies on the previous page, with a weighted average carbon intensity that is 63% to 74% less than their respective benchmarks. For both strategies, stock selection accounts for nearly all of the outperformance.

The Boston Trust Walden SMID Cap and Mid Cap strategies have the best relative performance of the investment strategies, with a weighted average carbon intensity that is 59% to 70% less than their respective benchmarks. For both strategies, stock selection accounts for nearly all the outperformance.

In the Boston Trust Walden Mid Cap strategy, three-quarters of the outperformance is attributable to avoidance of utilities with carbon-intensive electricity generating assets. As a result, the most carbon-intensive utility sector holding in the strategy is about one-fifth as carbon-intensive as the median for the sector in the benchmark. Nevertheless, utility company Consolidated Edison is the most energy-intensive holding in the strategy, but Packaging Corporation of America is the largest contributor to the weighted average carbon intensity. RPM International and One Gas, a natural gas utility company, are the other top contributors to the Mid Cap strategy's emissions intensity.

Air Products and Union Pacific are among the largest contributors to the Boston Trust Walden Large Cap Core and Fossil Fuel Free (FFF) Large Cap strategies' carbon intensity. Both Air Products and Union Pacific are carbon-intensive industrial companies, but their products and services enable customers to be more carbon efficient — a factor that is not reflected in the metric. For example, railways are carbon-intensive and a relatively carbon-efficient mode of transportation. According to the Rocky Mountain Institute, the average freight train has an efficiency of 400 ton-miles per gallon whereas trucks average about 130 ton-miles per gallon.



As part of our climate advocacy work, we ask all companies to set science-based GHG reduction goals. A majority of companies held in our Large Cap Core strategy have done so.

Readers may be surprised that the carbon intensity of the FFF Large Cap Core portfolio is greater than the unrestricted Large Cap Core portfolio. This result reflects a shortcoming of the carbon intensity metric: namely, the measure does not capture the emissions associated with the use of products. The FFF strategy would appear superior if the metric included the emissions associated with the use of the oil produced by energy companies in the portfolio.

COMPANY CARBON REDUCTION

As we described above, carbon intensity does not capture a company's intention (or lack thereof) to reduce its emissions in the future. To address the backward-looking nature of the metric, we researched the companies in our Large Cap Core strategy for public commitments to reduce emissions. We primarily focused on large cap companies since their emissions are on average significantly larger than smaller cap companies.

Approximately 84% of companies in the portfolio, or 53 out of 63, had either absolute or intensity-based (emissions normalized by sales, production volume, or something similar) GHG reduction goals as of December 31, 2020. 47% (29) companies have committed to set, or have established, science-aligned or net zero GHG emission reduction goals.

The degree of ambition among these goals is as varied as the companies themselves. Among companies with emissions exceeding one million tons per year, Microsoft set a goal to become carbon negative by 2030, Google committed to be carbon free by 2030, PepsiCo committed to achieve net zero emissions by 2040, and Johnson & Johnson committed to achieve net zero by 2045. Another sizable emitter, 3M, announced its ambition to achieve carbon neutrality by 2050.

The largest emitters in the Large Cap Core strategy have also committed to reductions, albeit on a more modest scale: ConocoPhillips announced an ambition to achieve net zero emissions for operational (Scope 1 and 2) emissions by 2050 and revised its previous GHG emissions intensity reduction target to 35-45% by 2030, from their previous 5-15% goal; United Parcel Service committed to achieve carbon neutrality by 2050; and Union Pacific committed to extend their efficiency efforts and set a science-based emissions reduction goal aligned with global climate goals.

All of this is to underscore the following point: active ownership matters. If the companies in the strategy meet their stated goals, the climate-related risk may be less than the carbon intensity metric would suggest.



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1 Beacon Street, 33rd Floor
Boston, MA 02108
(617)726-7250
www.bostontrustwalden.com

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