MIT GREENHOUSE GAS INVENTORY

FREQUENTLY ASKED QUESTIONS

LAST UPDATED: JANUARY 2016

MIT / Office of Sustainability

MIT GREENHOUSE GAS INVENTORY FAQ

BASIC QUESTIONS

What is a greenhouse gas inventory and why did we complete one?

MIT completed a greenhouse gas (GHG) inventory to measure and manage our Institutional emissions of gases associated with climate change.

A greenhouse gas inventory measures the amount and source of an organization's emissions of the six GHG gases as defined by the International Panel on Climate Change (IPCC) and measured in carbon dioxide equivalents (MTCO2e). This inventory can also be known as a "carbon footprint" — that is, how institutional activities contribute to the accumulation of GHG in the atmosphere, which contributes to climate change. The inventory process calculates the impact from burning fossil fuels and using other resources at the Institute, and converts those emissions into a single metric: metric tons of carbon dioxide equivalent (MTCO2e).

What sources does MIT measure?

MIT measures GHG emissions in three source categories: *Building Energy Use, Fugitive Gases,* and *Campus-Owned Vehicles*. The inventory includes buildings owned and leased for use on the Cambridge campus.

Who manages the inventory?

The Office of Sustainability manages the GHG inventory in collaboration with the Department of Facilities and Environment, Health and Safety Office. The Office of Sustainability is responsible for collecting the data on an annual basis. Data is audited by the MIT Office of the Treasury.

Who should use the inventory? How will it be used?

The inventory will be used to manage MIT's GHG reduction goal and supporting activities, and as a real-world learning tool for the MIT community to use for understanding and improving GHG measurement. MIT is committed to becoming a test bed for climate innovation; staff, students, and faculty are encouraged to use the inventory to identify ways to reduce the Institute's footprint, understand energy and emission trends, and improve methodology in data collection.

BY THE NUMBERS

What is our current greenhouse gas footprint? (MTCO2e)

2015 inventory total: 201,020
Some 2015 data are estimated until the end of the calendar year.

2014 inventory total: 213,428
2014 is the baseline year for reducing MIT emissions.

BY CATEGORIES
Categories are the way MIT commonly refers to emissions' sources

	2015	2014
Buildings:	195,869	208,278
Fugitive Gases:	4,000*	4,000
Campus Vehicles:	1,151*	1,151

BY SCOPES
Scopes are the GHG Protocol's formal measurement categories

	2015	2014
Scope 1:	166,729	156,816
Scope 2:	38,765	36,494
Scope 3:	7,935	7,710

MIT reduced emissions in 2015 by 6% (12,408 MTCO2e) from 2014 levels.

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What is the largest source of emissions? Why?	Given that MIT is a dense, urban, research-intensive campus, building energy use is the largest source of its emissions. Building energy use accounted for 97% of the total footprint in 2015 and 98% in 2014.

METHODOLOGY

What inventory protocol do we use?	The Institute uses the *Operational Control Approach* as defined by the World Resources Institute's GHG Protocol to define its organizational boundary, and the Campus Carbon Calculator to structure data collection and calculate emissions for the inventory.

METHODOLOGY

What inventory protocol do we use? (continued)	Thousands of institutions in the U.S. and abroad use the same Calculator and Protocol to track their institutional greenhouse gas emissions, including more than 90% of the U.S. colleges and universities that publicly report their emissions.
What gases are measured?	Six greenhouse gases are calculated and converted to metric tons of CO2 equivalent: Carbon dioxide (CO2), Methane (CH4), Nitrous oxide (N2O), Hydrofluorocarbons (HFCs), Sulfur hexafluoride (SF6) and Perfluorocarbons (PFCs)
What are fugitive gases? Are these different than other greenhouse gases? Why are they in a unique category?	The fugitive gases are Hydrofluorocarbons (HFCs), Sulfur hexafluoride (SF6), and Perfluorocarbons (PFCs). These gases are not combusted like fossil fuels but are used in research and operational practices including refrigeration, electrical insulation, and research activities, which result in some direct emissions. They are measured because of these gases have a high global warming impact relative to their mass. For instance, SF6 has a global warming potential of 23,900 times that of CO2.
Under the GHG Protocol for measuring emissions by "scopes," what does MIT account for?	MIT measures emissions in Scopes 1, 2, and 3 according to the Protocol. Scope 1 includes direct emissions from sources owned and/or controlled by the Institute, including fuel used by owned buildings, campus vehicle fuel use, and fugitive gas emissions Scope 2 emissions include indirect emissions from purchased electricity, steam, and chilled water Scope 3 includes indirect emissions of fuels including leased buildings energy use and transmission/distribution losses from grid-purchased electricity.
What emissions factor do we use when calculating purchased-electricity emissions?	For purchased electricity, MIT uses the ISO New England (ISO NE) annual average emissions factor. *(The emissions factor is used to calculate the carbon intensity of energy purchased from the grid)*

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How does the Institute GHG inventory differ from our state and federal GHG mandated reporting?	MIT is required by law to report some emissions to a central reporting agency for public, state, and federal use. MIT reports only Scope 1 emissions to the EPA and Massachusetts Department of Environmental Protection (MassDEP). Because this reporting is based on calendar year and requires a different method for setting boundaries, figures may differ slightly between MIT's institutional inventory and the state and federal reporting databases.

ACCURACY

How accurate is the GHG inventory?	MIT has adopted a greenhouse gas inventory in line with leading industry practices, and Scope 1 data has been audited both internally and externally. The GHG inventory allows the Institute to assess emissions' source and trends, and observe the efficacy of mitigation measures over time.
Will MIT expand the inventory to include "Scope 3" sources such as waste, employee commuting, and business travel?	Methodology improvement and expansion of the inventory are priorities for the Institute. Scope 3 emissions from employee commuting, business air travel, purchasing and waste are being considered as areas of measurement to include in future inventories.
Are the data audited or verified?	The MIT Office of Treasury has audited inventory data for FY11 – FY15. Additionally, all Scope 1 data submitted for mandated reporting to the Mass DEP and federal agencies are audited by an independent third party.

GHG REDUCTION

What is MIT's GHG reduction goal?	MIT committed to a reduction goal of at least 32% below 2014 levels by 2030. This goal was set in the MIT Presidents' *Plan for Action on Climate Change* released in October 2015, which resulted from the *Campus Climate Conversation*, a year-long community dialogue on MIT's role in contributing to addressing the climate crisis.
Why was this goal chosen?	The reduction amount and timeframe of the MIT goal is aligned with the Obama Administration's Clean Power Plan released in August 2015 that calls for 32% reduction in GHG emissions from power plants by 2030. It also complements MIT's existing plans for capital renewal as outlined in the MIT 2030 framework, and makes understanding and minimizing climate impact a priority for all upcoming investment decisions about buildings, resources, and campus planning on campus that can reduce our climate impact.

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MIT's operational emissions are just a drop in the bucket, globally. Why are we reducing our emissions at all? Doesn't this put research and academic excellence at risk?	It is the role of higher education to address the challenges and needs of society through teaching and research. MIT is committed to contributing to understanding and solving the problem of climate change through academic pursuits while harnessing best practices and innovation in our operations on campus and becoming a test bed for low carbon operations. We believe it is important to 'walk the talk' and demonstrate the changes necessary globally to prevent disastrous climate change, starting right here on the Cambridge campus. Greater efficiency in use of resources will not put research at risk. Reducing emissions while continuing to build new buildings and expand and support research capacity will not be easy – but it is necessary. MIT must do its part in contributing to global emissions reduction, both through operational changes and modeling and research leadership sustainable practices. While our emissions footprint is small compared to the global total, our impact as a role model expands well beyond the walls of the Institute, showing our peer institutions and partner organizations what is possible. Through the demonstration of sustainable practices on campus, we can engage every student, faculty, and staff member in real-time learning about the possibility, challenges, and necessity of transitioning to a low-carbon society.
How does MIT plan to meet the Institutional GHG goal while continuing to build new buildings and expand research capacity?	MIT has already launched a campus climate action planning process to identify the strategies needed to meet this goal. MIT's first step to meet this goal is investment in upgrades to its on-campus cogeneration power plant. By investing in greater energy efficiency programs, building systems upgrades, and enhancement of the campus cogeneration plant, and by switching to less carbon-intensive energy sources, including renewable sources, MIT can reduce emissions. And -- equally as important – MIT can demonstrate leading solutions for sustainability by creating new standards for high-efficiency building and campus operations and by engaging the entire campus community in changing practices. The MIT Sustainability Working Group Recommendations released in Fall 2015 outline first steps toward this process, identifying strategies for low-carbon investment in sustainable design, construction, and renovation of buildings; green labs; stormwater and landscape management; materials management; procurement; and waste management.

COMPARISON

Is our inventory comparable to other institutions?	Yes – MIT uses the same standard for measurement as many of our higher education peers. However, institutions often use different operational boundaries (for example, some of our peers measure commuting or leased space while others do not), making an exact apples-to-apples comparison difficult.
What is the relative impact of MIT's carbon footprint? What does it compare to?	MIT's 2014 carbon footprint is equivalent to the annual energy use of 19,473 average homes in the U.S. *Calculated using the EPA GHG Equivalencies calculator.*