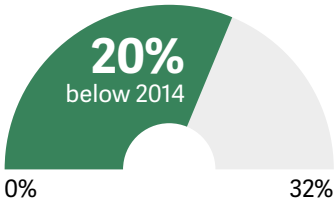
Climate Action Plan Update: Reducing MIT's Emissions

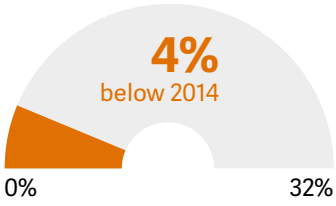
2018

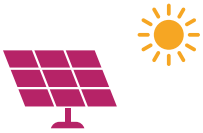
2018 PROGRESS TO DATE

Net Emission Reduction



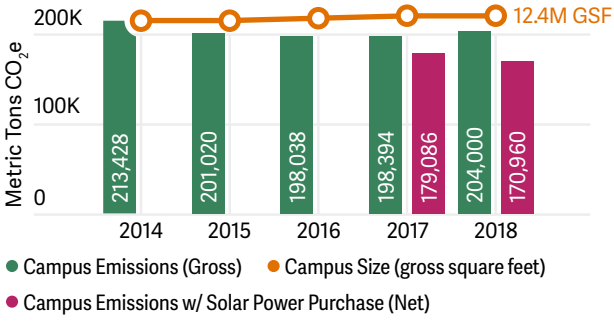
Gross Emission Reduction





88,774
Solar Mwh Produced

TOTAL CAMPUS EMISSIONS BY YEAR



2018 TOTAL EMISSIONS BY SOURCE

Emissions Source	$MTCO_2e$	Annual Change
Fleet Vehicle Fuels	1,026	-6%
Leased Buildings	4,937	+1%
Fugitive Process Gases	5,055	-11%
Owned Buildings	192,982	+3%
Total	204,000	+3%

MIT'S SOLAR ENERGY PURCHASE CONTRIBUTES TO PROGRESS TOWARDS 32% CAMPUS GOAL

Shifts region towards cleaner grid

MIT continues to advance towards its 2015 goal of a 32% reduction in campus greenhouse gas (GHG) emissions by 2030. Compared to 2017, net emissions, which account for the offset by the solar power purchase, have fallen 4.5%, bringing the total net emissions reduction to 20% below our 2014 baseline. Although on-campus gross emissions (which do not account for the solar energy purchase) increased 3% from 2017 to 2018, these emissions have dropped a total of 4% since 2014.

Through the solar energy purchase agreement, Summit Farms produced 88,774 megawatt hours for MIT in 2018, contributing a net carbon offset of 33,040 metric tons carbon dioxide equivalent ($MTCO_2e$). The power purchase agreement partnership between MIT, Boston Medical Center and Post Office Square, continues to be viewed as an important and scalable multi-party model for other organizations.

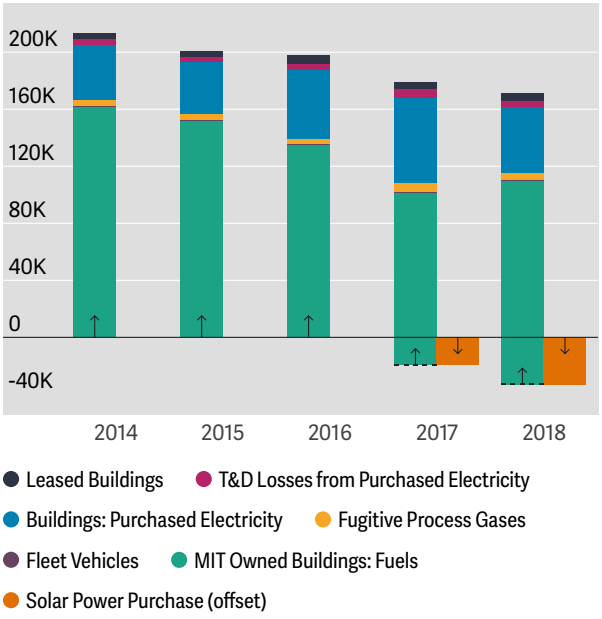
SUMMIT FARMS SOLAR FACILITY

Generating clean, emissions free power

Summit Farms Solar LLC is a solar photovoltaic facility in Currituck County North Carolina, operated by Dominion Energy. MIT has contracted through a long-term power purchase agreement for the purchase of 73% of the electricity produced. MIT has chosen to retire the renewable energy credits associated with the purchase.

The offsets produced by Summit Farms' clean, emissions-free power are clear and tangible. The solar facility displaces more carbon-intensive sources of energy, in a region where forty percent of its power is generated from coal. In addition to displacing power, the solar farm has helped to facilitate the early retirement of a large coal-fired plant nearby, by providing substitute power to make up for the coal plant's contractual peak-power delivery obligations. The owners of the coal plant are paying the purchasing partners (that include MIT) to provide substitute capacity as they come offline, making it economically feasible for the coal plant to retire ahead of schedule.

EMISSION CHANGES BY SOURCE & YEAR



MIT's GHG reduction plan relies on a portfolio of strategies to reach its minimum reduction goal of 32% by 2030, including mitigating the impact of expected campus growth. The chart below shows key strategies of the plan and their estimated impact on emissions through 2030. Expanding renewable energy purchases can enable additional reductions.

DRIVERS OF CHANGE IN EMISSIONS VARY YEAR-TO-YEAR

As expected, GHG performance on campus is not linear. External and internal drivers affect our emissions on a daily basis and in turn annually. In fiscal year 2018, Cambridge experienced more days that required heating, but slightly fewer days requiring cooling, resulting in higher energy use and $MTCO_2e$. In addition, required operational and maintenance changes in MIT's central utility plant reduced overall efficiency, which also increased emissions. The growth in energy demand from existing buildings was minimized with energy efficiency investments across campus. Emissions related to our fleet vehicles and purchase of specialty research gases declined slightly, while emissions associated with our leased space increased by 1%. Solar power purchased increased dramatically as the new system became fully operational in 2018.

From 2017-2018, major drivers and their impact on emissions are estimated below:

+1,600 $MTCO_2e$ +	**Campus Growth**
+2,000 $MTCO_2e$ +	**Power Plant Operations**
+4,000 $MTCO_2e$ +	**Weather – More Heating Days**
-1,200 $MTCO_2e$ –	**Energy Efficiency Projects**

GETTING TO 32% AND BEYOND: MIT GHG REDUCTION PLAN