

Department of Defense

Report on Greenhouse Gas Emission Levels



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Office of the Assistant Secretary of Defense
for Sustainment

The estimated cost of this report or study for the Department of Defense is approximately \$4,550 for the 2021 Fiscal Year. This includes \$3,740 in expenses and \$810 in DoD labor.

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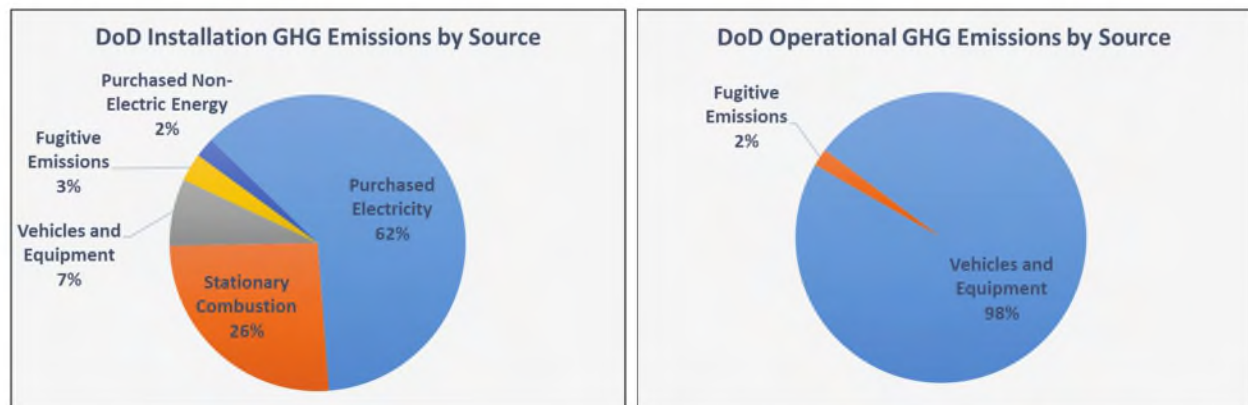
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I. EXECUTIVE SUMMARY

This report is in response to section 328 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (FY) (Public Law 116-283) that directs the Secretary of Defense to provide a report on the total level of greenhouse gas (GHG) emissions for each of the last 10 fiscal years.” The report shall include the agency wide total, breakdowns by military department, and delineations between installation and operational emissions. This report provides the requested information on emission levels at the Department of Defense (DoD).

The Department considers climate as an essential element of national security and continues to assess the impacts of climate change on security strategies, operations, and infrastructure. Mitigating the impacts of climate change will require significant global reductions in GHG emissions. Tracking and reporting of GHG emissions represents a critical step in the development of strategies to reduce emissions and mitigate climate threats, which aligns with the Department’s broader goal of increasing resilience.

In FY 2019, DoD emissions totaled 55 million metric tons of carbon dioxide equivalent (MMT_{CO₂e}).¹ Of this total 21 MMT_{CO₂e} (38%) resulted from emissions at installations and 34 MMT_{CO₂e} (62%) resulted from emissions from operational sources. The vast majority of emissions at DoD are the result of the combustion of fossil fuels, particularly jet fuel, in operational vehicles and equipment. In FY 2019, emissions from vehicles and equipment accounted for 98 percent of operational emissions and 61 percent of total DoD emissions. Jet fuel accounted for approximately 80% of operational emissions. The majority of installation emissions are the result of indirect emissions from purchased electricity and emissions from the combustion of fuel in buildings (62% and 26%, respectively).



DoD’s emissions have been trending downward since tracking and reporting began in 2010. DoD’s emissions in FY 2019 were 29.1 percent lower than the FY 2008 base year and 1.1 percent lower than in FY 2018. The Department’s focus on energy resilience and energy

¹ A carbon dioxide equivalent, abbreviated as CO₂e, is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

security contributes to reductions of GHG emissions, as it includes reducing facility energy consumption, meeting renewable energy goals, advancing sustainable buildings, and improving efficiency.

However, the emission reductions required to meet the Administration’s proposed goals will require targeted and specific GHG reduction strategies that go beyond the reductions realized through existing initiatives. Recognizing the Department’s leadership role within the federal government as well as its ability to be a test bed for new technology, the Department can be a leader in both energy resilience and GHG reductions while simultaneously enhancing capability and mission resilience.

II. BACKGROUND

The Energy Independence and Security Act of 2007 (EISA) (42 U.S. Code §17143) requires Federal agencies to compile and submit to the Director of the Office of Management and Budget (OMB) an annual report on the implementation status of initiatives to improve energy efficiency, reduce energy costs, and reduce GHG emissions. The data is used by OMB and the Council on Environmental Quality (CEQ) to track compliance with statutory requirements and progress toward Executive Order goals.

Tracking and reporting agency GHG emissions was first implemented in 2010 under Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance. In 2015, E.O. 13693, Planning for Federal Sustainability in the Next Decade, was signed and required agencies to propose percentage targets for reductions of GHG emissions by the end of FY 2025 relative to a FY 2008 baseline. In FY 2018 E.O. 13834, Efficient Federal Operations, revoked E.O. 13693 and removed the requirement to set percentage reduction targets but retained the requirement to track and report on GHG emissions. In February 2021, E.O. 14008, Tackling the Climate Crisis at Home and Abroad, was signed. This E.O. establishes it as policy that climate considerations are an essential element of US foreign policy and national security and acknowledges that responding to the climate crisis will require “both significant short-term global reductions in greenhouse gas emissions and net-zero global emissions by mid-century or before.”

The Department of Energy’s Federal Energy Management Program (FEMP) provides Federal agencies with resources for reporting GHG emissions and other energy and sustainability metrics. Agencies use FEMP’s Annual Energy Management Data Report workbook for comprehensive reporting of fiscal year data, including GHG emissions. FEMP consolidates the input from all Federal agencies for CEQ and OMB. To date, the DoD has submitted reports for the FY 2008 baseline, and for FY 2010 through FY 2020.² The GHG emissions data presented in this report were obtained from these annual reports.

² FY 2020 emissions data have not been published and are not included in this report.

III. ABOUT THE DATA

The data provided in this report include two categories of emissions known as scope 1 and scope 2 emissions. Scope 1 emissions are *direct* emissions primarily from fuel consumption at installations and by non-tactical vehicles and equipment and from fugitive gases and emissions from on-site waste and wastewater treatment. Scope 2 emissions are *indirect* emissions from purchased energy such as electricity and steam. As of FY 2017, agencies are no longer required to report scope 3 emissions. These emissions result from agency activities but are from sources not owned or directly controlled by the agency, such as business travel and commuting. It is likely that agencies will be required to report scope 3 emissions again in the future.

The FEMP Annual Energy Management Data Report categorizes emissions by Standard Operations and Non-Standard Operations. *Standard Operations* generally refers to operations at installations and includes fuel consumption at buildings and from non-tactical fleet vehicles. *Non-Standard Operations* are vehicles, vessels, aircraft and other equipment used for combat support, combat service support, tactical or relief operations, training for such operations, law enforcement, emergency response, or spaceflight (including associated ground-support equipment). This closely tracks with the DoD definition of *operational energy*, which was defined in FY 2009 as “the energy required for training, moving, and sustaining military forces and weapons platforms for military operations.” International emissions are captured under Non-Standard Operations.

The data in this report present agency wide total scope 1&2 emissions and breakdowns by military department delineated between installation and operational emissions for FY 2010 through FY 2019.^{3,4} Data are provided in millions of metric tons of carbon dioxide equivalent.⁵

GHG Emission Sources by Scope

Scope 1 - Direct emissions from sources that are owned or controlled by DoD, including fossil fuel combustion from stationary and mobile sources and fugitive emissions (such as leaks).

Scope 2 – Emissions resulting from the generation of electricity, heat, or steam purchased by DoD.

Scope 3 - Emissions that result from DoD activities but are from sources not owned or directly controlled by DoD (such as business travel and commuting).

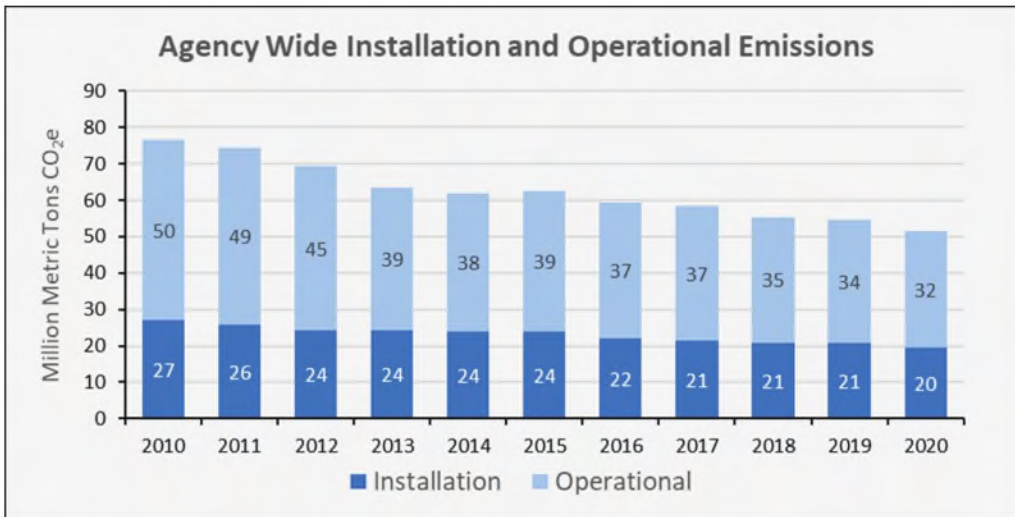
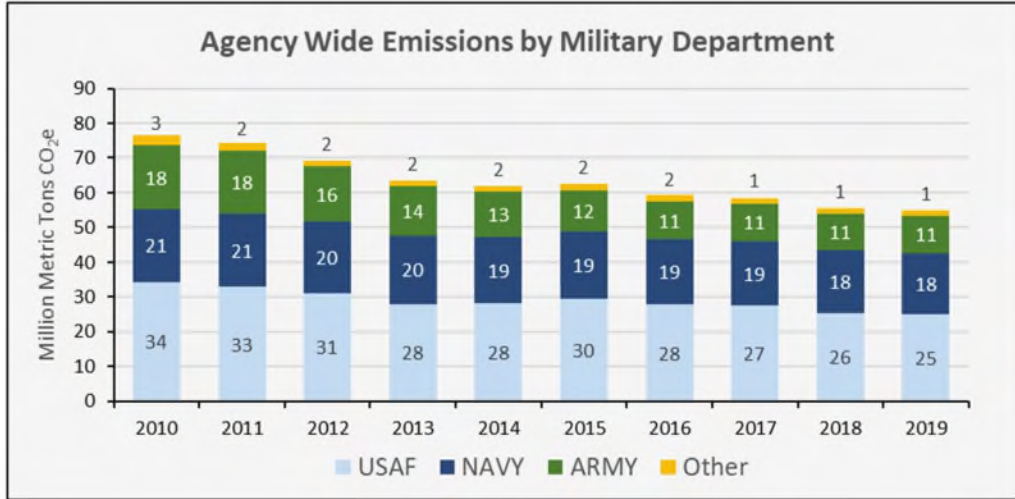
³ Emissions from the United States Marine Corps are included in Department of the Navy totals.

⁴ The “Other” category includes emissions from defense agencies.

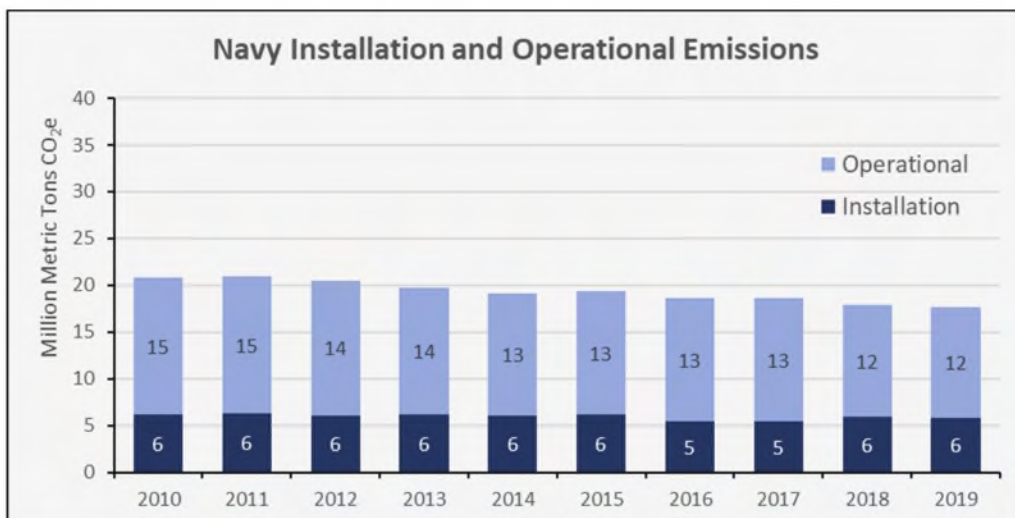
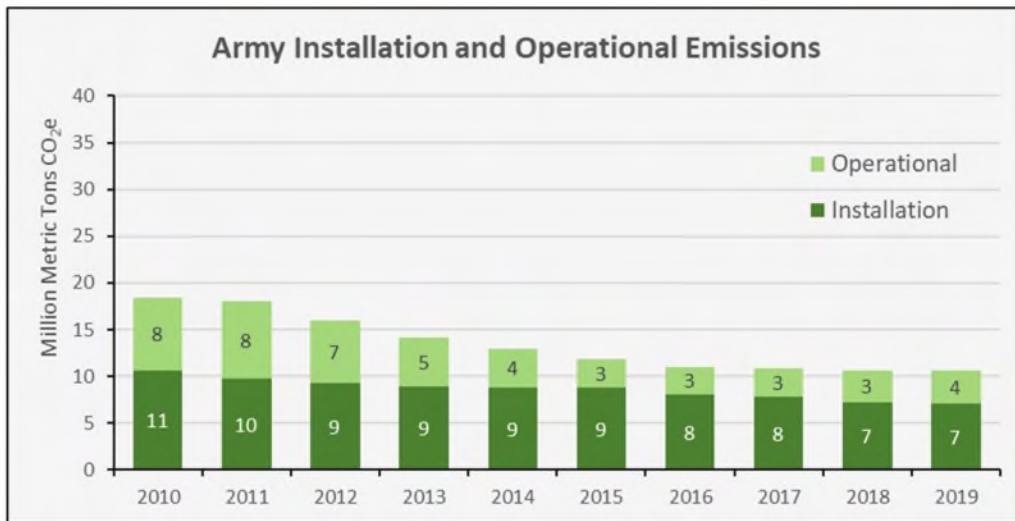
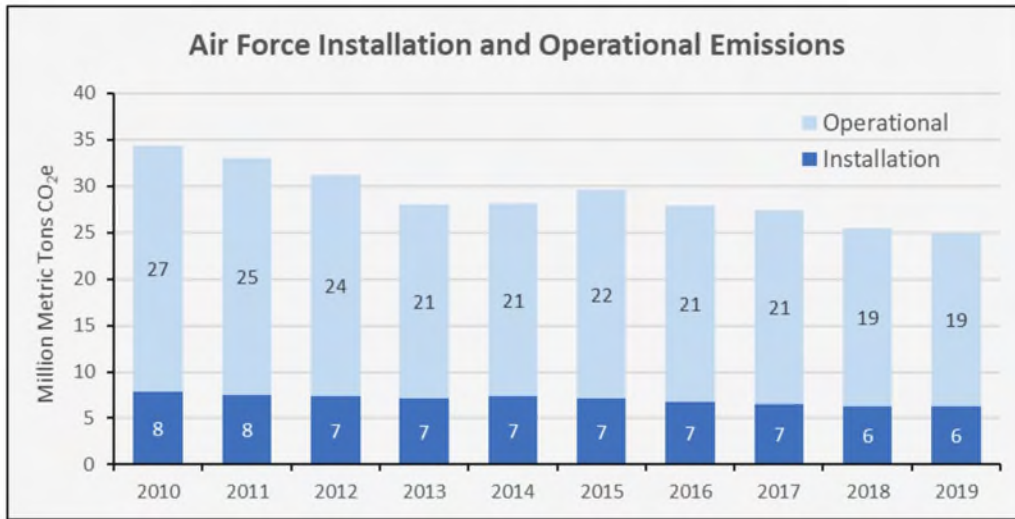
⁵ A carbon dioxide equivalent, abbreviated as CO₂e, is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same GWP.

IV. DoD GHG EMISSIONS FROM FY 2010 to FY 2019

Agency Wide Emissions



Military Department Emissions



Appendix A. DATA TABLES

DoD Agency Wide Emission (MTCO₂e)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Installation	27,014,937	25,680,151	24,387,027	24,098,546	23,820,379	23,927,275	22,068,190	21,320,275	20,872,157	20,683,925
Operational	49,508,306	48,753,207	44,945,277	39,499,301	38,056,442	38,671,866	37,239,955	37,073,325	34,534,487	34,088,337
Total Emissions	76,523,243	74,433,358	69,332,305	63,597,848	61,876,821	62,599,140	59,308,145	58,393,599	55,406,644	54,772,262

Department of the Air Force Emissions (MTCO₂e)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Installation	7,818,302	7,511,312	7,438,053	7,177,727	7,363,524	7,139,002	6,813,348	6,558,246	6,319,535	6,264,132
Operational	26,592,638	25,495,869	23,742,258	20,785,066	20,739,129	22,444,204	21,099,472	20,903,085	19,187,188	18,692,165
Total Emissions	34,410,939	33,007,182	31,180,311	27,962,794	28,102,652	29,583,206	27,912,821	27,461,331	25,506,723	24,956,296

Department of the Army Emissions (MTCO₂e)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Installation	10,677,212	9,756,749	9,355,221	8,905,694	8,854,049	8,844,495	8,126,767	7,833,821	7,290,688	7,107,834
Operational	7,713,463	8,265,408	6,634,458	5,218,663	4,122,266	2,991,687	2,856,756	3,042,156	3,383,887	3,531,597
Total Emissions	18,390,675	18,022,157	15,989,679	14,124,357	12,976,316	11,836,182	10,983,524	10,875,978	10,674,575	10,639,431

Department of the Navy Emissions (MTCO₂e)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Installation	6,182,905	6,286,391	6,100,351	6,141,043	6,039,954	6,117,342	5,477,751	5,384,375	5,954,879	5,786,730
Operational	14,603,433	14,677,602	14,388,143	13,564,831	13,069,283	13,209,893	13,114,180	13,208,457	11,886,933	11,896,774
Total Emissions	20,786,338	20,963,994	20,488,494	19,705,874	19,109,238	19,327,234	18,591,931	18,592,832	17,841,811	17,683,505