VANDERBILT UNIVERSITY INVENTORY OF GREENHOUSE GAS EMISSIONS 2014

Between 2005 and 2014, Vanderbilt University's GHG emissions have decreased by:



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Vanderbilt University Inventory of Greenhouse Gas Emissions 2014

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Produced collaboratively by the Sustainability and Environmental Management Office, Plant Operations, Campus Planning and Construction and Vanderbilt News and Communications.

The Sustainability and Environmental Management Office (SEMO) is a collaborative venture between Vanderbilt Environmental Health and Safety and Vanderbilt University's Plant Operations. SEMO's mission is to initiate, promote, coordinate, evaluate and encourage environmental management and sustainability initiatives that improve Vanderbilt's impact on the community and environment.

Plant Operations provides facilities support for all construction, renovation and routine maintenance of University Central space and facilities; housekeeping services for approximately 5.8 million square feet of academic, administrative, residential, and recreational space; grounds care for 330 acres that are a registered arboretum; turf care for athletic fields; and utilities for University Central and the Medical Center.

Campus Planning and Construction (CPC) aims to present a physical environment that meets the programmatic requirements of its customer base while visually expressing the quality to which Vanderbilt University aspires. Functions closely related to the delivery of new facilities are performed by the Facilities Information Services unit within CPC. This group addresses the inventory and management of Vanderbilt's construction document library, GIS mapping and documentation of all utilities and tracking of floor plans for the Space Inventory and Accounting processes.

Vanderbilt University's award-winning **Division of Public Affairs** which includes **Vanderbilt News & Communications** serves as the institution-wide hub for communications, marketing and public policy initiatives. Whether developing unique relationships with and communicating to Vanderbilt's vast array of external and internal constituencies, promoting government and community initiatives, creating a broader, deeper and more complete understanding of Vanderbilt, each and every activity of the division supports the University's academic missions of teaching, research, service and patient care.

Front page graphic created by Chelsea Hamilton and Jennifer Wu.

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EXECUTIVE SUMMARY

This Greenhouse Gas (GHG) emissions inventory is intended to portray Vanderbilt's current carbon footprint as accurately as possible and to provide trending information to show progress in GHG emissions reductions from 2005-2014. This GHG inventory was developed by Vanderbilt's Sustainability and Environmental Management Office (SEMO).

This report, a supplement to previous reports for 2005 to 2013¹, establishes Vanderbilt's GHG emissions for calendar year 2014 so that the Vanderbilt community can better understand its own unique impact on the environment and determine the most effective improvement strategies to implement in the future. Trending data for 2005 through 2014 is provided in Appendix B and discussed below.



Findings

Total Vanderbilt GHG Emissions, Calendar Years 2005-2014.

¹ Vanderbilt University's Inventory of Greenhouse Gas Emissions 2005-2014 is available at <u>www.vanderbilt.edu/sustainvu.</u>

Between 2005 and 2014, Vanderbilt University's GHG emissions have decreased by:



- VU's total GHG emissions for calendar year 2014 were 412,676 Metric Tons of Carbon Dioxide Equivalent (MTCO₂E), down 13 percent from 2005 and 18 percent from the all-time high reached in 2008².
- The portion of Vanderbilt University's Scope 1 GHG emissions required to be reported to the Environmental Protection Agency (EPA) for calendar year 2014 were 139,060 MTCO₂E.
- GHG emissions from Academic and Research Areas have decreased by 19 percent since 2008, and GHG emissions from Patient Care Areas have decreased by 17 percent since 2008³.
- Overall GHG emissions are down 18 percent from the all-time high reached in 2008, even though square footage has increased by 12 percent, or by almost two million square feet, since 2008⁴.
- GHG emissions from the power plant dropped 10 percent from 2013 to 2014 from running on all natural gas for one and a half months and emissions will ultimately be reduced by as much as 40 percent through the plant conversion⁵.
- 89 percent of GHG emissions in 2014 came from purchased electricity, coal and natural gas use at the campus co-generation power plant and faculty and staff commuting⁶.
- Coal use at the Vanderbilt Power Plant was discontinued in November 2014. Because of the conversion of the power plant and significant construction underway throughout calendar year 2014, more kilowatt-hours were purchased from Tennessee Valley Authority (TVA) to make up for periodic decreases in capacity at the power plant during construction.

² Additional information about the University's total GHG emissions for 2005-2014 can be found in Table B.1 in the appendices.

³ Additional information about GHG emissions from Academic and Research Areas and Patient Care Areas can be found in Sections III and IV and Tables B.1, B.2 and B.3 in the appendices.

⁴ Additional information about the University's total GHG emissions for 2005-2014 and Gross Square Footage can be found in Table B.3 in the appendices.

⁵ Additional information about the University's total GHG emissions for 2005-2014 can be found in Table B.1 in the appendices.

⁶ Additional information about the sources of GHG emissions can be found in Figure C.1 in the appendices.

Vanderbilt Power Plant Is Now Coal Free!

In 2013, Vanderbilt University began the conversion of its co-generation power plant from being fueled with both coal and natural gas to being fueled entirely by natural gas. The conversion reached a <u>major milestone</u> on November 19, 2014 when the plant burned its last piece of coal! The plant now runs exclusively on natural gas.

The conversion of the plant has increased its operational efficiency while also contributing to significant environmental benefits. Greenhouse gas emissions will ultimately be reduced by as much as 40%. The conversion also decreased the emission of particulate matter by more than 50% and virtually eliminated emissions of mercury, hydrogen chloride, sulfur dioxide and other air pollutants. Vanderbilt has eliminated the delivery of 2,300 trucks of coal each year, 15 million pounds of coal ash waste produced by the plant, and has eliminated the burning of 105 million pounds of coal each year. Other benefits include a reduction of noise pollution, and elimination of associated fuel use and emissions from trucking coal to the power plant⁷.



Future Plans

This inventory provides campus stakeholders with a consistent means of comparing annual GHG emissions and sufficiently detailed information to make informed decisions to determine reduction strategies. Annual emissions inventories will be conducted in the future to measure progress, which will continue to be made publicly available on the SustainVU website⁸.

⁷ More information regarding the VU Power Plant Conversion can be found at <u>http://www.vanderbilt.edu/sustainvu/2013/04/vu-power-plant-faq/</u>

⁸ www.vanderbilt.edu/sustainvu