Sustainable Buildings and Energy Sources Work Group

Report and Policy Recommendations – March 28, 2013

BACKGROUND ON WORK GROUP

In May 2007, President Mote signed the American College and University Presidents Climate Commitment and established the Office of Sustainability. Since that time, the university adopted a Climate Action Plan (2009) and established the University Sustainability Council (2009). The CAP was developed by a diverse workgroup of key campus stakeholders and included over 40 strategies to reduce greenhouse gas (GHG) emissions. The University Sustainability Council and the Office of Sustainability are charged with monitoring and measuring campus progress with regards to these reductions and with advising the President on strategies related to the CAP commitments.

The majority of the CAP strategies were developed in 2008. Since then, the university has made substantial progress in reducing its GHG emissions as reflected in the annual GHG inventory reports. However, in summer 2011, the Office of Sustainability undertook an effort to interview staff from several campus units regarding the strategies and their implementation. During this period, OS also assessed a new national sustainability metric system designed by AASHE (Advancement for Sustainability in Higher Education) to evaluate its broad set of metrics to identify sustainability issues that were not yet being measured.

This effort culminated in a presentation to the University Sustainability Council in fall 2011. Ten significant issues were identified and grouped into 4 topic areas. The Council elected to establish a Sustainable Buildings and Energy Sources Work Group to further evaluate progress under the CAP and provide recommendations in light of the stated 2015 and 2020 reduction goals. The Workgroup, chaired by Carlo Colella, Associate Vice President – Facilities Management, was formed in September 2012 and has met throughout the current academic year. Other members include:

David Daily	Graduate Student
Sally DeLeon	Office of Sustainability
Mary Hummel	Student Affairs
Steve Hutcheson	Cell Biology & Molecular Genetics
Eric Kazyak	Undergraduate Student
Joan Kowal	Energy Manager
Stephanie Lansing	Environmental Science and Technology
Scott Lupin	Office of Sustainability
Fran LoPresti	Division of Information Technology
Kimberlee Robertella	Center for Social Value Creation
Reinhard Radermacher	Mechanical Engineering
Mark Stewart	Office of Sustainability

WORKING GROUP RECOMMENDATIONS

The university recently entered the most aggressive period (2012-2020) of the Climate Action Plan, which established goals of reducing the university's carbon footprint 25% by 2015 and 50% by 2020. Though a challenge, the Sustainable Buildings and Energy Sources Work Group believes these goals are attainable and presents the following recommendations to meet CAP targets for power and operations:

- **Policy on Carbon Neutral New Development**
    - This policy creates a cap on carbon (greenhouse gas) emissions associated with new campus development so the university can focus on decreasing emissions associated with existing infrastructure and operations instead of increasing its carbon footprint. The policy corresponds to chapter 3, section B, strategy 2.0 (Carbon Neutral New Construction) in CAP. See attached draft policy for details.

- **Policy on Implementing Energy Conservation in Existing Buildings**
    - This policy sets a standard for energy performance of existing buildings and offers tools for each campus unit to implement energy projects to meet the standard. The policy corresponds to chapter 3, section B, strategy 1.0 (Energy Performance Contracts and Existing Building Retrofits) in CAP. See attached draft policy for details.
    - Energy conservation measures will be funded through the Energy Reserve Fund, third party financing (Maryland Clean Energy Center), and the Sustainability Fund.

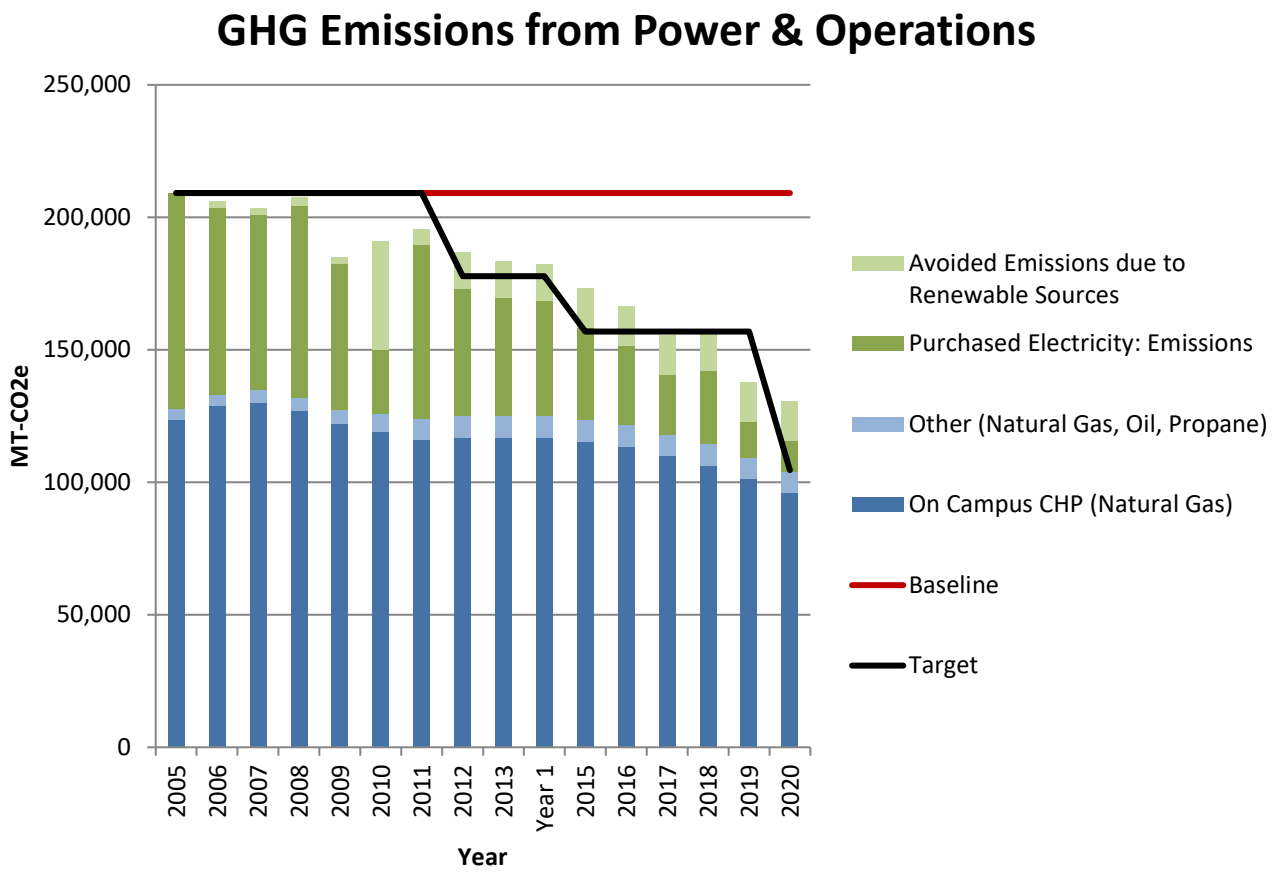
- **Evaluate the feasibility to reduce emissions from on-campus energy generation 50% by 2020**
    - Create a multidisciplinary team to prioritize funding and establish milestones for studying this goal and determining its feasibility. The team will investigate cost-effective solutions to reducing emissions, which may include carbon sequestration and biofuel utilization. University should allocate annual funding to ensure the goal is met.
    - Commit $100k for first year to fund report from group to identify milestones and additional funding requirements.

- **Promote research and student involvement in our commitment to become carbon neutral**
    - Establish a process for using the Energy Reserve and Sustainability Fund for pilot projects or class labs that promote carbon reduction initiatives.
    - Commit $250,000 from the Energy Reserve Fund to fund research for carbon reduction strategies. (Student Sustainability Fund may propose a similar commitment but at a lower funding level.)

IMPACT OF POLICY RECOMMENDATIONS ON CARBON EMISSIONS

Policies on carbon neutral new development and energy conservation play essential roles in capping the growth of emissions and driving down emissions to CAP levels. The Policy on Carbon Neutral New Development will allow the campus to continue to grow without adding emissions. With growth of emissions capped, the campus can focus on improving the energy performance of its facilities. The Policy on Implementing Energy Conservation in Existing Buildings will significantly reduce emissions, preventing approximately 36,000 MT-CO2e in 2020 alone.

Figure 1: Projecting combined GHG emissions from purchased power and stationary sources shows that with the recommended policies in place, UMD would be on track to meet its 2015 CAP target of a 25 percent reduction and will make measurable progress toward achieving the 2020 goal of a 50 percent reduction (the black line depicts CAP targets). Additional strategies will be required to reduce emissions from on-campus generation.



DRAFT POLICIES

Policy on Carbon Neutral New Development

I. Purpose

The University of Maryland President and Senate approved the Climate Action Plan (CAP) in 2009, which set goals of cutting the university's carbon footprint in half by 2020 and reaching carbon neutrality by 2050. The physical growth of campus facilities poses the greatest challenge to meeting those goals. This policy creates a cap on carbon (greenhouse gas) emissions associated with new campus development so that the university can focus on decreasing emissions associated with existing infrastructure and operations instead of increasing its carbon footprint. The policy corresponds to chapter 3, section B, strategy 2.0 (Carbon Neutral New Construction) in CAP.

II. Applicability

This policy applies to all new construction, major renovations, and major program changes (e.g. converting classrooms/offices into laboratories, adding data centers to existing facilities, etc.).

III. Policy

The University of Maryland will neutralize carbon emissions associated with campus growth by:

A. Requiring that all new construction and major renovation projects (renovation greater than 25% of gross building space or $1,000,000) will achieve at least a 30% improvement over ASHRAE 90.1 for new buildings, and 26% for existing buildings through the combination of design, equipment selection, and/or on-site renewable energy. This flexibility will allow each project to best design for its unique requirements or site location. Submittal of an as-built Energy Model to FM's Energy Manager will be used to validate that this requirement is met for each project.

B. Requiring Energy Use Intensities (kBtu/GSF) for all new construction and major renovation projects that are in the top tier of higher education design based on building type (e.g. laboratories, residence halls, classroom buildings, dining halls, etc.) as found in the Energy Star Portfolio Manager. Facilities Management will confirm the design EUI during the commissioning process and continuously monitor and take corrective action as needed to ensure that buildings continue to operate as designed.

C. Purchasing off-site, bundled renewable energy for a minimum of 20 years for the remaining energy demand of the new building, or program change that resulted in an energy increase.

IV. Effective Date

The effective date of this policy is January 1, 2014. (Pending date of Senate/President approval)

Policy on Implementing Energy Conservation in Existing Buildings

I. Purpose

The University of Maryland strives to reduce its energy consumption and costs, meet the greenhouse gas reduction goals of the Climate Action Plan, and meet the US Department of Energy's Better Buildings Challenge, which calls on the owners of commercial and institutional buildings to reduce energy consumption 20% by 2020. This policy sets a standard for energy performance of existing buildings at the University of Maryland, College Park and offers tools for each campus unit to implement energy projects to meet the standard. The policy corresponds to chapter 3, section B, strategy 1.0 (Energy Performance Contracts and Existing Building Retrofits) in the University of Maryland Climate Action Plan (CAP), approved by the President and Senate in 2009. Successful implementation of this policy will significantly reduce the greenhouse gas emissions associated with campus operations and help the university meet its CAP goals.

II. Applicability

This policy covers every facility at the University of Maryland, College Park and therefore applies to the occupants and operators of every facility on campus including colleges/schools, auxiliary services, and state-support entities.

III. Policy

A. Unit Accountability – All campus units (i.e. college/school, auxiliary service, OIT, etc.) are responsible for achieving at least 20% energy reductions in their facilities by 2020. (Major renovations greater than 25% of gross building space or $1,000,000 must meet the policy for Carbon Neutral New Development. Units may take advantage of loans and grants from the Energy Reserve Fund and/or the University Sustainability Fund to implement projects. Each major campus unit will identify a point-person to notify Facilities Management (FM) of planned projects to ensure adequate measurement and verification, receive annual energy reports from FM, report annually on other sustainability projects within their unit, and meet at least once annually with point-persons from other units to share ideas for reducing energy consumption in campus facilities.

B. Implementation of Energy Conservation Measures (ECMs) – Facilities Management will enhance a minimum of 1,000,000 gross square feet of building space (state and self-supported) with a targeted carbon reduction of 9500 MT-CO_2e every two years with ECMs resulting in average building energy reductions of at least 20%. ECMs implemented by Facilities Management can count toward the reductions specified in section III.A of this policy.

C. Energy Use Intensity Tracking – Facilities Management will track the Energy Use Intensity (EUI) of campus facilities to ensure that new and existing buildings maintain or improve their energy performance during their lifespan. This process will occur over an implementation period of 5 years from effective date of this policy and include all buildings exceeding 50,000 GSF.

D. Data Center Centralization – In accordance with the Information Technology Strategic Plan action Items 1.1 and 1.11, units are expected to utilize centralized data centers operated by the Division of Information Technology in lieu of creating decentralized data centers in their own facilities where feasible.

IV. Effective Date

The effective date of this policy is January 1, 2014. (Pending date of Senate/President approval)