

## Climate Action Plan Executive Summary

### Introduction

The University of Colorado Denver Chancellor's Advisory Task Force on Sustainability has developed this draft of a Climate Action Plan to fulfill requirements set forth as signatories to the American College and University President's Climate Commitment (ACUPCC) and includes goals established by the State of Colorado Governor's Greening of State Government Executive Order. The University considers this plan to be a dynamic and fluid document that can and will be altered as the campuses grow, funding is made available and new technologies arrive. In accordance with the University of Colorado Board of Regent's Sustainability Resolution passed in October 2009, UC Denver will submit a comprehensive climate action plan by no later than June 30, 2010.

### Greenhouse Gas Emissions Scopes

Scope 1 GHG emissions are those directly occurring from sources that are owned or controlled by the UC Denver, including on-campus stationary combustion of fossil fuels and mobile combustion of fossil fuels by fleet vehicles. Scope 2 emissions are indirect emissions generated in the production of electricity by Xcel Energy and consumed by the university. Scope 3 emissions are all the other indirect emissions that are "a consequence of the activities of the institution, but occur from sources not owned or controlled by the institution" such as commuting, air travel for university activities, waste disposal, etc.

### GHG Emissions Inventory, Scopes 1 & 2

Scopes 1 & 2 emissions (natural gas and gasoline/diesel combustion, purchased electricity) for the baseline year of 2006 totaled 112,368 MT-CO<sub>2</sub>-e.

### Emissions Trajectory

Considering campus growth, a business-as-usual approach, which assumes no additional GHG reduction initiatives are implemented, would generate 153,244 MT-CO<sub>2</sub>-e by 2020, a 36.8% increase from the baseline. A trajectory line drawn to 2050 would assume growth to an estimated 240,000 MT-CO<sub>2</sub>-e, an increase of 113% from the baseline.

### Normalizing for Growth

UC Denver has and will continue to add a number of buildings to accommodate growth in academic and research programs, totaling nearly 1 million new square feet from 2006 - 2020. The Energy Use Index (EUI), or kBtu per square foot, for the baseline year of 2006 is 303. EUI measured for 2009 is 227, a decrease of 25% from baseline and estimates for 2020 assume an EUI of 200, a 52% decrease from baseline. This represents a decrease of 18% in GHG emissions per square foot to 2020.

### GHG Emissions Targets & Phasing

Consistent with other CU System campuses and with the State of Colorado's Climate Action Plan, the Task Force recommends the following goals for absolute GHG emissions reductions:

- By 2020 - 20% decrease from baseline = 89,894 MT-CO<sub>2</sub>-e
- By 2030 - 50% decrease from baseline = 56,020 MT-CO<sub>2</sub>-e

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- By 2050 - 80% reduction from baseline = 22,408 MT-CO<sub>2</sub>-e

These reduction goals are planned to be met in four phases. The majority of emphasis will be placed on meeting the most immediate goals through 2020, Phases 1 & 2. Later phases will be conceptualized as funding and technology allow. The phases are as follows:

- **Phase 1 (2010 - 2012):** Fulfillment of the Governor's Executive Order on the Greening of State Government - 10% reduction in EUI, 20% reduction in paper use, 10% reduction in water consumption, 25% reduction in petroleum use and a "zero-waste" goal for all construction and facility operations.
- **Phase 2 (2012 - 2020):** Energy Efficiency, Conservation and Small-Scale Renewables - 20% reduction in GHG emissions
- **Phase 3 (2020 - 2030):** Large-Scale Renewables - 50% decrease in GHG emissions
- **Phase 4 (2030 - 2050):** New and Emerging Technologies - 80% reduction in GHG emissions

**Emission Reduction Initiatives to 2020**

The university is realizing a significant energy use and GHG reduction from the baseline in building a new, modern and more efficient campus. This has and will continue to result in a significant drop from the business-as-usual scenario, with an anticipated reduction of 27,991 MT-CO<sub>2</sub>-e. Other emissions reductions must be realized in order to meet the 2020 goal of an additional 35,622 MT-CO<sub>2</sub>-e.

Suggested initiatives to 2020 include:

- Behavioral Conservation Campaign
- IT Greening
- Power Grid Changes (Xcel Energy)
- LEED Projects and International Energy Conservation Code 2009 Adoption
- Campus Energy Efficiency Projects

These initiatives are projected to save an addition 24,338 MT-CO<sub>2</sub>-e, leaving a variance between emissions reductions and the 2020 goal of 11,284 MT-CO<sub>2</sub>-e

**Potential Emission Reduction Initiatives to Reach 2020 Goal**

The remaining emissions after the suggested reduction initiatives are implemented total 11,284 MT-CO<sub>2</sub>-e. The university administration will choose how the remaining emissions will be reduced from a number of options suggested by the Task Force. Costs, benefits, and feasibility are being studied for these options. These options include:

- Geothermal Heating and Cooling
- Solar Photovoltaic
- Passive Solar Hot Water
- Purchased Wind Power
- Renewable Energy Certificates
- Carbon Offsets

**Scope 3 GHG Emissions**

UC Denver's Scope 3 emissions, or those emissions associated with the purpose of the university but outside of the university's direct financial control, totaled 44,998 MT-CO<sub>2</sub>-e in

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2007. Of this, nearly 80% is personal automobile commuting and airline travel and the rest lies in materials such as water, fuel and paper. UC Denver will develop programs that will address Scope 3 emissions in introducing more commuter options, more efficient procurement processes and waste reduction initiatives.

#### **Feasibility Assessments**

Making investments to reduce GHG production requires that the University carefully weigh the social and potentially mandated requirements for reducing GHG production and our fiduciary responsibility as stewards of public funds. To ensure the university balances these requirements, internal criteria will be established to guide investments focused on reducing GHG production, and they may be modified to meet the needs of the institution and/or changes in the operating environment.

#### **Funding Mechanisms**

Various funding opportunities exist for GHG reduction projects from both within and outside of the university. Internal funding could come from general fund allocations, user fees, and the issuance of treasury bonds. The establishment of a revolving loan fund is crucial to the success of climate action related projects to insure that savings from projects can be reinvested back into the loan and dispersed as projects are selected. External funding could come from local, state and federal grant funding programs, private contributions and venture capital groups.

#### **Institutional Commitments**

The development of this action plan coincides with three developments at UC Denver that lead to a more defined commitment to planning for climate action: The University of Colorado Denver Strategic Plan 2020, University Priority 7 - *Secure the resources to achieve our vision while being responsible stewards of those resources*; The signing of the American and College University President's Climate Commitment; and the adoption of a resolution by the Board of Regents in support of sustainability efforts and climate action planning.

#### **Academic and Research Programs**

UC Denver has a number of established programs at the undergraduate, graduate and professional levels that concern themselves with climate change and general sustainability curriculum and research. In many ways, these innovative programs have been ahead of UCD administrative decisions regarding climate change and sustainability issues and are now informing the rest of the University in climate action planning.

#### **Conclusion**

When initially investigating the realm of possibilities for GHG reduction at UC Denver, a hard date was sought for carbon neutrality. In considering the specific projects, timelines, university growth, revenues, new technologies, etc., the Task Force recommends a plan that concentrates on the immediate and near future in order to continue to change our climate trajectory downward. Better and more robust decisions will be made at times of more certainty. The recommended plan's goals are consistent with the State of Colorado Climate Action Plan and University of Colorado System plans.