FRAMING SUSTAINABILITY AND CLIMATE ACTION PLANNING

• AMERICAN COLLEGE AND UNIVERSITY PRESIDENT’S CLIMATE COMMITMENT (ACUPCC)
• CU BOARD OF REGENT’S SUSTAINABILITY RESOLUTION
• UPAC STRATEGIC PRIORITY #7 - RESOURCE STEWARDSHIP
• GREENING OF STATE GOVERNMENT EXECUTIVE ORDER
Baseline Greenhouse Gas Inventory by Scope FY 05/06
(Metric Tons of Carbon Dioxide equivalent gases)

- Scope 1 & 2 = 112,368 MT/CO₂-e
- Scope 3 = 44,998 MT/CO₂-e
- Total = 157,366 MT/CO₂-e

SCOPE DEFINITIONS
- Scope 1: Natural Gas/Transport Fuel burned
- Scope 2: Electricity Purchased
  - Scopes 1 & 2 required by ACUPCC and relate mostly to energy in campus buildings.
- Scope 3: Outside of direct UC Denver control
  - Majority of Scope 3 is commuting
  - Allows for more options in reducing total GHGs
* Energy Initiatives completed and proposed for new buildings will lower trajectory by 27,991 MT/CO₂-e
Climate Action Plan targets reducing GHGs by 80% in 3 incremental phases over the next 40 years with *emphasis* on a 20% reduction by 2020.
Phase 1 has begun with Energy Efficiency upgrades in Research 1

- All projects completed is will reduce total campus GHGs by 10%
- Funded in part by interest-free Energy Conservation Bonds with a payback in saved energy costs

* Energy Initiatives completed and proposed for new buildings will lower trajectory by 27,991 MT/CO₂-e
Greenhouse Gas Trajectory and Reduction Phases

**GHG Reductions for Phase 1**

- **GHG Avoidance**: New buildings (departure from 9th & CO), Efficiency Technologies, Set-point temperature changes = \((27,991)\) MT/CO\(_2\)-e
  - Reduces B-A-U to projected = \(125,253\)

**Planned Reductions:**

- Total Planned Reductions = \((24,338)\)
- Estimated GHG Inventory in 2020 = \(100,915\)
- 2020 Goal (20% Reduction) = \(89,631\)
- Difference = \(11,284\) MT/CO\(_2\)-e
Balance of Phase 1: Reaching a 20% Reduction

Gap of 11,284 MT-CO2-e = 15.8 million kWh of electricity
• Enough electricity to power 1,377 homes for one year
• Equivalent of electricity produced by 2 large wind turbines in one year (2.5 MW)

DIRECT REDUCTION OPTIONS:
• Geothermal Heating/Cooling: $1,500 per ton of capacity ≈ $4.5 million
• Solar Photovoltaic: $3 - $5 million
• Passive Solar Hot Water: small applications only
• Localized Wind Power: 20, 250kW Turbines, 120 ft high = $12 - $14 million

INDIRECT REDUCTION OPTIONS:
• Purchased Wind Power = + $251,200 to electricity costs per year
• Renewable Energy Certificates = + $40,022 ($0.00259 p/kWh/year)
• Carbon Offsets = + $112,840 ($10 per ton/year)
Greenhouse Gas Trajectory and Reduction Phases

Phase 2: Large-Scale Renewables
Greenhouse Gas Trajectory and Reduction Phases

PHASE 3: New and Emerging Technologies