Strategic Objectives for Reducing Energy Consumption

- 1) Improve Energy Efficiency
- 2) Increase Renewable Energy Procurement
- 3) Promote Energy Conservation

Greenhouse Gas Mitigation Strategies

- LED & Controls Retrofits
- HVAC Retrofits
- Lab Retrofits
- Monitoring-Saved Commissioning
- Water Loop
- Renewable Energy Procurement
- Solar PV

Reduction Potential

- Energy Demand Reduction: 60% reduction
- Renewable Energy Procurement: 40% increase
- Energy Efficiency Improvement: 20% reduction

2025 Projected Emissions

- Greenhouse gas emissions: 25,000 metric tons of CO₂e can be avoided in 2025 by implementing these greenhouse gas mitigation strategies.

Recommendations

- Implement LED and controls retrofits for all buildings.
- Upgrade HVAC systems to improve energy efficiency.
- Implement lab retrofits to reduce energy consumption.
- Commission building systems to ensure optimal performance.
- Maximize water loop energy savings.
- Procure renewable energy sources to meet sustainability goals.
- Install solar photovoltaic systems to generate clean electricity.

Carbon Neutrality Can be a Reality

We recommend that UCSB invest as much capital as possible early in the carbon neutrality process and to the highest feasible level. This phase should be funded by capturing and reinvesting unused utility costs into energy efficiency projects. As mentioned in Step 1, this mechanism will require strategic capital investments from $48M to below $16M.

Our analysis shows that achieving carbon neutrality for Scope 1 and Scope 2 emissions alone is feasible with minimal capital investment. Further improvements to the utility grid and campus energy infrastructure will be necessary to achieve carbon neutrality for Scope 3 emissions. While many energy efficiency strategies and conservation efforts can be implemented within the next few years, these projects will still be developed over the next decade. As a result, the carbon neutrality process will take approximately 20 years to complete.

Recognizing the importance of the climate and the leadership of President Sáenz and Chancellor Yang, the University of California, Santa Barbara should also consider the investments necessary to achieve carbon neutrality of Scope 1 and Scope 2 emissions by 2025. As a living laboratory for sustainability, it is within the scope of our mission to act as a global leader in this challenging time.

What is Carbon Neutrality?

Carbon neutrality is the practice of balancing greenhouse gas emissions over a specific time frame, usually 20 years. This process requires an engineer to fine-tune a building’s energy systems to reduce energy consumption and improve efficiency. By offsetting remaining emissions, carbon neutrality can be achieved.

UCSB 2025 Projected Scenarios

- **Scope 1**: Reducing emissions from direct energy use in university facilities and buildings
- **Scope 2**: Reducing emissions from energy production for electricity use
- **Scope 3**: Reducing emissions from energy production for non-electricity use

Goal: Reduce carbon emissions to zero by 2025.

- **Baseline Scenario**: Does not implement any additional energy efficiency, conservation, or renewable energy projects.
- **No RPS Scenario**: Assumes that the state of California will not implement a Renewables Portfolio Standard (RPS) to increase renewable energy usage.

Estimate the implementation costs associated with the recommended strategies.

- **Baseline Scenario**: Costs range from $48M to below $16M.
- **No RPS Scenario**: Costs range from $44M to below $16M.

With an investment of $48M, UCSB can save $64M in total costs and $500,000 MCO₂-e over a 20-year timespan.