

FY23 GREENHOUSE GAS INVENTORY



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MEET THE GHG TEAM



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KEY RECOMMENDATIONS (GHG REDUCTION REPORT, FY19)

These recommendations were compiled by an interdisciplinary group of students, staff, and faculty over nine months in 2019 following FSC-2019-01: Faculty Senate Resolution to Reduce Utah State University’s Greenhouse Gas Pollution. This resolution was passed unanimously a second time during data collection for this inventory.

Battery icons indicate estimated progress on each initiative, elaborated on further in the report. They do not represent a quantitative measure.

<p>Key Rec 1</p> 	<p>Employ best practices to ensure a robust and consistent process for estimating USU’s total GHG emissions, including both Logan and Statewide campuses, to serve as the key performance indicator for USU’s progress.</p>
<p>Scope 1 - Direct Emissions</p>	
<p>Not included in 2020 Report</p> 	<p>Pursue actions in the Decarbonization Master Plan for USU Logan’s Central Utility Plant (CEP) as they become financially viable. Decarbonization Plan for the Logan Campus is broken into 4 paths, and USU is pursuing Path #4.</p>
<p>KeyRec 4</p> 	<p>Increase investment in best available energy management technology and energy saving HVAC commissioning projects for the next ten years.</p>
<p>Key Rec 5</p> 	<p>Continue to investigate opportunities to increase solar and wind energy on or near campus, beyond those provided in the renewable energy portfolios that we seek to purchase from public utilities.</p>
<p>Key Rec 6</p> 	<p>Improve fuel efficiency of fleet vehicles and conduct a pilot study of integrating electric vehicles in our fleet.</p>
<p>Scope 2 - Purchased Electricity</p>	
<p>Key Rec 2</p> 	<p>As Rocky Mountain Power’s Schedule 34 is no longer available to USU, we continue to work with Logan Light and Power (LL&P) to procure renewable energy. LL&P, and other statewide municipal utilities, are mandated to value affordability over emissions and environmental impact when making portfolio decisions.</p>

Scope 3 - Indirect Emissions

<p>Key Rec 7</p> 	<p>Implement a non-binding 'shadow' price on carbon emissions for all major University expenditures.</p>
<p>Key Rec 8</p> 	<p>Establish a mandatory carbon offset fee of \$10 per round-trip for all University-sponsored air travel paid by the department, college, or index funding the trip. Use funds raised by that fee to pay for projects with the highest return on investment for reducing USU's GHG emissions and/or improving air quality on or near USU campuses.</p>
<h3>Program Development (Other)</h3>	
<p>Key Rec 9</p> 	<p>Develop a fundraising campaign focused on advancing USU's efforts towards sustainability and carbon neutrality.</p>
<p>Key Rec 10</p> 	<p>Expand and Institutionalize USU's Planetary Thinking Workshop with a focus on general education courses to ensure all students graduate with an understanding of the causes, implications, and solutions to climate change.</p>
<p>Key Rec 11</p> 	<p>Expand adoption of climate and sustainability-related learning outcomes and assess students' attitudes and understanding of relevant content.</p>

In Fiscal Year 2023, USU's total emissions were

106,125

metric tons of carbon dioxide equivalent.

Our annual carbon footprint increased by **12% MTCO₂e.**

Our total emissions are trending down by **3% per year.**

Scopes 1 and 2 increased by **4,521 MTCO₂e**, while Scope 3 grew by **9,247 MTCO₂e.**

LETTER FROM THE DIRECTOR

For some, culminating their first year of work integrating sustainability at USU with a 12,000 MTCO_{2e} increase in GHG emissions in the face of a renewed faculty commitment to reducing GHG emissions would be... less than ideal. For me, it's a call to action, a welcome catalyst, and a stark reminder of the investment needed to pursue the initiatives called for by the faculty senate in 2019. Utah State University is not alone in the struggle to invest adequate resources to sustainability work – universities across the country are facing hard economic costs associated with decarbonization even with the unprecedented funding offered by the federal IRA. At the same time, I reckon with the changing needs of our society, and think about Utah State's role in graduating a workforce ready for what's to come. With hard work, innovation, and an entrepreneurial spirit? I think we've got this.

On that note:

I am thrilled to welcome our program's relocation to the Office of the President. This strategic move symbolizes elevated importance and integration of sustainability in the overall vision and strategy of the university. Proximity to key decision-makers will enhance our ability to advocate for and implement impactful sustainability initiatives, policy, and strategic direction, for our campuses and the state as a whole.

I am looking forward to later this year, when Utah State will prepare to launch its first comprehensive Climate Action planning process, bringing our statewide campuses to the table while building on the Logan campus' Decarbonization and Drought and Resilience Plans. Our team will invite our community to come together and ask *you* to decide how we build our preferred futures.

We'll also be investigating how we can integrate sustainability deeply into USU's curriculum in a way that fits our modern Land Grant. This is a pivotal moment in our journey, representing a newfound, holistic approach to fostering a culture of sustainability not only within our operations but also within the minds and hearts of our students, staff, and faculty.

While the rise in our total emissions is a reality we must address, the slow trend downward unacceptable in the face of a compounding global crisis, it is crucial to recognize the good work done in stride with the opportunities to seize. We move forward thinking of deep, systemic change and integration, while inviting our community to build the future we all want to see. Change is not only inevitable but, when approached with determination and strategic planning, can lead to something great for every Aggie, all throughout Utah.

I look forward to building our shared vision of a sustainable future, together.

Sincerely,



Caitlin McLennan
Director of Sustainability
USU Sustainability | Office of the President

SUMMARY OF THE FY23 GREENHOUSE GAS INVENTORY

In Fiscal Year 2023, USU contributed **106,125.56** metric tons of carbon dioxide equivalent (MTOCO2e) to the global carbon budget.

That's equivalent to the amount sequestered by



acres of U.S. forests in one year.

We created a linear trend line from a 2008 emission baseline, we can zoom out and see a moderate **3% emissions reduction over time**, seen in Figure 1 below. This trend does not include projected growth assumptions, and the university adds square feet to the inventory with each new building on campus. As the university grows, additional emphasis and funding must be placed on emissions reduction to ensure we correct the trend to an accelerated drawdown in line with the Faculty Senate resolution and global emissions pathways.

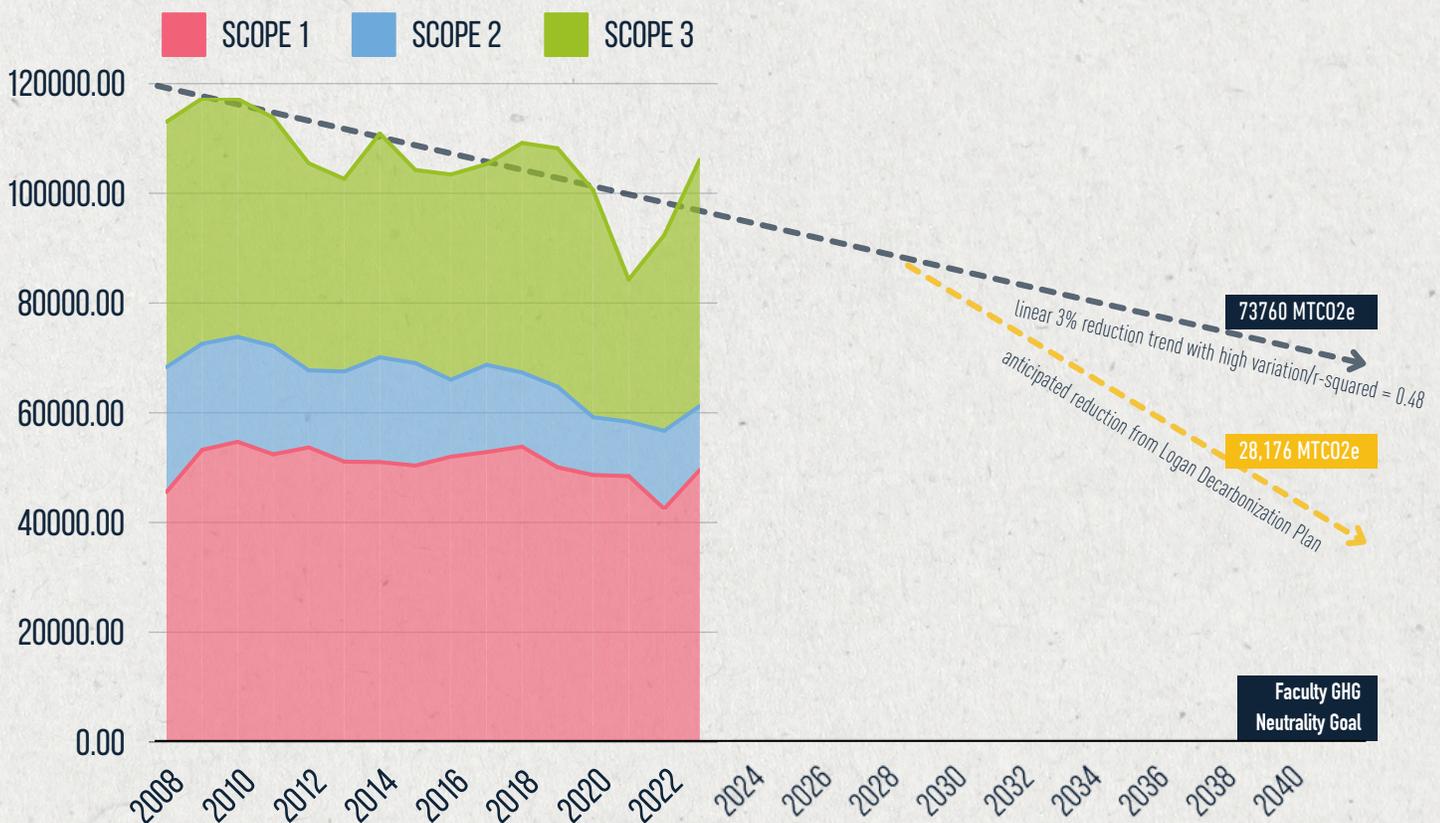


Figure 1, USU's GHG emissions by Scope + linear trend line + assumed CEP Decarbonization Plan reduction

Looking forward, we anticipate a 4% overall reduction for the Logan Campus from the Logan City Power Utility’s goal of procuring and producing 50% renewable energy by 2030. We also anticipate a current RFP will deliver ~3MW of USU-owned solar capacity in the coming months, reducing emissions by another ~2900 MTCO₂e, part of the CEP Decarbonization Plan.

As investments are made in campus energy and HVAC systems, we anticipate a 60% overall emissions reduction by 2040. This plan will require dedicated funding of ~\$10 million per year not accounting for inflation or incentives from the State and the federal IRA direct pay program. The annual Energy Efficiency fund of \$800,000 continues to fund projects that deliver economic and environmental returns. Staff pursue decarbonization projects as they are financially feasible in line with the CEP Decarbonization Plan.

A thorough analysis of Scope 3 emissions is necessary to ensure neutrality by 2040.

USU Sustainability is actively investigating partnerships to contract a consultant to verify data and collection, outline statewide campus emission reduction strategies, and ensure sound governance and planning for sustainability at USU. Including paper purchasing in full, working with procurement and Food and Dining to include food procurement, and working with PD&C to include the embodied carbon of capital development projects are essential to a complete inventory. In Figure 2, we depict Scopes 1, 2, and 3 emissions over time, noting the sharp decline in emissions during COVID. This is in line with what other universities have experienced, and the uptick in emissions since COVID is worrying for USU’s emissions trajectory.

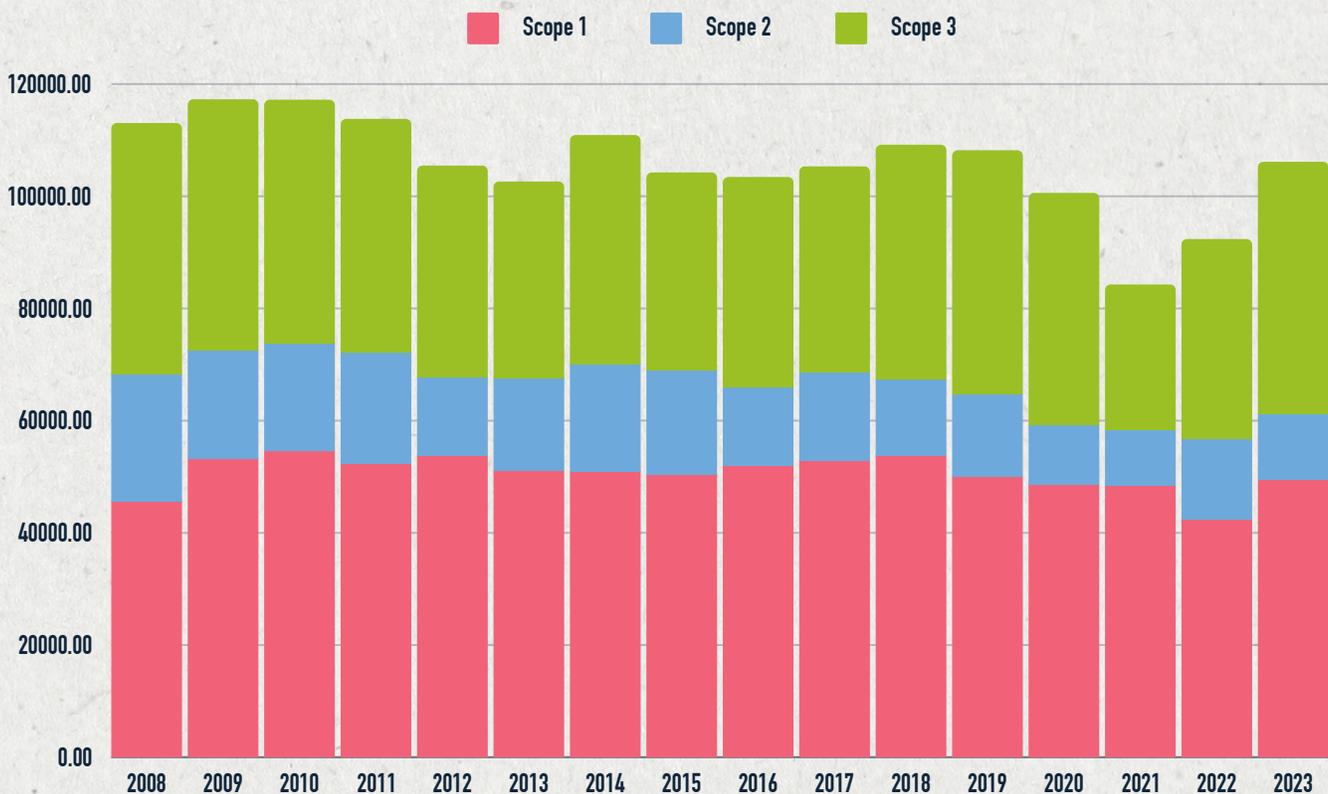


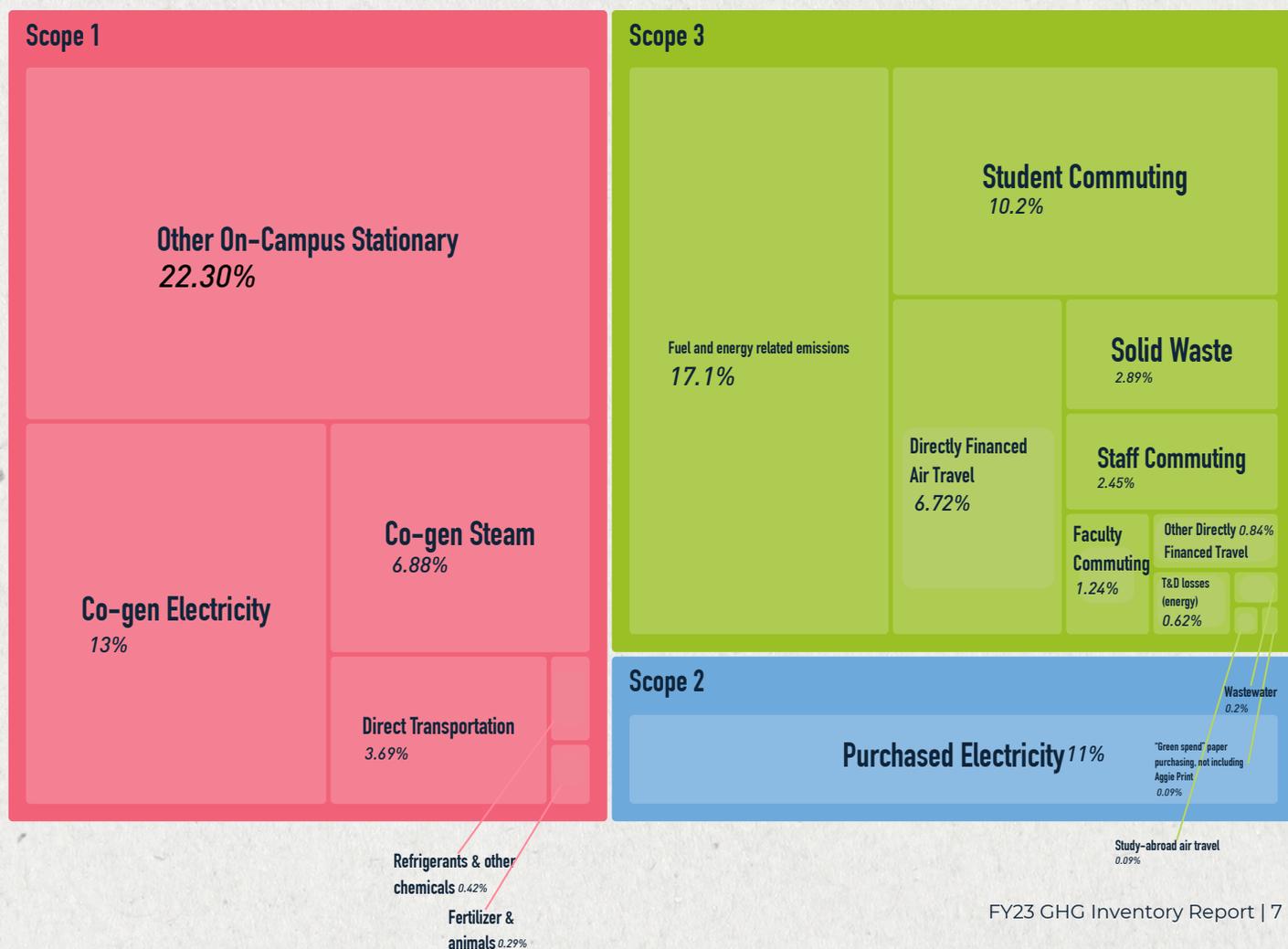
Figure 2: USU’s GHG emissions by Scope, 2008-2023

Diving into emissions sources

Changes seen from last year's source emissions include:

- **Staff and Faculty members flew 2X as many miles** compared to last year's inventory, bouncing back to pre-COVID levels almost identical to those reported in 2019.
- The USU Utilities Department ran the Central Energy Plant for 2 additional months of this year, **reducing emissions associated with procured energy, but increasing those associated with our on-campus energy production**, while saving the Utilities Department significant amounts of money on energy bills.
- **Student, staff, and faculty commuting was estimated**, as internal conversations work to establish a biennial commuter survey. A commuter survey has not been conducted since 2019, and the same modal split is used as collected then, multiplied by population numbers. The survey in 2019 did not include Statewide Campuses; these emissions are estimated using the 2019 modal split.
- **Emissions associated with the Aggie Shuttle service increased significantly across all years** to account for missed calculations. The Parking and Transportation team compresses natural gas on-site, and data collection in the past only reported state-obtained procurement information.
- **Emissions associated with fertilizer and animals reduced by about 2%.**

Complying with the international GHG Protocol for Higher Education, we collect data for **Scope 1**, **Scope 2**, and some **Scope 3** emissions sources.



Comparing USU to other campuses

We gathered data from three Utah and two peer universities to compare progress on emissions reduction. To better understand how our emissions compare across varying sizes of schools we took our MTCO₂e totals and broke them down to per square foot of the particular school. USU comes in just after the U with the second highest emissions intensity per square foot, followed by Colorado State University, then Weber, and the Oregon State.

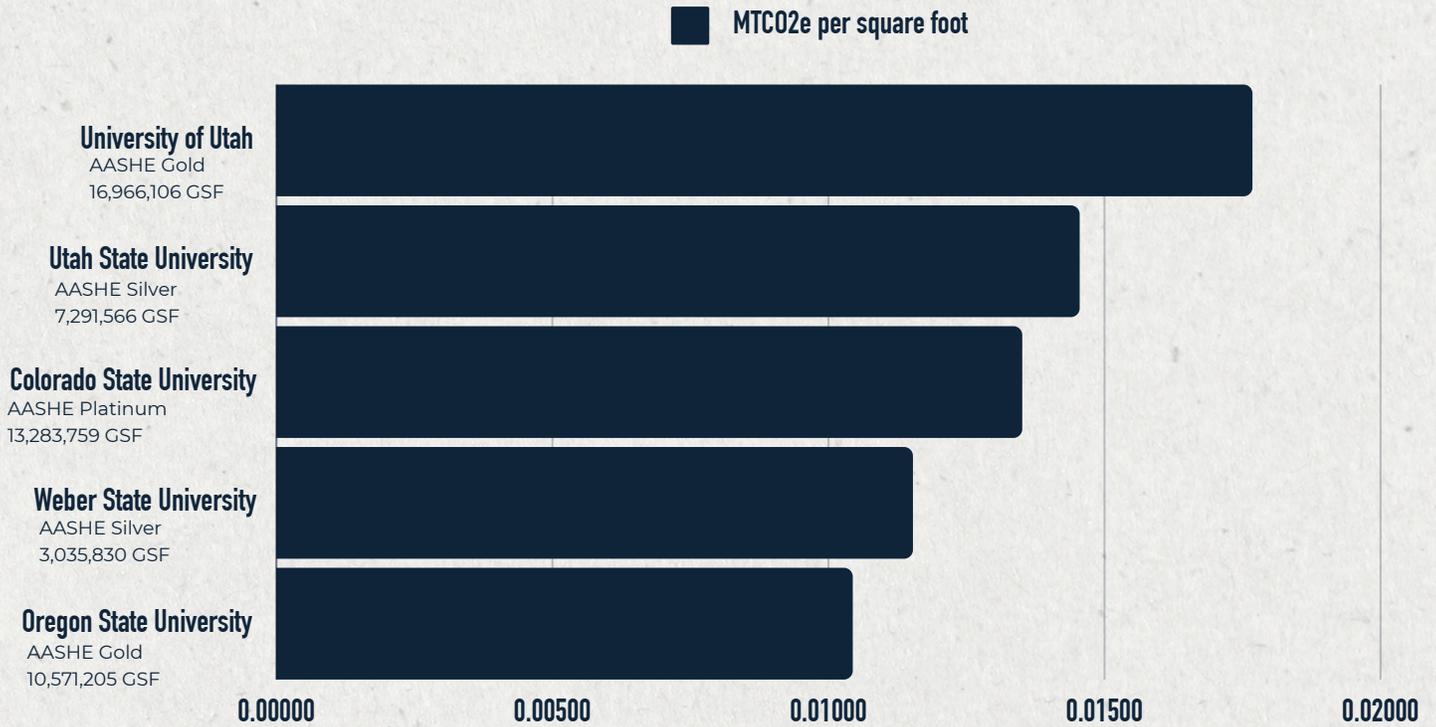


Figure 4: Emissions intensity of peer and Utah universities normalized by square foot in MTCO₂e

ELABORATING ON OUR PROGRESS

Detailed updates on each Key Recommendation, as recommended by the Greenhouse Gas Reduction Committee assembled in 2019.

Key Recommendation 1: Improve GHG Data Collection

This year, the team compiled a data collection narrative report, which will become compulsory for years following (Appendix 1). This report details contact methods for data collection and outlines key assumptions made to ensure consistency of the inventory overtime, following best practices from the GHG Protocol. Moving forward, the team will investigate including additional Scope 3 sources, emissions factors for First Dam, and continue to thoroughly document the collection process.



Scope 1 | Direct emissions, sources are controlled and owned by USU directly

Key Recommendation 2: Implement the CEP Decarbonization Master Plan on the Logan Campus

The CEP Decarbonization Master Plan marks a massive step forward in USU's climate action planning. The Plan is broken into 4 Paths, and USU is currently pursuing Path #4:

- Procuring decarbonized energy when possible;
- Deep HVAC efficiency projects;
- Domestic hot water electrification;
- Significant electrification of campus HVAC;
- Installation of on-site PV solar.

These actions are pursued as equipment is phased out and The USU Utilities Team has an RFP out for 2-3 MW of solar, which would result in ~300MTCO₂e reduction when installed and operational. Moving forward, dedicated funding is needed to make the plan a reality. The Plan in full will cost \$157 million, although savings from the IRA elective pay program are yet to be estimated. **USU Sustainability and Utilities welcome partnership from faculty and staff in the USU community to bring pieces of the plan to life through on-campus research.**

Additionally, it is necessary to begin thinking Statewide. A Decarbonization Plan for Statewide campuses is yet to come to life, and with return-to-work post-COVID statewide energy consumption accounts for about 11% of the total inventory.



Key Recommendation 4: Invest in Energy Management & energy saving HVAC commissioning

USU Utilities and USU Sustainability invested in GRITS in FY23, a software aligned with current GHG emissions and sustainability reporting tools, to increase transparency of emissions reductions associated with projects invested in with the \$800,000 annual Energy Efficiency budget. USU's Energy Manager is working to develop a green revolving fund for statewide campuses, starting with Price, which will help USU reinvest savings from energy efficiency projects. USU employs a full-time energy commissioner who ensures USU's new construction projects deliver energy savings and perform as planned. USU also uses the EPA's EnergyStar tool to manage energy consumption.



Key Recommendation 5: Increase renewable energy on-site

Increasing investment in and developing new renewable energy on USU owned land and buildings is a significant opportunity to reduce emissions due to complicated utility boundaries statewide. As of FY24, USU has an RFP out for ~3MW of dispersed solar to provide power. These solar installations will be co-located with battery infrastructure for reliability.

Additionally, USU's Planning, Design, and Construction Department is revising design guidelines to ensure "solar ready" building construction. Roof tops and solar go well together, with similar lifecycles and maintenance requirements. Putting solar on our buildings can reduce the amount of open space lost to renewable production and minimize impact from energy generation.



Key Recommendation 6: Improve fuel efficiency of fleet vehicles & conduct EV integration study

USU Sustainability does not have adequate capacity to prioritize EV integration in USU's fleet, and is actively seeking collaboration from other departments. Other efforts continue, such as supporting the Council Air Quality and Transportation Working Group, the City of Logan led Bicycle and Pedestrian Advisory Committee, and working with Aggie Blue Bikes on general active and alternative transportation education and outreach, and Planning Design & Construction on infrastructural improvements.

New Aggie Shuttles, powered by compressed natural gas (CNG), were purchased as of FY23. Utilizing CNG reduces emissions upstream, during shipping and transit of fossil fuels. CNG is an improvement compared to a typical gas-powered fleet and a significant improvement compared to diesel.



Scope 2 | Purchased electricity to power buildings USU owns or leases

Key Recommendation 2: Rate 34/32 – procuring renewable electricity

USU is no longer able to pursue Rate 34, the renewable energy rate offered to commercial customers of Rocky Mountain Power. Many USU campuses reside in UAMP (municipally owned power providers) territory, complicating rate structure agreements.

For the Logan campus, USU will enjoy an approximate 4% reduction in overall emissions when Logan Light and Power accomplishes procuring and producing at least 50% renewable energy.

Scope 2, or procured energy, emissions are calculated using EPA e-grid factors in compliance with the global protocol for GHG calculations, known as the market-based method. There is opportunity to refine this calculation using a more localized emissions factor. It should also be noted that in doing so emissions may rise due to the use of coal and natural gas over renewable energy in Utah as a whole (estimated at 53% and 26%, respectively, according to the 2022 estimate from the [U.S. Energy Information Administration](#)). Using a market-based emissions factor, USU's inventory benefits from cleaner grids in Washington, Oregon, and Idaho.



Scope 3 | Indirect emissions associated with USU-sponsored activities and purchasing

Key Recommendation 7: Implement a non-binding 'shadow' price on carbon emissions

This recommendation, when implemented, will prepare USU for a federal or state carbon tax. Options such as energy use, proxy prices, payments by MTCO_{2e} (known as the "Social Cost of Carbon") are all tools to ensure robust financing of university or business climate and sustainability programs.

At this time, USU Sustainability lacks capacity to begin negotiating administration adopt a carbon fee. We are exploring possibilities for fees associated with capital development, commuting, and departmental energy use. If enacted, the fee would need to be applied throughout the university, and could substantially improve staff ability to drawdown initiatives and raise awareness,



Key Recommendation 8: Establish a mandatory carbon offset fee of \$10 for all university-sponsored air travel.

This recommendation was implemented as of the publishing of the 2020 GHG Reduction Report. Funding access is in flux with the president's change, over, but USU Sustainability expects the fee will assist in future emissions reduction.

This year, USU's Sustainability Council allocated \$10,000 to the purchase of an electric van for the Christenson Office of Social Action and Sustainability (COSAS), supporting the Cache Community Gleaning Program, Aggie Blue Bikes, and additional student travel. The van will replace a temporary diesel-powered truck rental COSAS utilized in year's past, reducing emissions and piloting the integration of EV vans in USU's fleet.

The fee's ability to cumulate substantial funding is limited as it was set at ~6% of the EPA's recommended value. USU could look to other universities about increasing this fee, or pursue a university social cost of carbon to increase funding.



Program Development (recommendations about academic integration and development of USU's Sustainability Program.

Key Recommendation 9: Develop a fundraising campaign focused on USU's sustainability efforts

USU Sustainability is working on establishing a relationship with the Advancement Office. **More collaboration with the faculty is requested to support financing USU Sustainability efforts.**

We are actively investigating grant opportunities, and were awarded over \$80,000 to pursue the development of Utah's "Quality Green Jobs Agenda" in FY23. We continue to investigate and pursue funding opportunities as they arise.



Key Recommendations 10 & 11: Expand and institutionalize USU's Planetary Thinking Workshop | Expand adoption of climate and sustainability-related learning outcomes and assess student's sustainability literacy

The faculty-focused Planetary Thinking Workshop has been put on hold this year due to limited staff capacity and funding. This was a strategic decision to ensure USU Sustainability's capacity to implement systemic initiatives that institutionalize sustainability concepts in USU's teaching.

Further, USU Sustainability successfully secured USU's position as an anchor partner in the Jobs for the Future Foundation (JFF) *Quality Regional Green Jobs Challenge*. We are currently in Phase 2, the "Planning Phase", in which USU will conduct listening sessions across our campuses, investigating the concept of "green jobs" according to the communities we are located in. These listening sessions will center communities and local knowledge in order to increase education on workforce development opportunities in Utah and co-design programs and recommendations with Utah, by Utah.

Ultimately, our work is will culminate in three programs: a clean energy engineering certificate, associate degree, and bachelor of applied science; a direct clean energy maintenance training program with the Navajo Nation out of the Blanding campus; integrating sustainability internally through curriculum and professional development opportunities.

Beyond our participation in the JFF opportunity, we are not planning to assess student learning outcomes and literacy for sustainability. USU Sustainability is, however, actively investigating models to systemically integrate sustainability in all that we do, including developing curriculum and formal partnerships with academic units. **We welcome collaboration from the faculty in this effort.**



LOOKING AHEAD

In the next Fiscal Year, USU Sustainability will be focused on:

- **Excellence in sustainability governance:** our team will be investigating sustainability structure, governance, and planning at other universities and will make recommendations to the President based on this and outside research.
- **Job training:** utilizing the momentum from our successful JFF grant, we will continue to pursue funding and opportunities to institutionalize sustainability through workforce development at USU. We hope to collaborate with multiple units in the pursuit of preparing graduates for the green economy, and the modern challenges to come in their respective fields.
- **Academic integration:** USU Sustainability is interested in either 1) developing or 2) forming a formal partnership with an academic unit to create a “landing pad” for faculty, students, and research related to the dimensions of societal sustainability.
- **STARS Gold:** USU’s reporting institution is the international Association for the Advancement of Sustainability in Higher Education’s (AASHE) Sustainability Tracking, Assessment, and Rating System (STARS). In 2025, our current score (Silver) expires and the organization transitions from v.2 to v.3. We will be prioritizing this reporting work, shooting for a Gold level rating.
- **Climate action planning:** USU Sustainability expects to re-affirm our commitment to Second Nature with President Cantwell, which will require the above mentioned climate action planning process. This will allow USU to update financials associated with decarbonization, scope opportunities to collaborate with statewide campuses and municipalities, and work on building out high level, measurable goals for our sustainability program. We are interested in building out USU’s sustainability work, including creating internal and external partnerships and developing new impact areas through this planning process.

CONTACT US

Got questions? Ideas? Want to get involved? Join us!

Reach out to us at sustainability@usuedu or email Caitlin directly at caitlin.mclennan@usu.edu



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