



Verification Report

University of California, Los Angeles 2021 GHG Emissions Inventory

Prepared for:
University of California Los Angeles

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Ruby Canyon Environmental, Inc.
743 Horizon Court Suite 385
Grand Junction, Colorado 81506
(970) 241-9298
www.rubycanyonenv.com

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1.0 Introduction

The University of California, Los Angeles (UCLA) contracted Ruby Canyon Environmental, Inc. (RCE) to perform the third-party greenhouse gas (GHG) emissions inventory verification for UCLA's facilities reporting under financial control to The Climate Registry's (TCR) voluntary reporting program. The inventory is required to include emissions from seven GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃); however, UCLA has no NF₃ emissions.

1.1 Inventory Description

UCLA's 2021 emissions inventory includes emissions from stationary and mobile combustion, fugitive sources, and purchased electricity reported using both location-based and market-based methods. UCLA submitted a Self-Defined Boundary Form to identify that fugitive emissions from UCLA Health System are excluded from the inventory.

1.2 Responsible Party

University of California, Los Angeles
731 Charles E. Young Drive S
Los Angeles, CA 90095

1.3 Verification Team

The RCE verification team consisted of the following individuals who were selected based upon verification experience and knowledge of university GHG emissions sources.

Lead Verifier: Garrett Heidrick

Independent Peer Reviewer: Jessica Stavole

1.4 Objectives

The objective of the verification activities was to ensure that the reported GHG emissions are complete, transparent, verifiable, and estimated and reported according to TCR's protocols and its reporting requirements for the voluntary reporting program. Furthermore, the verification activities ensure that the data provided to RCE is well documented and free of any material errors or omissions.

1.5 Scope

The scope of the verification consisted of the following independent and objective activities:

- Review the 2021 GHG emission sources;
- Review the 2021 inventory support documents;
- Review the organizational and operational boundaries;
- Conduct a site visit (if necessary) to UCLA;
- Review the inventory data acquisition and quality control procedures;
- Review the GHG emissions calculations;
- Review the documents and data against the Verification Criteria listed in Table 1;
- Issue requests for additional documentation, clarifications, and corrective actions as necessary; and
- Issue a Verification Statement, Verification Report, and List of Findings to UCLA.

1.6 Verification Criteria

Table 1. Verification Criteria

Criteria	Details
Standards and Protocols for Verification	<ul style="list-style-type: none"> • The Climate Registry’s General Reporting Protocol (GRP) Version 3.0 (May 2019) • The Climate Registry’s General Verification Protocol (GVP) Version 2.1 (June 2014) • The Climate Registry’s GVP Updates and Clarifications document (October 2019) • ISO 14064-3:2006 Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions
Reporting Year	CY 2021
Level of Assurance	Reasonable assurance
Materiality	A +/-5 percent materiality threshold, assessed separately for Scope 1, Scope 2 location-based, and Scope 2 market-based emissions

2.0 Verification Activities Summary

As the first step in verification activities, RCE developed a verification plan to follow throughout the verification. The verification plan included the following activities:

- RCE completed the Conflict-of-Interest Assessment Form to identify any potential conflicts of interest with UCLA. RCE submitted the form to TCR on November 28, 2022, and the COI assessment revealed no conflicts of interest and was approved by TCR on December 8, 2022.
- RCE held a verification kickoff meeting with UCLA on December 15, 2022. During the kickoff meeting, RCE reviewed the verification objectives, verification process, and the verification schedule.
- RCE performed a strategic review and risk assessment of the received data and support documents to understand the scope and areas of potential risk in the GHG emissions inventory.
- RCE developed a risk-based sampling plan based upon the strategic review and risk assessment. The verification team used the verification plan and sampling plan throughout the verification, and they were revised as needed based upon additional risk assessments.
- RCE performed a risk-based desktop review of the submitted verification documents. The review included an assessment of the GHG emissions calculation methods and inputs, source data completeness, GHG data management and monitoring systems, and company record retention practices.
- RCE submitted requests for corrective actions, non-material findings, additional documentation, and clarifications as necessary throughout the verification.
- RCE’s independent peer reviewer conducted a review of the verification sampling, verification report, and verification statement.
- RCE issued a final Verification Report, Verification Statement, and List of Findings.
- RCE held an exit meeting with UCLA.

3.0 Verification Findings

3.1 Assessment of the GHG Emission Sources

UCLA's cogeneration plant is its largest emission source, representing 87.8% of total Scope 1 emissions, which includes two gas turbines, two heat recovery steam generators, two duct burners, and one auxiliary boiler. UCLA aggregated emissions from all these units which are integrated into the combined cycle system. The gas turbines and auxiliary boiler run primarily on natural gas but can also combust diesel; however, under normal operations, the cogen facility does not use diesel to produce electrical or thermal energy. Natural gas combustion in on-campus and off-campus buildings and fugitive R-410A emissions contribute most of the remaining Scope 1 emissions, 2.0%, 3.9%, and 2.2% respectively. Other direct emission sources include combustion of gasoline, diesel, and CNG by vehicles and small quantities of fugitive SF₆, HFC, and PCF emissions.

Scope 2 emissions are from purchased electricity in on-campus and off-campus buildings.

The lead verifier conducted a preliminary review and risk assessment of UCLA's CRIS Report and GHG inventory spreadsheet. Based on the information in the report and spreadsheet, the Lead Verifier developed a sampling plan, which was based on the relative magnitude of emissions from each category as well as the relative magnitude of emissions from individual sources.

RCE conducted a streamlined verification for UCLA's 2021 GHG emissions inventory. RCE conducted a virtual site visit during UCLA's 2019 verification process. During the site visit, RCE observed the GHG emission sources at the cogeneration plant via photos. RCE reviewed photos of the gas turbines, heat recovery steam generators, duct burners, and the auxiliary boiler as well as the emergency generator and fuel tank. During the virtual site visit, RCE also interviewed the personnel responsible for GHG reporting; reviewed the onsite data management systems; and reviewed data gathering, monitoring, and handling procedures.

3.2 Assessment of the GHG Emissions Data Management System

RCE interviewed UCLA personnel responsible for developing UCLA's GHG inventory, collecting data, and calculating GHG emissions. RCE confirmed that personnel are experienced, knowledgeable, and competent to collect and aggregate the inventory data and perform the GHG emissions calculations. RCE reviewed UCLA's procedures for data collection, data handling, and data QA/QC.

Source data used in the calculation of GHG emissions consists of SoCalGas utility invoices detailing the quantity of natural gas delivered to the cogeneration plant as well as invoice summaries from SoCalGas for other locations on campus and off campus. UCLA also provided the UCLA Energy Systems Facility Monthly Operations Report from Worley, the third party that operates the cogeneration facility, which contains monthly diesel combustion data. Volume of diesel combusted is based on daily readings of each fuel tank fuel level. Source data for electricity purchases consists of utility billing records and/or summary sheets detailing monthly consumption by account from each utility.

3.3 Assessment of the GHG Emissions Calculations

The emissions calculations assessment included a review of the data inputs into the Climate Registry Information System (CRIS) and the inventory spreadsheet, calculation of the input values, and accuracy of the fuel types and calculation methodologies selected for each emissions source. RCE evaluated the completeness and validity of the original data and how the data was transferred to the GHG emissions reporting calculations spreadsheet and CRIS.

During the desktop review, RCE conducted cross checks of spreadsheet functionality, and compared calculation methodologies in the spreadsheet and CRIS Report to the methods described by key personnel during the site visit as well as TCR reporting requirements and the General Reporting Protocol methodologies. RCE found that the GHG calculations were accurate and consistent with The Climate Registry's methodologies.

Scope 1

RCE reviewed the calculation of stationary combustion emissions from natural gas combustion by the cogeneration system. RCE requested the natural gas invoices for all of 2021 and confirmed that the monthly totals were summed correctly and that the appropriate emissions factors were applied to calculate emissions. RCE also reviewed the SoCalGas invoice summaries with monthly consumption by account for the on-campus buildings. Emissions for all locations selected for sampling were materially correct.

Fugitive emissions, stationary combustion of miscellaneous fuels in off-campus buildings, stationary combustion on biomass and biogas, and CH₄ and N₂O emissions from mobile combustion are reported using SEMs. RCE verified that sources using SEMs to estimate emissions are under the 10% threshold defined in the GRP.

Biogenic Emissions

UCLA had two sources of biogenic emissions, Weed Powerhouse (biomass) and Calabasas Gas-to-Energy (biogas). Biogenic emissions were calculated by converting the plants' MWhs to MMBtus. The MMBtus were then multiplied by the applicable emission factors for biomass or biogas. RCE reviewed biogenic calculations and ensured that their estimations were materially correct.

Scope 2

Location-based emissions

RCE reviewed UCLA's calculation of emissions from purchased electricity using the location-based method. UCLA applied the WECC California (CAMX) eGRID 2020 emission factors for CO₂, CH₄, and N₂O to calculate all location-based Scope 2 emissions. According to TCR guidance, UCLA must use the most recent eGRID factors available at the time they register their inventory. UCLA registered their inventory on 1/11/2023 and the newest eGRID 2021 was not published until 1/30/2023.

UCLA receives summary spreadsheets of monthly electric invoices from each electric utility, Los Angeles Department of Water and Power (LADWP) and Southern California Edison (SCE). RCE reviewed the summary spreadsheets for Main Campus and Off Campus locations against values used in the emissions calculations. SEMs were used to calculate emissions for a small portion of Off Campus locations. RCE verified that this was appropriate and that the total emissions reported using SEMs are below the 10% threshold required by the GRP.

RCE verified that location-based Scope 2 emissions are materially correct.

Market-based emissions

RCE reviewed UCLA's calculation of emissions from purchased electricity using the market-based method. UCLA determined electricity quantities using the same methods described above. To calculate emissions, UCLA applied three types of factors: utility-specific factors, eGRID factors, and energy attribute certificates.

As described above, UCLA purchases electricity from LADWP and SCE. They also purchase power from Clean Power Alliance's (CPA) Clean Power 100% Green Power (100% renewable energy) and Clean Power

50% Green Power (50% renewable energy) options. CPA electricity is delivered by SCE; for the location-based method, this power was included in the purchases from SCE.

- For the electricity purchased from LADWP, UCLA applied the LADWP system average factor for 2021 (633 lbs CO₂e/MWh) to calculate emissions. Since the emission factor includes CO₂, CH₄, and N₂O emissions, only one emissions value was reported, under CO₂, but it includes all three GHGs. RCE reviewed the letter from LADWP to UCLA that provides the 2021 emission factor.
- For the electricity purchased from CPA under its 100% Green Power option, UCLA applied an emission factor of 0 lbs CO₂/MWh to calculate CO₂, CH₄, and N₂O emissions. RCE reviewed CPA's 2021 Power Content Label to confirm that all power in the mix was eligible renewable.
- For electricity purchased from SCE, UCLA applied the SCE system average factor for 2021 (452 lbs CO₂e/MWh) to calculate CO₂e emissions. RCE reviewed the report from SCE to UCLA that provides the 2021 emission factor.

RCE used the same comparisons described for location-based emissions above to verify that quantities of purchased electricity were appropriately applied in emissions calculations. RCE also reviewed the application of market-based emissions factors and confirmed that market-based Scope 2 emissions are materially correct.

Like for location-based emissions, UCLA used SEMs to calculate emissions for a small portion of Off Campus locations. RCE verified that this was appropriate and that the total emissions reported using SEMs are below the 10% threshold required by the GRP.

Finally, RCE reviewed UCLA's Scope 2 Disclosure Form, confirmed that it is uploaded to CRIS and verified that appropriate fields were completed, and that documentation of Energy Attribute Certificates was uploaded to CRIS.

3.4 Assessment of Net Inventory

UCLA applied offsets to the 2021 inventory. A total of 8,458 tCO₂e of offsets were applied to Scope 1 CO₂ emissions. Offsets are California Air Resources Board Offsets generated from U.S. Forest projects. RCE verified that UCLA appropriately completed the Applied Offsets Form within CRIS.

RCE verified that UCLA's adjusted net inventory is materially correct.

3.5 Prior Year Comparison

RCE compared reported emissions for 2021 to prior year emissions as part of its risk assessment and verification process.

- UCLA's 2021 Scope 1 emissions increased by 1.7% from 2020 emissions.
- UCLA's 2020 Scope 2 location-based emissions increased by 26.0% percent from its 2020 emissions. The increase was caused by UCLA's campus returning to normal operations post-COVID lockdowns and CAMX's emission factor increased by 13.2%.
- UCLA's 2021 Scope 2 market-based emissions increased by 11.4% from its 2020 emissions. The increase was caused by UCLA's campus returning to normal operations post-COVID lockdowns.

4.0 Verification Results

UCLA provided sufficient evidence and documentation of its emissions calculations, data collection procedures, monitoring and quality control procedures for its facilities. The verification process focused on verifying the emissions calculations and the source data used by UCLA to quantify its GHG emissions in

accordance with The Climate Registry’s General Reporting Protocol. The following is a summary of the verification results, and tables 2 and 3 define the GHG emissions verified for 2021.

During the verification process, RCE made requests for material findings, non-material findings, additional documentation, and clarifications to complete the verification. The details of these requests are documented in RCE’s List of Findings provided to UCLA.

5.0 Conclusions

RCE conducted a risk-based analysis of the UCLA GHG emissions inventory and a strategic review of the inventory data and calculations. Based upon the processes and procedures and the evidence collected, RCE concludes that the GHG assertion is a fair representation of the GHG emissions for 2021 and can be considered:

- In conformance with The Climate Registry’s General Reporting Protocol Version 3.0,
- Without material discrepancy in Scope 1, Scope 2 location-based, or Scope 2 market-based emissions, and
- Verified to a reasonable level of assurance.

Table 2. Total Entity Emissions by Emission Type Under Financial Control

Emissions Verified	CO₂e (metric tons)
Stationary Combustion	217,603.76
Mobile Combustion	2,733.83
Process	0
Fugitive	9,797.07
Scope 1 Total	230,134.66
Purchased Electricity – Location-based	35,683.00
Scope 2 Total – Location-based	35,683.00
Purchased Electricity – Market-based	29,558.22
Scope 2 Total – Market-based	29,558.22
Purchased Electricity – Location-based – Biomass	2,090.52
Mobile Biomass Combustion	5.31
Biomass Total	2,095.83

Table 3. Net Total Entity Emissions Under Financial Control*

Net Emissions Verified	CO₂e (metric tons)
Scope 1 Total	221,676.66
Scope 2 Total – Location-based	35,683.00
Scope 2 Total – Market-based	29,558.22
Biomass Total	2,095.83

*The Net Totals reflect the application of 8,458 tCO₂e of offsets.

Lead Verifier Signature

Garrett Heidrick

Independent Peer Reviewer Signature

Jessica Stavole