

**Amendment No. 2 to
City of Phoenix Agreement No. 156928--0**

This Amendment No. 2 ("**Amendment**") to the Master Intergovernmental Agreement No. 156928--0 is entered into by the City of Phoenix, a municipal corporation of the State of Arizona ("**City**"), and The Arizona Board of Regents for and on behalf of Arizona State University and its Rob and Melani Walton Sustainability Solutions Services ("**ASU**") is made effective October 31, 2023.

Recitals

A. The Parties entered into the Agreement for research and evaluation support on an as-needed basis related to environmental and sustainability efforts and for certain activities and tasks as the City may require.

B. On March 23, 2022, the Phoenix City Council approved the original contract.

C. The Agreement was amended (No. 156928-01), dated June 5, 2023, to amend the Scope of Work.

D. The parties mutually desire to again amend the Agreement to change the scope of services.

Amendment

The parties agree to amend Agreement 156928--2, as follows:

1. Amend the Amended Exhibit A of the Agreement, "Scope of Work," by adding additional scope of work, which is attached and incorporated into this Amendment No. 2.

2. Except as otherwise amended, all other terms and conditions of the Agreement and any prior amendments not in conflict will remain in full force and effect. If there is a conflict or ambiguity among amendments and the Agreement, the most recent amendment will only prevail and control if clear and unambiguous; and if not the original Agreement will govern to the extent necessary to support the intent of the Agreement.

**The Arizona Board of Regents
For and on Behalf of
Arizona State University**

**City of Phoenix, a municipal corporation
JEFFREY BARTON, City Manager**

Contractor acknowledges receipt of an
agreement with the amendment.

By: _____

A signed copy must be returned to
Public Works Department

Signature

Nancy Henderson FOR
Kristy Macdonald
Assistant Director

City Clerk

10/13/2023

Date

Date

**APPROVED AS TO FORM:
Ben Larson
Associate General Counsel**

**APPROVED AS TO FORM:
Julie M. Kriegh, City Attorney**

By: Benjamin L. Shum 10.13.2023

Amended Exhibit A

TO MASTER INTERGOVERNMENTAL AGREEMENT

Scope of Work

The following scope of work is added to and does not delete or replace the scope of work in the original Exhibit A or in Amendment 1.

This project will tabulate and report the calendar year 2022 City of Phoenix municipal operations and community-scale GHG emissions inventories to be complete on or before May 17, 2024.

Background. In December 2008, the Phoenix City Council adopted a goal to reduce greenhouse gas (GHG) emissions from city operations to 5% below reported 2005 levels by 2015. The effort began with an inventory of the city's 2005 emissions from municipal operations, which established a baseline and provided technical support for the City of Phoenix 2009 Climate Action Plan for Government Operations (CAP). The report also forecast a 14% increase, to 706,000 metric tons (MT) CO₂e, by 2015 if the city maintained a business-as-usual approach.

The ASU Rob and Melani Walton Sustainability Solution Service (RMWSSS), first engaged with the City of Phoenix to conduct a municipal operations GHG emissions inventory for the 2012 calendar year. The purpose of this GHG emissions inventory was to estimate how well the City of Phoenix was tracking toward its 2015 reduction goal.

The 2012 Greenhouse Gas Emissions Inventory for Government Operations conducted by RMWSSS according to the Local Governmental Operations Protocol (LGOP) indicated that the city had surpassed its goal by already achieving a 7.2% GHG emissions reduction; therefore, the Phoenix City Council adopted a new goal to reduce GHG emissions to 15% below 2005 levels by 2015. The 2015 City of Phoenix Greenhouse Gas Emissions Inventory for Government Operations found that Phoenix had met its new goal, reducing GHG emissions 15.6% between 2005 and 2015.

To complement the municipal operations GHG emissions inventory, the City of Phoenix completed community-scale GHG emissions inventories for calendar years 2012 and 2016. Both community-scale GHG emissions inventories were conducted according to the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC Protocol). The 2016 Community-Scale GHG Emission Inventory showed a 6.3% reduction in the overall GHG citywide emissions compared to the 2012 levels.

The 2018 inventory year updates to the municipal operations and community-scale GHG emissions inventory updates both showed continued emissions reductions and economic growth. Demonstrating progress toward the City's GHG emissions reductions goals is achievable while growing the local economy.

The goal of this project is to provide the City of Phoenix information on progress toward their current

40% by 2025 municipal operations GHG emissions reductions goals by updating the existing municipal operations and community GHG emissions inventories for the 2022 calendar year that will measure progress towards the 50% by 2030 GHG emissions reductions goal established in the City of Phoenix Climate Action Plan 2021 Edition. Additionally, the project team will update the emissions tracking workbooks that allow the City of Phoenix to compare GHG emissions trends.

Proposal.

2022 City of Phoenix GHG Emissions Inventory Updates

This section describes the tasks necessary for the project team to update the City of Phoenix GHG emissions inventories – municipal operations and community – for calendar year 2022. The major tasks will be to update the municipal operations and community GHG emissions inventories with calendar year 2022 data. Additionally, the existing GHG emissions inventory templates will be updated to allow for the City of Phoenix to compare GHG emissions across all previous inventories.

The project team will conduct the municipal operations GHG emissions inventory according to the Local Governments Operations Protocol (LGOP); the same methodology utilized for the 2005, 2012, 2015, 2018, and 2020 GHG emissions inventories.

The community GHG emissions inventory will be conducted according to Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC). Additionally, the project team will take extra review steps to ensure that the resulting 2022 community GHG emissions inventory is compliant with the Global Covenant of Mayors for Climate & Energy (GCoM) reporting framework. Ensuring the 2022 community GHG emissions inventory is GCoM compliant will facilitate City of Phoenix's ability to submit and track GHG emissions with organizations like GCoM and the CDP (previously known as Carbon Disclosure Project) within the summer 2024 reporting cycle.

Task 1: Data Needs Assessment & Acquisition

Collect previous data requests submitted to the City of Phoenix for previous municipal operations and community GHG emissions inventories. Evaluate current datasets with respect to previously provided datasets and note any changes between source datasets. Building from the previous data requests, and the raw datasets previously provided by the City of Phoenix, the project team will develop two separate data request lists: one (1) for the 2022 municipal operations GHG emissions inventory and (1) for the community GHG emissions inventory. After the data request list is submitted, data acquisition will be performed by the City of Phoenix with guidance provided by the project team as needed. The project team will setup a secure protocol to facilitate the delivery of data and data management between ASU and the City of Phoenix.

Task Outcome(s):

- 1a. Updated Municipal Operations GHG Emissions Inventory Data Request List.
- 1b. Updated Community GHG Emissions Inventory Data Request List.

Task 2: Data Quality Assurance Review and Data Quality Report

After the Data Needs Assessment & Acquisition tasks are finalized, the project team will conduct a Data Quality Assurance Review and produce a Data Quality Report. This task will perform a quality control check to verify that data is sufficient and does not contain any errors or omissions that would prevent the accurate calculation of GHG emissions. This task will be an iterative task with constant communication between the project team and City of Phoenix regarding the state of the data. At the completion of this task, the project team will produce two separate data quality reports: one (1) for the 2022 municipal operations GHG emissions inventory and (1) for the community GHG emissions inventory.

Task Outcome:

- 2a. Municipal Operations GHG Emissions Data Quality Report.
- 2b. Community GHG Emissions Data Quality Report.

Task 3: Project Status Meeting & Data Quality Update

Project status meeting to review the collected data, discuss any changes that are necessary to the existing municipal operations and community GHG emissions inventory templates, discuss any changes to the boundaries of the emissions inventory, set up communications protocols for the remainder of the project. The project status meeting will also be an opportunity to discuss the data collection process, the necessary steps to fulfill outstanding data requests, and/or any estimation methods necessary to address data gaps. Additionally, project stakeholders will review the boundary conditions/assumptions set for the previous municipal operations and community GHG emissions inventory.

Based on feedback from this meeting, the Data Quality Report will be updated.

Task Outcome:

- 3a. Project Status Meeting and Data Quality Validation – Municipal Operations
- 3b. Project Status Meeting and Data Quality Validation – Community
- 3c. Updated Municipal Operations GHG Emissions Data Quality Report.
- 3d. Updated Community GHG Emissions Data Quality Report.

Task 4: GHG Emissions Inventory Template Update

Update the existing municipal operations and community GHG emissions inventory templates. The existing GHG emissions inventory templates are built to calculate GHG emissions from raw data provided by City of Phoenix and collected from other primary data sources. The templates present GHG emissions data in structured tables by emissions sector, emissions scope, and sector-level performance metrics. The first part of this update will be to process the collected primary data into the backend of the municipal operations and community GHG emissions inventory templates. After data inputs to the 2022 GHG inventory templates, the project team will perform any necessary updates to the worksheets in the templates that contain emissions factor data, calculate and report GHG emissions, or calculate and report performance metrics. The project team proposes to use the latest emissions factors published by the local utilities, IPCC and USEPA. GHG emissions totals from previous years will be updated with the latest IPCC/USEPA GHG emissions factors. The 2022 Municipal Operations GHG Emissions Inventory Template will be based on the template previously developed by the project teams. The 2022 Community

GHG Emissions Inventory Template will be based on the previously developed template and also incorporate any updates to the City Inventory Reporting and Information System (CIRIS) GHG emissions reporting template. The project team will review 2022 community GHG emissions inventory and ensure it is GCoM compliant.

Task Deliverable:

- 4a. 2022 Municipal Operations GHG Emissions Inventory Template.
- 4b. 2022 Community Operations GHG Emissions Inventory Template.

Task 5: Report preparation, research and writing

As part of this process, the project team will review the previous municipal operations and community GHG inventory reports, executive summaries, and presentations. After this review, the project team will create two new report templates – one for the municipal operations inventory and one for the community inventory – that are both detailed and function as public-facing documents in English and Spanish. If requested, the reports will be accompanied by a slideshow presentation; one for each inventory. This task will be an iterative task with constant communication between the project team and City of Phoenix to finalize the summary report and a summary presentation.

Task Deliverable:

- 5a. 2022 Municipal Operations GHG Emissions Inventory
 - Comprehensive Public-Facing Report (English and Spanish)
 - Presentation and/or slide materials, if requested
- 5b. 2022 Community GHG Emissions Inventory
 - Comprehensive Public-Facing Report (English and Spanish)
 - Presentation and/or slide materials, if requested

Timeline. The study will be completed within 6 months from start date but no later than **May 17, 2024**.

Cost. The total payable to ASU for the project is **\$104,780**.

City of Phoenix will consent, upon successful completion of the project, to development and publication of a short (1- to 2-page) “case brief” explaining the challenge, project approach, solution and impacts of the project. Such consent would be dependent on the City of Phoenix’s satisfaction with the results. The case brief would be posted on ASU websites and used as the basis for public relations, marketing and ASU student education. City of Phoenix will also consider co-creating one or more in-depth case studies of the project that might be published in academic and/or industry journals. In both cases, ASU recognizes that confidentiality considerations may result in the delay of publication of the above documents for an extended period of time.

Staffing.

Northern Arizona University School of Informatics, Computing, and Cyber Systems

The School of Informatics, Computing, and Cyber Systems (SICCS) at Northern Arizona University (NAU) integrates a range of educational programs and interdisciplinary research at the intersection of computational and data sciences with engineering, the natural and social sciences, the arts, and business. Our faculty and academic programs combine expertise in environmental and ecological informatics, health and bioinformatics, computer science, and electrical engineering.

Dr. Richard Rushforth is research faculty at the Northern Arizona University School of Informatics, Computing, and Cyber Systems. He has led the development of all of the City of Phoenix's current GHG emissions inventory workbooks for municipal operations and community-scale GHG emissions inventories since the 2012. Similarly, he will lead this project, providing oversight and technical guidance on all aspects of the project.

The Rob and Melani Walton Sustainability Solutions Service

Arizona State University (ASU), named the most innovative college in the US for five straight years, is home to the nation's first comprehensive School of Sustainability and has more than 500 Sustainability Scientists and Scholars. ASU's Rob and Melani Walton Sustainability Solutions Service (RMWSSS) harnesses the knowledge of these diverse experts to accelerate the delivery of scalable sustainable solutions to the economic, environmental and social challenges impacting the globe. RMWSSS assembles custom teams of experts who co-create solutions with governments, businesses, non-profits and communities to address complex local and global challenges of sustainability. RMWSSS will provide project management along with additional support and resources in collaborating with Dr. Rushforth in this project.