

COUNCIL ACTION FORM

SUBJECT: **AWARD OF CONTRACT FOR THE DEVELOPMENT OF A
COMMUNITY GREEHOUSE GAS INVENTORY, FORECASTING
AND RECOMMENDATIONS REPORT**

BACKGROUND:

For decades, the City of Ames has actively engaged in saving resources, reducing energy demand, and promoting diversified waste management and landfill diversion. There is a growing movement in the community to promote conservation of finite natural resources as a means to achieving a greater global good – a more sustainable future. One of the priorities of the City Council is to expand Sustainability Efforts by evaluating the community's greenhouse gas impact and looking for ways to reduce it. GHG Inventories are frequently developed as part of a Climate Action Plan or a broader community approach to carbon reduction. Establishing a Community Greenhouse Gas (GHG) Inventory, Forecasting, and Recommendations Report using standard data-gathering protocol is an effective first step in developing a Climate Action Plan.

A Request for Proposal (RFP) was developed to engage a consultant to implement a study leading to increased awareness and understanding of community GHG emissions and community contributions. The consultant is asked to forecast projections related to impacts of status quo actions, as well as opportunities to reduce carbon emissions. The consultant is also expected to create standardized collection tools for future GHG inventory collection and assessment.

The Community Greenhouse Gas (GHG) Inventory, Forecasting, and Recommendations Report is envisioned to take six months to complete at a cost of \$24,960. The City Council has budgeted \$25,000 from Council contingency for this project.

The RFP was issued and five responses were received. An evaluation team comprised of City staff members (representing the City Manager's Office/Sustainability, Resource Recovery, Water, Electric, and Planning Departments) ranked the five proposals using an evaluation matrix identified in the RFP. Each proposal was evaluated based on a combination of quality of service; experience, past performance, and qualifications of personnel; organization and clarity of the proposal; timeline; and cost.

The scores for each of these criteria used a scale of 1 to 5 and then assigned a corresponding weight factor. The maximum possible score, combining all eight evaluators, was 4000.

The proposal fees and initial rankings are listed below:

Firm	Score	Rank	Fee Proposal
PaleBLUEdot, LLC, Maplewood, MN	3480	1	\$18,960
AET Group, Inc, Kitchner, ON, Canada	3050	2	\$24,500
LEIF, LLC, Minneapolis, MN	2905	3	\$24,960
Good Company, Eugene, OR	2875	4	\$25,000
KLA, Kim Lindgren Associates, Inc, Woburn MA	2849	5	\$29,805

The next step in the process involved interviews with the evaluation team and the top three firms via teleconference. All three firms were asked to provide a brief presentation introducing and demonstrating their understanding of the scope of services. The evaluation team provided a list of specific follow up issues. These issues included data-collection practices and past experiences, how data collection adheres to established GHG Inventory standards, the ability to continue data collection independently in the future, expectations of a finished product, public education tools and summaries, the ability to incorporate a student learning opportunity, and the amount of staff time required in the data-collection process.

Interviews were evaluated based on methods for achieving the desired outcomes, a clear understanding of the goals of the project, methodology, and past experience with projects of similar size and scale.

The combined scores of the written proposals and interviews resulted in the following ranking:

Firm	Rank
PaleBLUEdot, LLC, Maplewood, MN	6580
LEIF, LLC, Minneapolis, MN	5430
AET Group, Inc, Kitchner, ON	5425

After the scoring process was complete, PaleBLUEdot received the highest ratings and was selected as the preferred consultant. The PaleBLUEdot proposal included collaboration with Orange Environmental, a greenhouse gas analyst group, as well as partnering with an ISU graduate student to serve as the team's GHG Emissions Research Specialist. The team has an ongoing relationship with the ISU graduate student, and her experience includes multiple greenhouse gas inventories with other Iowa cities. The project team also includes a public education communication support member. The PaleBLUEdot team demonstrated experience with many cities in Minnesota and Iowa through their work on greenhouse gas inventories, climate vulnerability assessments, climate adaptation action plans, and renewable energy planning.

In addition to providing the proposal for the Community Greenhouse Gas (GHG) Inventory, Forecasting, and Recommendations Report, the PaleBLUEdot team offered optional services including a Climate Vulnerability Assessment for an additional \$4,000 and a Renewable Energy Potentials Study for an additional \$2,000. City staff believe these additional services would provide helpful, foundational data for future use and guidance. With the addition of these optional services, PaleBLUEdot remains within the budgeted amount. It is City staff preference that the scope of services include the optional services.

The scope of work includes a number of steps throughout the development process. This information is primarily data collection to create an Ames-specific carbon emissions baseline based on the ICLEI Global Protocol for Community-Scale Green House Gas Emissions. There will not be public component to the information-gathering phase of the project. The final phase of the project is for the consultant to present the Inventory, Forecasting, and Recommendations Report to the City Council, and public comment could be part of that process.

A summary of the primary tasks and major deliverables are described in the following table. Each task is defined in greater detail within the scope of work.

No. 1: Kick Off Meeting	\$1,110
No. 2: Identify Emissions Sectors and Emission Categories	\$1,250
No. 3: Data Collection	\$8,750
No. 4: Complete GHG Emissions Forecasting for 2030 and 2040	\$ 750
No. 5: Provide a final GHG Report and Calculations Summary	\$6,600
No. 6: Present Finding	\$ 500
No. 7: Climate Vulnerability Assessment (optional)	\$4,000
No. 8: Renewable Energy Potentials Study (optional)	<u>\$2,000</u>
	\$24,960

ALTERNATIVES:

1. Approve the award of contract with PaleBLUEdot of Maplewood, MN for a Community Greenhouse Gas (GHG) Inventory, Forecasting, and Recommendations Report in the amount of \$24,960.
2. Direct staff to negotiate a contract for a Community Greenhouse Gas (GHG) Inventory, Forecasting, and Recommendations Report with one of the other firms that submitted a proposal to the City.
3. Do not award contract.

CITY MANAGER'S RECOMMENDED ACTION:

The three final consulting firms had varied levels of experience and provided different strategies for creating a Community Greenhouse Gas (GHG) Inventory, Forecasting, and Recommendations Report consistent with the RFP. After evaluating the scope of services and experience of each consultant team, interviewing the consultant, and asking questions; PaleBLUEdot, of Maplewood, MN, was identified as the high score and is qualified to complete the work.

The proposed PaleBLUEdot scope of work is consistent with standard protocol in developing a final report that would allow the City to work towards its goal of reduced carbon emissions.

Therefore, it is the recommendation of the City Manager that the City Council approve Alternative #1, thereby approving the contract with PaleBLUEdot, Maplewood, MN for Community Greenhouse Gas (GHG) Inventory, Forecasting, and Recommendations Report in the amount of \$24,960.

Attached is the supplemental materials pertaining to PaleBLUEdot draft contract document with the scope of work.

**CONTRACT FOR
COMMUNITY GREENHOUSE GAS INVENTORY, FORECASTING AND RECOMMENDATIONS
REPORT FOR THE CITY OF AMES**

THIS AGREEMENT, made and entered into effective the 12th day of November, 2019, by and between the CITY OF AMES, IOWA, a municipal corporation organized and existing pursuant to the laws of the State of Iowa (hereinafter sometimes called "City") and PaleBLUEdot, LLC (a Limited Liability Corporation, organized and existing pursuant to the laws of the State of Minnesota and hereinafter called "Provider");

WITNESSETH THAT:

WHEREAS, the City of Ames has determined that certain services to be provided to the City of Ames and its citizens by Provider, such services and facilities being hereinafter described and set out, should be purchased in accordance with the terms of a written agreement as hereinafter set out;

NOW, THEREFORE, the parties hereto have agreed and do agree as follows:

**I
PURPOSE**

The purpose of this Agreement is to procure for the City of Ames certain services as hereinafter described and set out; to establish the methods, procedures, terms and conditions governing payment by the City of Ames for such services; and, to establish other duties, responsibilities, terms and conditions mutually undertaken and agreed to by the parties hereto in consideration of the services to be performed and monies paid.

**II
SCOPE OF SERVICES**

Provider shall provide the services set out in the City of Ames, Iowa Request for Proposal #2020-011 Scope of Services for the Community Greenhouse Gas Inventory, Forecasting and Recommendations Report for City of Ames and PaleBLUEdot response dated August 29, 2019 attached hereto as Exhibit A.

The City, without invalidating the Agreement, may direct changes in the services within the general scope of the Agreement, with the authorized payment maximum being adjusted accordingly. Any change in the scope of service by the provider shall be done by written agreement signed by both parties. The added cost or cost reduction to the City resulting from a change in the Agreement shall be determined by mutual acceptance of a lump sum properly itemized and supported by sufficient data to permit evaluation, or by unit prices stated in the Agreement or subsequently agreed upon.

It shall be the responsibility of the provider, before proceeding with any change in scope, to verify that the change has been properly authorized on behalf of the City. No additional charges or any other change in the Agreement will be allowed unless previously authorized in writing by the City, with the applicable compensation method and maximum authorized additional sum stated.

**III
METHOD OF PAYMENT**

A. Payments shall be made by the City of Ames in accordance with the following task schedule:

Task	Total Amount
a. No. 1: Kick Off Meeting	\$1,110
b. No. 2: Identify Emissions Sectors and Emission Categories	\$1,250
c. No. 3: Data Collection	\$8,750
d. No. 4: Complete GHG Emissions Forecasting for 2030 and 2040	\$ 750
e. No. 5: Provide a final GHG Report and Calculations Summary	\$6,600
f. No. 6: Present Finding	\$ 500
g. No. 7: Climate Vulnerability Assessment	\$4,000
h. No. 8: Renewable Energy Potentials Study	\$2,000

The maximum total amount payable by the City of Ames under this Agreement is \$24,960 and no greater amount shall be paid without written amendment. Reimbursables are included in the each task.

B. Payment will be made upon completion of the services and acceptance by the City of Ames. Provider shall submit an invoice upon completion of the services. The invoice shall include an itemization of the services for which payment is claimed. Invoices referencing the assigned purchase order number shall be sent to the following address:

City of Ames, Finance Dept. – Accounts Payable, PO Box 811, Ames, IA 50010

IV

FINANCIAL ACCOUNTING AND ADMINISTRATION

A. All claims for payment shall be supported by properly executed payrolls, time records, invoices, contracts, vouchers, or other documentation evidencing in proper detail the nature and propriety of the charges. All checks, payrolls, invoices, contracts, vouchers, orders, or other accounting documents pertaining in whole or in part to this Agreement shall be clearly identified as such and readily accessible for examination and audit by the City or its authorized representative.

B. All records shall be maintained in accordance with procedures and requirements established by the City Finance Director, and the City Finance Director may, prior to any payment under this Agreement, conduct a pre-audit of record keeping and financial accounting procedures of the Provider for the purpose of determining changes and modifications necessary with respect to accounting for charges made hereunder. All records and documents required by this Agreement shall be maintained for a period of three (3) years following final payment by the City.

C. At such time and in such form as the City may require, there shall be furnished to the City such statements, records, reports, data, and information as the City may require with respect to the payments made or claimed under this Agreement.

D. At any time during normal business hours, and as often as the City may deem necessary, there shall be made available to the City for examination all records with respect to all matters covered by this Agreement and Provider will permit the City to audit, examine, and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment, and other data relating to all matters covered by this Agreement.

V

INSURANCE

A. The provider shall maintain insurance coverage in scope and amounts acceptable to the City's Risk Manager.

B. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City of Ames, its officials, employees, or volunteers.

C. Provider shall furnish the City with certificates of insurance and with original endorsements effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be on standard insurance company forms or forms provided by the City and are to be received and approved by the City before services commences. The City reserves the right to require complete, certified copies of all required insurance policies, at any time.

D. Provider shall include all sub-consultants as insured under its policies. All coverages for sub-consultants shall be subject to all of the requirements stated herein.

E. To the fullest extent permitted by law the Provider shall indemnify and hold harmless the City of Ames, their agents, and employees from and against all claims, damages, losses, and expenses, including, but not

limited to attorneys' fees arising out of or resulting from the performance of the services, provided that any such claim, damage, loss, or expense (1) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the services itself) including the loss of use resulting therefrom; and (2) is caused in whole or in part by any negligent act or omission of the Provider, any Sub-consultant, anyone directly or indirectly employed by any of them or any one for whose acts, any of them may be liable.

F. In no case will the Provider's coverage be constructed to provide coverage for acts of negligence alleged to be caused by the sole negligence of employees of the City of Ames.

VI

PROPRIETARY RIGHTS AND CONFIDENTIAL INFORMATION

Provider agrees to hold in trust and confidence any confidential and/or proprietary information or data relating to City business and shall not disseminate or disclose such confidential information to any individual or entity, except Provider's employees or sub-consultants performing services hereunder (who shall be under a duty of confidentiality), and any other individuals specifically permitted in each instance by the City.

VII

TERMINATION

The City of Ames may terminate this Agreement without penalty to the City at any time by giving written notice to the Provider at least fifteen (15) days before the effective date of such termination. In any case where the Provider fails in whole or in part to substantially perform its obligations or has delivered nonconforming services, the City shall provide a Cure notice. If after notice the Provider continues to be in default, the City may terminate this agreement immediately. The City shall only be obligated to compensate the Provider for compliant services performed prior to notice of termination.

VIII

INDEPENDENT CONTRACTOR STATUS

Provider agrees that the relationship between Provider and the City is that of an independent contractor for employment tax purposes. The Provider shall be solely responsible for all taxes relating to payments under this agreement including those of employees.

IX

LAWS

This contract is governed by the law of the State of Iowa with venue in the appropriate state and/or federal courts for Story County, Iowa.

X

ASSIGNMENT

This Agreement may not be assigned or transferred by the Provider without the prior written consent of the City.

XI

AFFIRMATIVE ACTION

~~Provider shall place on file with the City a statement of nondiscrimination policy in the form of a completed Assurance of Compliance with the City of Ames, Iowa, Affirmative Action Program satisfactory to the Affirmative Action Officer of the City.~~

XII

DURATION

This Agreement shall be in full force and effect from and after November 12, 2019 until completion of the Services, or, until terminated by the City of Ames, Iowa.

IN WITNESS WHEREOF the parties hereto have, by their authorized representatives, set their hand and seal as of the date first above written.

CITY OF AMES, IOWA

By: _____
John A. Haila, Mayor

By _____

Attest by: _____
Diane R. Voss, City Clerk

Printed Name and Title

EXHIBIT A COMMUNITY GREENHOUSE GAS INVENTORY, FORECASTING AND RECOMMENDATIONS REPORT

Approach

Key to all phases of this project will be consistent communication with project team members and the City of Ames. To assure that the project goals are met, our team will lead regularly scheduled progress and update meetings with the City's Project Manager. Progress sessions will include both brief phone conferences and more in-depth, in-person meetings coordinated in advance based on work phases and schedule.

Project Kickoff

Successful project launch through a kick-off meeting to confirm data availability, relevant past and current project efforts, and data from the City; reaffirm project goals and objectives; confirm project scope, approach, and schedule. The project kick-off session will be held in-person, with the schedule and agenda coordinated in advance with the City's Project Manager.

Team Communication

Key to the success of the City of Ames Community Greenhouse Gas Inventory, Forecasting, and Recommendations Report project will be regular communication with all project team members. To assure that the project goals are met our team will lead regular team meetings with the City's project team members. These "owner" meetings will be coordinated and scheduled in advance at the project Kick-off meeting.

Project Lead, Accessibility, and Responsiveness.

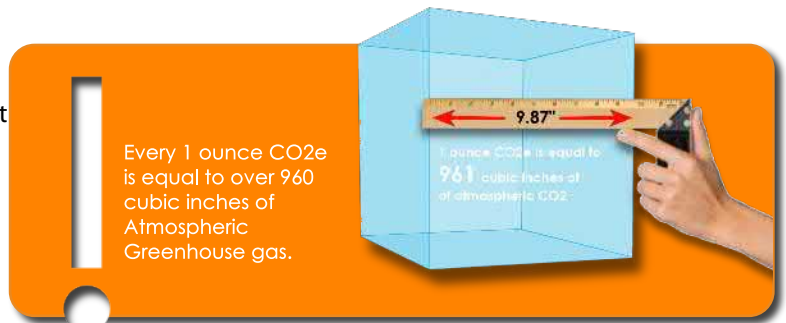
The paleBLUeDot team project lead will be Ted Redmond, who will manage the team's efforts on a day-to-day basis. Ted will function as the communication point of contact assuring that team communications are maintained, shared, and acted upon. Ted will be accessible to the City of Ames via phone, email and text message on a daily basis as needed by the City. All phone calls and e-mails will be responded to within one business day of receipt.

Team Availability

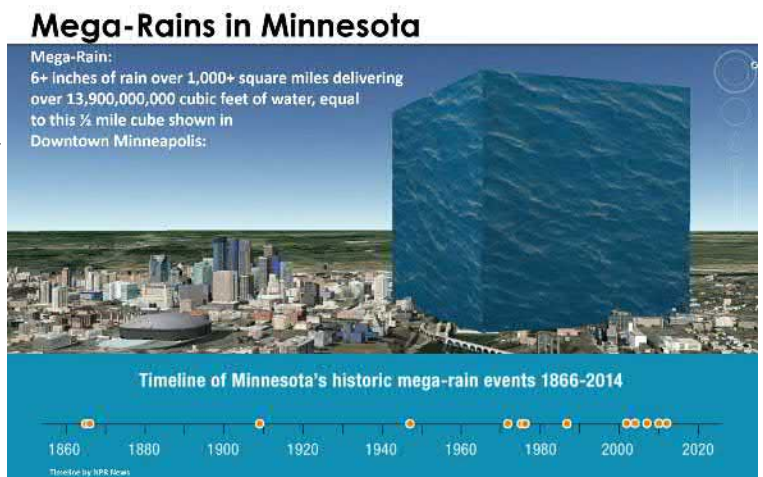
The paleBLUeDot team is available to begin work on the City of Ames Community Greenhouse Gas Inventory, Forecasting, and Recommendations Report project promptly upon approval to proceed. Existing project workloads support the appropriate engagement of all core project team members to facilitate a timely completion of the project meeting the final schedule to be established with City at project kick-off.

Visualization

Final reports will include a range of graphics intended to help communicate nuanced, technical information to a wide audience. In addition, Greenhouse Gas emissions will frequently be represented not only in the traditional terms of metric tonnage, but also graphically represented in terms of physical volume of atmosphere occupied by those emissions. These graphic representations are a unique hallmark of paleBLUeDot's work in support of our core mission of elevating public discourse around climate action.



Visualization Examples from paleBLUeDot public summary reports



Approach

paleBLUEdot’s approach to this inventory of City of Ames’s municipal and community-wide greenhouse gas emissions is rooted in our extensive experience in compiling GHG inventories for communities as well as organizations. Our team also has demonstrated expertise in climate action planning and emissions reduction strategy identification. Our approach will help identify which community and municipal activities contribute the most to its emissions, and what those contributions mean for the community and City of Ames as it moves toward its goals. The following is an overview of our team’s project resources and methodology.

Task 1. Kick Off Meeting

We will convene an initial in-person kick-off meeting to confirm the data available for the City Operations and City-Wide greenhouse gas inventories, confirm project methodology, data collection process, scope, and boundaries. The Project Kick-off meeting will also review the full project approach outlined in this proposal and confirm the services desired. In addition, the Project Kick-off meeting will confirm the City’s goals, expected outcomes, desired uses for the final inventory data and report materials, and a discussion on how this project can most effectively support the City’s mitigation and climate planning efforts. The meeting will also confirm the project schedule, establish project update protocols, and establish preliminary dates for the balance of the project meetings. This meeting will also be used to begin identification and sharing of relevant data and sources available to the City, such as for energy consumption, transportation activities, and waste disposal.

City Interaction: Kick-off meeting

Deliverables: Kick-off meeting, finalized project approach and schedule.

Task 2 Identify Emissions Sectors and Emission Categories

Prior to starting the Data Collection task of this project effort, the paleBLUEdot team will prepare an overview and comparison of citywide and city operations GHG inventory sectors and categories commonly included in community GHG inventories based on ICLEI GHG protocols. The paleBLUEdot team will compile a recommendation on the emissions sectors to be included in the citywide and city operations GHG inventories and will review with City for consensus at the Project Kick-off meeting.

City Interaction: Kick-off meeting

Deliverables: Review and recommendation of citywide and city operations GHG sectors to be included in Inventory (electronic documents)

Sectors and Categories for GHG Inventories

Global Covenant of Mayors Emissions Sector Guidance



City Inventory Reporting and Information System (CIRIS) Emissions Sector Guidance

Sectors and sub-sectors	Scope 1	Scope 2	Scope 3
Stationary energy			
Residential buildings	✓	✓	✓
Commercial buildings	✓	✓	✓
Institutional buildings	✓	✓	✓
Manufacturing industries and construction	✓	✓	✓
Energy industries	✓	✓	✓
Energy generation supplied to the grid	✓		
Agriculture, forestry, and fishing activities	✓	✓	✓
Non-specified sources	✓	✓	✓
Fugitive emissions from coal	✓		
Fugitive emissions from oil and natural gas systems	✓		
Transportation			
On-road	✓	✓	✓
Railways	✓	✓	✓
Waterborne navigation	✓	✓	✓
Aviation	✓	✓	✓
Off-road	✓	✓	
Waste			
Solid waste generated in the city	✓		✓
Solid waste generated outside the city	✓		
Biological waste generated in the city	✓		✓
Biological waste generated outside the city	✓		
Incinerated and burned waste generated in the city	✓		✓
Incinerated and burned waste generated outside city	✓		
Wastewater generated in the city	✓		✓
Wastewater generated outside the city	✓		
Industrial processes and product use (IPPU)			
Industrial processes	✓		
Product use	✓		
Agriculture, forestry, and fishing activities (AFOLU)			
Livestock	✓		
Land	✓		
Other agriculture	✓		



Approach

Task 3 Data Collection

The paleBLUEdot team will review and finalize the data collection process and methodology with the City of Ames at the Project Kick off meeting. Below is an overview of the approach methodology and primary steps our team will take to collect and analyze the inventory data for both the Citywide and City Operations inventories:

Citywide Inventory:

paleBLUEdot will outline specific data items needed for the Citywide inventory, with a brief description of the item, and anticipated data source for the information. This Data Collection outline will be reviewed with City project staff to affirm our data collection process. The Citywide data collection will be built around the requirements and organization of the ICLEI Global Protocol for Community-Scale Green House Gas Emissions. The primary steps for completion of the Citywide Inventory are:

3a	Data collection and analysis:
3a.1	Spreadsheet analysis setup: Consultants will setup the spreadsheet analysis to accommodate the data from the 4 Study Years and include the capacity for City staff to update the spreadsheets in subsequent years.
3a.2	Socioeconomic data: Consultants will add socioeconomic data about the City covering the Study Period and perhaps longer. Data will include population, households, and full-time-equivalent (FTE) employment for the City, Iowa State University (ISU), and Story County.
3a.3	Stationary combustion and electricity: City provides annual energy consumption data by citywide customers and annual emission factors for Ames Municipal Light and Power. City requests same data from Alliant Energy, Midland Power Cooperative, Consumers Energy, Iowa State University, and the Mary Greeley Medical Center. If requested, Consultant provides draft energy data request letters. Data will be segregated into the following consumption categories: residential, commercial, industrial, institutional, and streetlights and signals, and include the 4 Study Years and as many prior years as possible for trend analysis. The consultants will compile the data, generate annual GHG emission amounts, identify change factors (e.g. demographic changes, changes in emission factors, addition or elimination of major energy consumers, addition of renewable energy, etc.), and analyze trends.
3a.4	Renewable energy and other sources: City will provide information regarding current and potential contracts for renewable energy. Consultants will research whether data is available for additional significant sources of energy consumption located within the City (e.g. fuel oil, renewable energy).
3a.4	Transportation: Consultants translates State data regarding citywide vehicle miles traveled into estimated GHG emissions by fuel type (gasoline, diesel, E-85, biodiesel, etc.). Consultants makes determination whether emissions from the Ames Municipal Airport can be considered de minimis, and will prepare justifications for classifying railroads and water-based emissions as de minimis.
3a.5	Solid waste management: City provides processing data from its Resource Recovery Plant for municipal solid waste. Consultants allocate tonnages on a per-capita basis since the facility accepts waste from throughout Story County. City provides annual share of refuse derived fuel (tons) and natural gas consumption (therms) at Municipal Light and Power. Consultant calculates and allocates emissions consistent with ICLEI Method SW.7.
3a.6	Potable water: City provides monthly data for potable water delivered to city customers and separates data for sales to other cities (if applicable).
3a.7	Wastewater treatment: City provides annual flows treated by the City's Water Pollution Control Plant and emission factors. Data segregates city flows from those from the City of Kelley. Consultants estimates GHG emissions associated with wastewater treatment.
	Preparing deliverables:
3a.8	Excel file: Consultants prepare an Excel file that includes all of the spreadsheets necessary to produce the results.
3a.9	Findings report: Consultants prepare a Findings report (in Word) that summarizes the process, the findings, and Takeaways.
3a.10	First draft: Consultants help prepare an integrated first draft of the deliverables.
3a.11	Final version: Consultants respond to comments received regarding the first draft of the deliverables and help finalize documents.

paleBLUEdot will lead the data collection efforts from both City internal and external data sources for the Citywide inventory. The data collection will include collection of two types of data: raw use/activity data (energy use, transportation mileage and VMT, etc) as well as Emission factor data. Emission factor data will support the development of appropriate community-specific emissions factors which can then be applied to the raw use/activity data to calculate community appropriate GHG emissions by category. Emission factor data includes items such as utility-specific emissions profiles or regional eGRID values.

We strive to collect the most locally specific data available (e.g., utility-specific emission factors). We are aware that gathering raw use/activity data for some sectors often require additional third party outreach, coordination, and the development of alternative methodology for modeling use and activity data. From our experience, we also understand that some locally specific data, or measured data, are not always available and require regional or national averages or



Approach

Task 3 Data Collection

Citywide Inventory (continued):

Below is a partial review of project resources by GHG Emissions sector:

GHG Emission Sector	Project Resource
Residential Energy Consumption - Electricity	Data Source: Alliant Energy and Ames Municipal Light and Power, Midland Power Cooperative, and Consumers Energy. Emissions Factors: Same as above
Residential Energy Consumption - Natural Gas	Data Source: Alliant Energy Emissions Factors: US Community Protocol default fuel emission factors
Commercial/Institutional Energy Consumption - Electricity	Data Source: Alliant Energy and Ames Municipal Light and Power, Midland Power Cooperative, Consumers Energy, Iowa State University, and the Mary Greeley Medical Center. Emissions Factors: Same as above
Commercial Energy Consumption - Natural Gas	Data Source: Alliant Energy Emissions Factors: US Community Protocol default fuel emission factors
Transportation - On Road	Data Source: Iowa Department of Transportation VMT Estimates Emissions Factors: US EPA MOVES model
Transportation - Public Transit	Data Source: CyRide, in collaboration with ISU Emissions Factors: EPA Climate Leadership Emissions Factors
Transportation - Air Travel	Data Source: Ames Municipal Airport Emissions Factors: IPCC and US EPA Inventory of US GHG Emissions and Sinks
Waste - Solid Waste	Data Source: Ames Resource Recovery Plant (produces RDF), Boone County landfill (accepts RDF rejects). Municipal Light and Power co-fires RDF with natural gas. Emissions Factors: Iowa DNR Statewide Waste Characteristics Study / US Community Protocol Default Landfill Assumptions. RDF emissions factors.
Waste - Wastewater	Data Source: Ames Water Pollution Control plant. Emissions Factors: US Community Protocol population based emissions models / Fuel Mix Disclosure Report / US EPA eGRID
Water	Data Source: Ames Public Works Emissions Factors: Above emission factors for electricity and natural gas consumption.

City Operations:

As with the Citywide inventory, the city operations data collection will include collection of two types of data: raw use/activity data (energy use, transportation mileage, etc) as well as Emission factor data. Emission factor data will support the development of appropriate emissions factors which can then be applied to the raw use/activity data to calculate community appropriate GHG emissions by category. The Emission factor data collected in the Citywide inventory effort will be applied to the City Operations inventory as well.

To assist the City's future GHG inventory efforts, the paleBLUEdot team, will begin the City Operations data collection by developing a City Operations Raw Data Collection Questionnaire. This document will identify the raw consumption data – such as electric use by building - required to compile the City Operations inventory. The questionnaire will focus on collection of relevant data in forms which are typically readily available to City department leads and City Administration. The questionnaire will be provided to the City's project manager for distribution to all appropriate contacts within the City to complete and will be created in a way to support sharing with multiple key staff in order to obtain all relevant data as efficiently as possible. When completed, the questionnaire will be provided to the City as a data collection template for future city operation GHG inventory efforts.



Approach

Task 3 Data Collection

Citywide Inventory (continued):

The primary steps for completion of the City Operations Inventory are:

3b	Data collection and analysis:
3b.1	Questionnaire: City completes a questionnaire prepared by the Consultants. Questionnaire specifies all data needed to complete the Inventory.
3b.2	Energy consumption: City provides energy use data (including energy provider) for facilities owned and leased for City operations (annual usage data for electricity, natural gas, and other fuels, e.g., diesel for emergency generators). Consultant compiles and evaluates data by major categories (city buildings and facilities; parks and recreation facilities; streetlights, signals, and flashers; potable water production; and sanitary sewers); estimates associated GHG emissions; normalizes for changes in electric utility emission factors and per-FTE emission rates, and analyzes trends.
3b.3	Liquid fuels: City provides transportation fuel usage data by fuel type (gasoline, diesel, biofuels) for City transportation activities (public works, police, fire, pool vehicles, official travel). Consultant calculates associated GHG emissions.
3b.4	Contractor services: City provides information regarding contracted services for normal operating responsibilities (e.g. contractor contact people and contract dollar totals for road maintenance, seal coating, sweeping, and plowing). Consultant estimates associated
3b.5	Official travel: City provides information regarding official travel by City staff and elected officials (destination cities by air and road).
3b.6	Solid waste management: Consultant will use per-FTE waste management emissions to estimate city operations emissions.
3b.7	Potable water production: Consultant uses water production and consumption data from the citywide GHG Assessment to calculate water production efficiencies (Btu per gallon, GHG per gallon).
3b.8	Wastewater treatment: Consultant uses wastewater treatment data from the city-wide assessment.
	Preparing deliverables:
3b.9	Excel file: Consultants prepares an Excel file that includes all of the spreadsheets necessary to produce the results.
3b.10	First draft: Consultants help prepare an integrated first draft of the deliverables.
3b.11	Final version: Consultants respond to comments received regarding the first draft of the deliverables and help finalize documents.

City Interaction: Progress Meetings

Deliverables: City Operations Data Collection Questionnaire Template, Completed Citywide and City Operations GHG Inventory workbook (electronic documents)

Task 4 Complete GHG emissions forecasting for 2030 and 2040

paleBLUEDot will complete forecasting modeling for GHG emissions. This forecast may be used in support of identifying trends, establishing GHG reduction goals, and prioritizing emission sectors for reduction strategies and actions.


The team will model a “business as usual” forecast scenario for Citywide and City Operations emissions. This forecast will anticipate future emissions for the City of Ames assuming no further emissions reductions actions are taken. Using the ClearPath tool’s forecasting module as well paleBLUEDot developed forecasting tools, we will build the forecast scenario to anticipate emissions changes through 2040 in each of the inventory emission categories as well as total emissions. This forecast will provide a valuable tool for the City not only in designing and prioritizing GHG emissions reductions strategies, but also supporting the measurement of strategy reduction success. The “business as usual” forecast will be based on a range of variables as data is available, including:

- Population projections.
- Projected emissions factor changes.
- Anticipated federal vehicle fuel efficiency standards (e.g., CAFE).
- State and regional laws and policies which impact emissions such as renewable portfolio standards and energy/green building codes.

City Interaction: Progress Meetings

Deliverables: Business as Usual Forecast (electronic documents)

How can GHG emissions weigh more than the fuel we burn



According to the US EPA:
The amount of carbon dioxide (CO₂) that is produced from burning a fuel weighs more than the amount of the fuel itself, because during complete combustion, each carbon atom in the fuel combines with two oxygen atoms in the air to make CO₂. The addition of two oxygen atoms to each carbon atom forms CO₂, which has an atomic weight of 44—roughly 3.6667 times the atomic weight of the carbon, which is 12.



Approach

Task 5:

Provide a final GHG Report and Calculations Summary

paleBLUEDot will prepare a Greenhouse Gas Inventory Report summarizing the methodology and findings of the City Operations and Citywide GHG inventories. The report's structure and content will be finalized through review with the City's project team, however, report content will include:

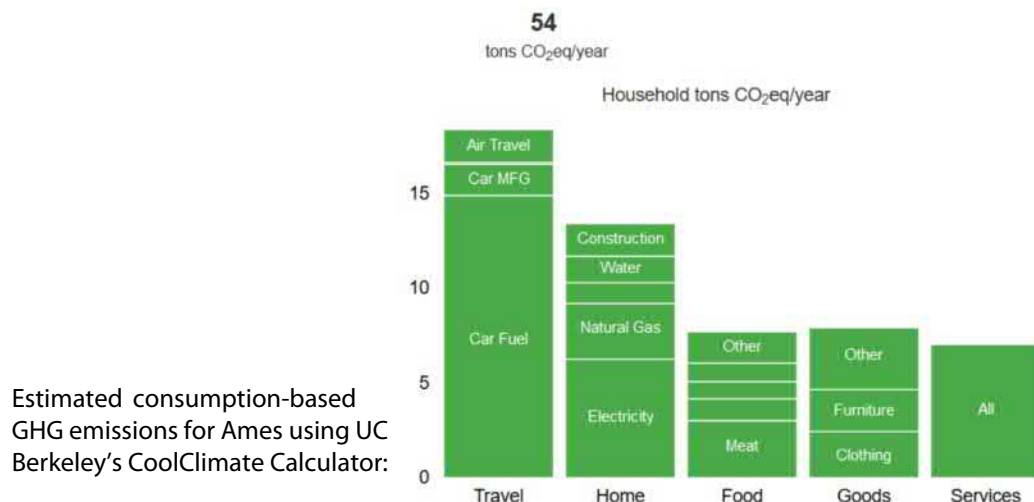
- Executive Summary, with an introduction to GHG concepts, emission sources by category, GHG Inventory summary, key data analysis findings from the inventory, and graphics/illustrations to support understanding of the technical data. This section will be designed to support the City using it as a stand-alone public communications piece.
- Methodology Overview, providing a discussion of the context of the inventory, purposes for conducting an inventory, and on-going use of the inventory finding. The section will also include an overview of the methods used to create the inventory, and other key concepts such as data availability, assumptions, and confidence levels.
- Inventory Detail, organized by emissions sector, both the City Wide and City Operations inventories will include a review of emissions sources, detailed sector raw use/activity data, emissions factors, and total sector emissions. The confidence level of all calculated emissions will be classified as "low", "medium", or "high" confidence based on the data source, accuracy, and modeling methods required for each sector. Each sector will also include relevant data analysis review supporting on-going year-to-year comparisons as well as GHG reduction strategy design and prioritization. Relevant data analysis will include calculations such as emissions assessment per capita, city-wide residential Energy Use Intensity (EUI) averages, City-Wide non-residential EUI, municipal solid waste per resident and per employee, vehicle miles traveled by road and vehicle type, water use and wastewater generation per capita, etc. These sections will also include an overview of sector appropriate GHG reduction strategy concepts as well as an identification of recommended Ames specific prioritization of mitigation areas for focus.
- Inventory Comparison, this section will compare the completed multiple years of GHG inventory each other as well as the business as usual forecast. In addition, the GHG inventory will be compared against select communities and State, Regional, and National benchmarks.

As a part of paleBLUEDot's mission to elevate the public discourse, our team strives to create reports which are attractive, engaging, and communicate visually as much as possible. We anticipate the Ames GHG Inventory Report to have concise text and a focus on graphs and visual communication. The goal will be to provide a clear overview of methodologies and the importance of tracking and reducing emissions as well as to serve as a baseline the City's mitigation planning efforts. paleBLUEDot has an in-house design team that creates visually appealing products including infographics and compelling data displays. The graphics and overall "consumability" for a public audience will be achieved through a community education quality assurance review conducted by Colleen Redmond.

The tools used by paleBLUEDot for data collection, forecasting, and the inventory workbook, including the City Operations Data Collection Questionnaire, shall be included as a part of the final report deliverable and offered in a transferable and accessible form that can be utilized for future inventory collection, forecasting and analysis by City staff.

City Interaction: Inventory Report Review meeting(s)

Deliverables: Draft and Final Greenhouse Gas Inventory Report; Executive Summary Report; Data collection and inventory tools (electronic documents)



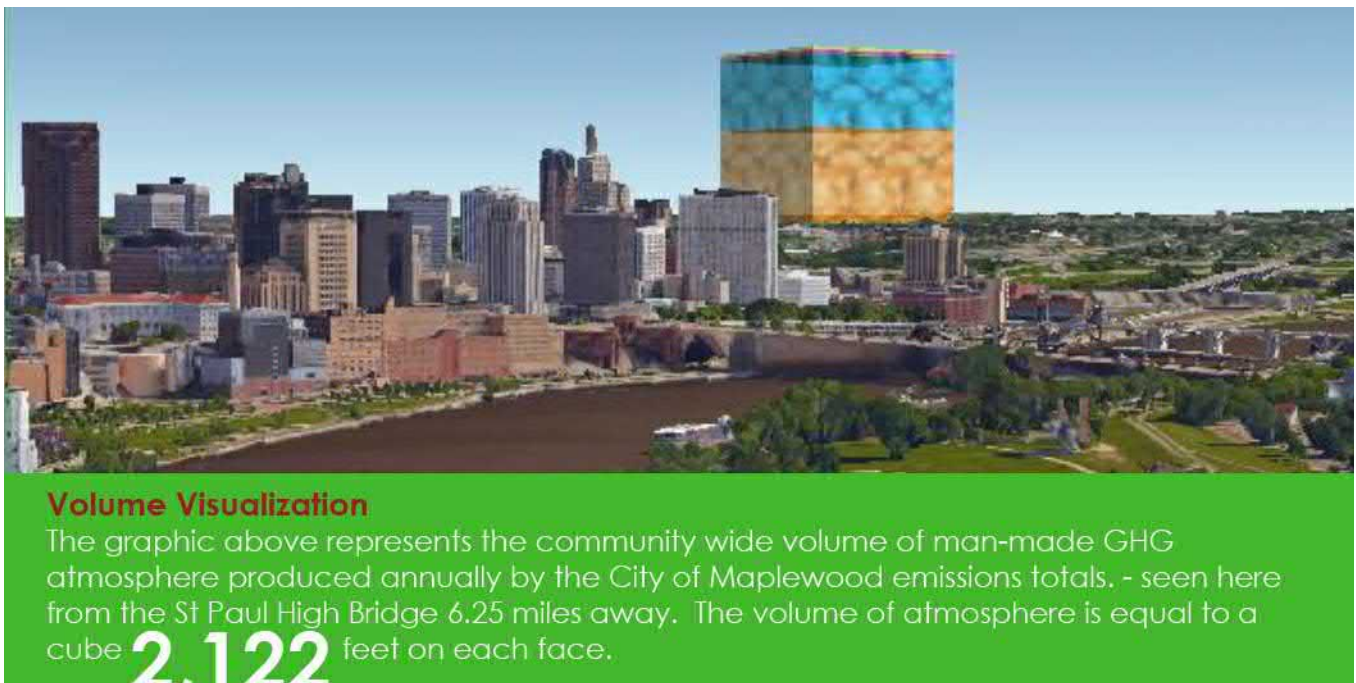
Approach

Task 6 Present Findings

The paleBLUEdot team will present the findings and final GHG inventory report to the Ames City Council at a meeting following the March 31, 2020 completion date. The paleBLUEdot team shall also be available for update/progress presentations at City Council work sessions if desired by the City. From our team's experience, we believe it may be helpful to provide a preliminary review of the draft final report at a City Council working session prior to the March 31st completion date. In addition, the City may wish for the paleBLUEdot team to provide a brief introduction of the project, methodologies, and expected outcomes at a City Council working session near the beginning of the project.

City Interaction: Presentation Prep meeting(s)

Deliverables: Final Presentation to City Council; working session presentations to City Council as desired and directed by City (electronic documents)



Example summary report visualization



Approach - Optional Services

OPTIONAL SERVICES

Understanding the City of Ames’s goal of establishing quality information in support of the City’s upcoming Climate Action Plan effort, the paleBLUEdot team offers the following optional services. These services are designed to provide comprehensive baseline information supporting GHG emissions reductions strategy decision making. Each of these efforts also includes the development of a “Menu of Strategies” which can be used to collaboratively review, refine, and prioritize Ames specific action strategies. Each of these optional efforts will provide critical additional information supporting a more robust, effective, and efficient future Climate Action Plan development.

Optional Task 7- Climate Vulnerability Assessment

As a documentation effort with the goal of providing robust data to the City of Ames upon which climate action strategies can be based, our team recommends the development of a high-level climate vulnerability assessment. The assessment will include the identification of climate change projections for the City, indication of likely impacts of these projections, and an identification of climate vulnerable populations and conditions within the community. The assessment will include possible impacts and risks associated with projected climate change for the region.

Drawing from US Census data, the paleBLUEdot team will map vulnerable populations within the City as well as existing City infrastructure and resources which may be capable of supporting climate adaptation strategies. These assessments will provide a basis for understanding vulnerabilities and resources which will support the decision making process needed for identifying and prioritizing climate adaptation measures to be included in the final Climate Action Plan.

Broad Climate Change Impacts and Risk Factors

The paleBLUEdot team will identify and summarize the broad climate change metrics already experienced, projected climate change impacts, and risk factors at a regional level. Data on the region will be collected from the US National Climate Assessment as well as academic resources. State of Iowa specific data will be collected and summarized from State and National agencies, and regional university data sources. In addition, detailed climate projections, based on National Center for Atmospheric Research, will be developed for the City of Ames.

Climate Risk Factors

The paleBLUEdot team will identify, and quantify the primary climate risk factors facing the City of Ames. The risk factors to be quantified will include:

- Flood data, risk, and histories
- Air Quality considerations
- Land Cover and tree canopy characteristics and extent
- Heat Island Characteristics and Temperature Impact
- Food Environment and Food Access considerations
- Population health data and characteristics from sources such as the Iowa Department of Public Health
- Heart attack rates
- Asthma hospitalization rates
- heat related illnesses
- Vector Borne disease data.

Quantifying City Vulnerability

By overlaying the data and mapping of vulnerable populations with that of the climate risk factors and community resources, the paleBLUEdot team will describe in detail the specific vulnerabilities for the City. The “order of magnitude” for each risk as well as the areas within the City of vulnerability to each risk will be identified, quantified, and mapped.

Preliminary Climate Adaptation Strategies

The paleBLUEdot team will provide a detailed “Menu of Strategies” to articulate a range of appropriate climate adaptation measures for each risk category identified. Adaptation strategies will be drawn from sources including: Georgetown Climate Center Adaptation Clearinghouse; Climate Adaptation Knowledge Exchange; US EPA, State resources, and from paleBLUEdot’s past Climate Adaptation efforts. This preliminary Menu of Strategies may then be used to support the City’s on-going climate related planning efforts.

City Interaction: Progress meeting(s)

Deliverables: Climate Vulnerability/Vulnerable Population Assessment and Menu of Strategies (electronic document)

Risks Addressed in Climate Adaptation Measures



Extreme Weather / Temp



Flood



Air Quality



Vector-Borne



Food Insecurity



Water Quality



Waterborne



Approach - Optional Services

Optional Task 8 – Renewable Energy Potentials Study

In support of development of effective renewable energy goalsetting and to establish strategies addressing renewable energy development, paleBLUEdot offers to conduct a Community-Wide solar photovoltaics (PV) potentials study including economic and environmental benefits. Through study of community-wide potential, the City of Ames will be empowered to create near and long-term renewable energy targets and implementation strategies based on community specific opportunity. This effort will include:

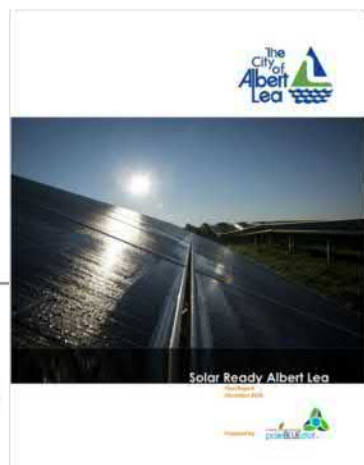
- 1) Collect city-wide satellite data (NREL, NOAA, and NASA data).
- 2) Determine building roof stock characteristics and solar suitable buildings, calculate total suitable areas by roof configuration/orientation.
- 3) Calculate total rooftop solar capacity and annual energy generation by roof configuration/orientation
- 4) Identify cost efficient annual energy generation potential.
- 5) Research solar market at national, State and regional levels. Identify low, medium, and high solar market absorption rates and city-wide solar pv goals.
- 6) Identify environmental and economic benefit of solar including economic development and job creation potential (NREL JEDI model)
- 7) Develop City-Wide Renewable Solar Energy Potentials report.

Development of a “Menu of Strategies” addressing potential climate adaptation and mitigation, and sustainability goals related to ground cover, tree canopy health, heat island mitigation, and carbon sequestration.

City Interaction: Progress meeting(s)

Deliverables: Community wide renewable energy potentials study with recommended targets and Menu of Strategies (electronic document)

paleBLUEdot Renewable Energy Potentials Study example



Local Economic Impacts - Summary Results

	Jobs	Earnings Million 2018\$		
During construction period				
Project Development and Onsite Labor Impacts	49	\$6.65		
Construction and Interconnection Labor	32	\$5.71		
Construction Related Services	17	\$0.93		
Equipment and Supply Chain Impacts	47	\$3.13	\$12.76	\$6.28
Induced Impacts	42	\$2.48	\$6.88	\$3.74
Total Impacts	138	\$12.26	\$28.68	\$17.42
During operating years (annual)				
	Annual Jobs	Annual Earnings Million 2018\$	Annual Output Million 2018\$	Annual Output Million 2018\$
Onsite Labor Impacts	22	\$1.56	\$1.56	\$1.56
Local Revenue and Supply Chain				
Induced Impacts				
Total Impacts				

Notes: Earnings and Output values are milli
Plant workers includes field technicians, adm
Economic impacts "During operating years"
The analysis does not include impacts asso
Totals may not add up due to independent r

Albert Lea Solar PV Projection Based on Potential Market Absorption

Year	Cumulative Installed (KW)	Annual Generation (KWH)	% of City Electric Consumption
2022	3,909	4,238,187	2.23%
2025	5,346	5,796,276	3.05%
2030	9,009	9,767,063	5.14%
2040	12,708	13,777,407	7.24%

