

Document A

**AGREEMENT FOR PROFESSIONAL SERVICES
BY AND BETWEEN**

**ECOLIBRIUM3
AND
CITY OF DULUTH**

THIS AGREEMENT, effective as of the date of attestation by the City Clerk (the “Effective Date”), by and between the City of Duluth, hereinafter referred to as “City”, and Ecolibrium3, located at 2014 West 3rd Street, Duluth, MN 55806, hereinafter referred to as “Consultant” for the purpose of rendering services to the City.

WHEREAS, the City has received a grant in the amount of \$700,414 from the Department of Energy Office of Energy Efficiency and Renewable Energy (hereinafter defined as the “EERE”) for project planning in regards to a geothermal district known as the LNPK 156 Geothermal Coalition; and

WHEREAS, acceptance of the grant was approved by Council Resolution 23-0836R; and

WHEREAS, the City, in partnership with Consultant, will implement a scope of work consisting of conducting public outreach and collecting data on energy use of buildings within the study area (the “Project”); and

WHEREAS, Consultant has represented itself as qualified and willing to perform the services required by the City; and

WHEREAS, the City desires to utilize Consultant’s professional services for the Project.

NOW, THEREFORE, in consideration of the mutual covenants and conditions hereinafter contained, the parties hereto agree as follows:

I. Services

Consultant will provide services related to the Project as described in the Statement of Project Objectives (Exhibit A). Consultant agrees that it will provide its services at the direction of the City of Duluth Sustainability Officer (Mindy Granley). In the event of a conflict between the Proposal and this Agreement, the terms and conditions of this Agreement shall be deemed controlling.

II. Fees

The Consultant’s maximum fee for the Project and Services shall not exceed the sum of Ninety-Nine Thousand Four Hundred and Nine Dollars (\$99,409) inclusive of all travel and other expenses associated with the Project, payable from Fund 257-025-3002. All invoices

for services rendered shall be submitted monthly to the attention of the Geothermal Project Coordinator, Alayna Johnson. Payment of expenses is subject to the City's receipt of reasonable substantiation/back-up supporting such expenses.

III. **General Terms and Conditions**

1. Amendments

Any alterations, variations, modifications or waivers of terms of this Agreement shall be binding upon the City and Consultant only upon being reduced to writing and signed by a duly authorized representative of each party.

2. Assignment

Consultant represents that it will utilize only its own personnel in the performance of the services set forth herein; and further agrees that it will neither assign, transfer or subcontract any rights or obligations under this Agreement without prior written consent of the City.

3. Data and Confidentiality, Records and Inspection

- a. The City agrees that it will make available all pertinent, non-privileged information, data and records under its control for Consultant to use in the performance of this Agreement, or assist Consultant wherever possible to obtain such records, data and information.
- b. All reports, data, information, documentation and material given to or prepared by Consultant pursuant to this Agreement will be confidential and will not be released by Consultant without prior authorization from the City.
- c. Consultant agrees that all work created by Consultant for the City is a "work made for hire" and that the City shall own all right, title, and interest in and to the work, including the entire copyright in the work ("City Property"). Consultant further agrees that to the extent the work is not a "work made for hire" Consultant will assign to City ownership of all right, title and interest in and to the work, including ownership of the entire copyright in the work. Consultant agrees to execute, at no cost to City, all documents necessary for City to perfect its ownership of the entire copyright in the work. Consultant represents and warrants that the work created or prepared by Consultant will be original and will not infringe upon the rights of any third party, and Consultant further represents that the work will not have been previously assigned, licensed or otherwise encumbered.

- d. Records shall be maintained by Consultant in accordance with requirements prescribed by the City and with respect to all matters covered by this Agreement. Such records shall be maintained for a period of six (6) years after receipt of final payment under this Agreement.
- e. Consultant will ensure that all costs shall be supported by properly executed payrolls, time records, invoices, contracts, vouchers, or other official 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 and readily accessible.
- f. Consultant shall be responsible for furnishing to the City records, data and information as the City may require pertaining to matters covered by this Agreement.
- g. Consultant shall ensure that 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 of its records with respect to all matters covered by this Agreement. Consultant will also 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.

4. Consultant Representation and Warranties

Consultant represents and warrants that:

- a. Consultant and all personnel to be provided by it hereunder has sufficient training and experience to perform the duties set forth herein and are in good standing with all applicable licensing requirements.
- b. Consultant and all personnel provided by it hereunder shall perform their respective duties in a professional and diligent manner in the best interests of the City and in accordance with the then current generally accepted standards of the profession for the provisions of services of this type.
- c. Consultant has complied or will comply with all legal requirements applicable to it with respect to this Agreement. Consultant will observe all applicable laws, regulations, ordinances and orders of the United States, State of Minnesota and agencies and political subdivisions thereof.

- d. The execution and delivery of this Agreement and the consummation of the transactions herein contemplated do not and will not conflict with, or constitute a breach of or a default under, any agreement to which the Consultant is a party or by which it is bound, or result in the creation or imposition of any lien, charge or encumbrance of any nature upon any of the property or assets of the Consultant contrary to the terms of any instrument or agreement.
- e. There is no litigation pending or to the best of the Consultant's knowledge threatened against the Consultant affecting its ability to carry out the terms of this Agreement or to carry out the terms and conditions of any other matter materially affecting the ability of the Consultant to perform its obligations hereunder.
- f. The Consultant will not, without the prior written consent of the City, enter into any agreement or other commitment the performance of which would constitute a breach of any of the terms, conditions, provisions, representations, warranties and/or covenants contained in this Agreement.

5. Agreement Period

The term of this Agreement shall commence on the Effective Date and performance shall be completed by November 30, 2024, unless terminated earlier as provided for herein.

Either party may, by giving written notice, specifying the effective date thereof, terminate this Agreement in whole or in part without cause. In the event of termination, all property and finished or unfinished documents and other writings prepared by Consultant under this Agreement shall become the property of the City and Consultant shall promptly deliver the same to the City. Consultant shall be entitled to compensation for services properly performed by it to the date of termination of this Agreement. In the event of termination due to breach by Consultant, the City shall retain all other remedies available to it, and the City shall be relieved from payment of any fees in respect of the services of Consultant which gave rise to such breach.

6. Independent Contractor

- a. It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of copartners between the parties hereto or as constituting Consultant as an agent,

representative or employee of the City for any purpose or in any manner whatsoever. The parties do not intend to create any third-party beneficiary of this Agreement. Consultant and its employees shall not be considered employees of the City, and any and all claims that may or might arise under the Worker's Compensation Act of the State of Minnesota on behalf of Consultant's employees while so engaged, and any and all claims whatsoever on behalf of Consultant's employees arising out of employment shall in no way be the responsibility of City. Except for compensation provided in Section II of this Agreement, Consultant's employees shall not be entitled to any compensation or rights or benefits of any kind whatsoever from City, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Worker's Compensation, Unemployment Insurance, disability or severance pay and P.E.R.A. Further, City shall in no way be responsible to defend, indemnify or save harmless Consultant from liability or judgments arising out of intentional or negligent acts or omissions of Consultant or its employees while performing the work specified by this Agreement.

- b. The parties do not intend by this Agreement to create a joint venture or joint enterprise, and expressly waive any right to claim such status in any dispute arising out of this Agreement.
- c. Consultant expressly waives any right to claim any immunity provided for in Minnesota Statutes Chapter 466 or pursuant to the official immunity doctrine.

7. Indemnity

To the fullest extent permitted by law, Consultant shall defend, indemnify, and hold City and its employees, officers and agents harmless from and against any and all costs or expenses, claims or liabilities, including but not limited to, reasonable attorney's fees and expenses, whether asserted by itself or any third party, including claims arising from the acts, omissions, negligence, or misconduct of Service Provider or that of its agents, employees, or contractors. The obligations shall include, but not be limited to, the obligations to defend, indemnify, and hold harmless the City in all matters where claims of liability against the City are alleged to be or could be found to arise out of acts or omissions of Service Provider or are passive, derivative, or vicarious of the negligent or intentional acts or omissions of Consultant arise out of or relate to the services in this Agreement or Service Provider's negligent, intentional, or wrongful acts or omissions, including breach

of any duty in this agreement, of Consultant. The obligations to defend, indemnify, and hold harmless shall be triggered upon the assertion of a claim for damages against City. This Section shall survive the termination of this Agreement for any reason. Consultant shall not have the obligation to indemnify the City for its intentional, willful or wanton acts. **The Consultant understands this provision may affect its rights and may shift liability.**

8. Insurance

- a. Consultant shall obtain and maintain for the Term of this Agreement the following minimum amounts of insurance from insurance companies authorized to do business in the State of Minnesota.
 - i. Workers' compensation insurance in accordance with the laws of the State of Minnesota.
 - ii. Commercial General Liability and Automobile Liability Insurance with limits not less than **\$1,000,000** Single Limit, shall be in a company approved by the City of Duluth; and shall provide for the following: Liability for Premises, Operations, Completed Operations, Independent Contractors, and Contractual Liability. Umbrella coverage with a "form following" provisions may make up the difference between the commercial general and auto liability coverage amounts and the required minimum amount stated above.
 - iii. Professional Liability Insurance in an amount not less than \$1,000,000 Single Limit; provided further that in the event the professional malpractice insurance is in the form of "claims made," insurance, Consultant hereby commits to provide at least 60 days' notice prior to any change to the Professional Liability Insurance policy or coverage; and in the event of any change, Consultant agrees to provide the City with either evidence of new insurance coverage conforming to the provisions of this this paragraph which will provide unbroken protection to the City, or in the alternative, to purchase at its cost, extended coverage under the old policy for the period the state of repose runs; the protection to be provided by said "claims made" insurance shall remain in place until the running of the statute of repose for claims related to this Agreement.

iv. **City of Duluth shall be named as Additional Insured** under the Commercial General Liability and Automobile Liability. Consultant shall also provide evidence of Statutory Minnesota Workers' Compensation Insurance. Consultant to provide Certificate of Insurance evidencing such coverage with notice to City of cancellation in accordance with the provisions of the underlying insurance policy included. The City of Duluth does not represent or guarantee that these types or limits of coverage are adequate to protect the Consultant's interests and liabilities.

- b. Certificates showing Consultant is carrying the above described insurance in the specified amounts shall be furnished to the City prior to the execution of this Agreement and a certificate showing continued maintenance of such insurance shall be on file with the City during the term of this Agreement.
- c. The City shall be named as an additional insured on each liability policy other than the professional liability and the workers' compensation policies of the Consultant.
- d. The certificates shall provide that the policies shall not be cancelled during the life of this Agreement without advanced notice being given to the City at least equal to that provided for in the underlying policy of insurance.
- e. Except as provided for in Section 8.a.iv above, Consultant hereby commits to provide notice to City at least 30 days in advance of any change in the insurance provided pursuant to this Section 8 or in advance of that provided for in the underlying insurance policy or policies whichever is longer. For the purposes of Section 8 of this Agreement, the term, "changed", shall include cancellation of a policy of insurance provided hereunder and any modification of such policy which reduces the amount of any coverage provided thereunder below the amounts required to be provided hereunder or otherwise reduces the protections provided under such policy to City

9. Notices

Unless otherwise expressly provided herein, any notice or other communication required or given shall be in writing and shall be effective for any purpose if

served, with delivery or postage costs prepaid, by nationally recognized commercial overnight delivery service or by registered or certified mail, return receipt requested, to the following addresses:

City: City of Duluth
411 W First Street
City Hall Room 422
Duluth MN 55802
Attn: Alayna Johnson

Consultant: Ecolibrium3
2014 W 3rd Street
Duluth, MN 55806
Attn: Jodi Slick

10. Civil Rights Assurances

Consultant, as part of the consideration under this Agreement, does hereby covenant and agree that:

- a. No person on the grounds of race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance, sexual orientation, and/or disability shall be excluded from any participation in, denied any benefits of, or otherwise subjected to discrimination with regard to the work to be done pursuant to this Agreement.
- b. That all activities to be conducted pursuant to this Agreement shall be conducted in accordance with the Minnesota Human Rights Act of 1974, as amended (Chapter 363), Title 7 of the U.S. Code, and any regulations and executive orders which may be affected with regard thereto.

11. Laws, Rules and Regulations

Consultant agrees to observe and comply with all laws, ordinances, rules and regulations of the United States of America, the State of Minnesota and the City with respect to their respective agencies which are applicable to its activities under this Agreement.

12. Applicable Law

This Agreement, together with all of its paragraphs, terms and provisions is made in the State of Minnesota and shall be construed and interpreted in accordance with the laws of the State of Minnesota.

13. Force Majeure

Neither party shall be liable for any failure of or delay in performance of its obligations under this Agreement to the extent such failure or delay is due to circumstances beyond its reasonable control, including, without limitation, acts of God, acts of a public enemy, fires, floods, wars, civil disturbances, sabotage, accidents, insurrections, blockades, embargoes, storms, explosions, labor disputes, acts of any governmental body (whether civil or military, foreign or domestic), failure or delay of third parties or governmental bodies from whom a party is obtaining or must obtain approvals, franchises or permits, or inability to obtain labor, materials, equipment, or transportation. Any such delays shall not be a breach of or failure to perform this Agreement or any part thereof and the date on which the party's obligations hereunder are due to be fulfilled shall be extended for a period equal to the time lost as a result of such delays.

14. Severability

In the event any provision herein shall be deemed invalid or unenforceable, the remaining provision shall continue in full force and effect and shall be binding upon the parties to this Agreement.

15. Entire Agreement

It is understood and agreed that the entire agreement of the parties including all exhibits is contained herein and that this Agreement supersedes all oral agreements and negotiations between the parties relating to the subject matter hereof. Any amendment to this Agreement shall be in writing and shall be executed by the same parties who executed the original agreement or their successors in office.

16. Counterparts

This Agreement may be executed in two or more counterparts, each of which shall be deemed to be an original as against any party whose signature appears thereon, but all of which together shall constitute but one and the same instrument. Signatures to this Agreement transmitted by facsimile, by electronic mail in "portable document format" (".pdf"), or by any other electronic means which preserves the original graphic and pictorial appearance of the Agreement, shall have the same effect as physical delivery of the paper document bearing the original signature.

IN WITNESS WHEREOF, the parties have hereunto set their hands on the date of attestation shown below.

CITY OF DULUTH

By: _____
Mayor

Attest:

By: _____
City Clerk

Date: _____

Countersigned:

City Auditor

Approved as to Form:

City Attorney

Ecolibrium3

By: _____

Its: _____
Title of Representative

Date: _____

Statement of Project Objectives
LNPK 156 Geothermal Coalition:
Designing and Deploying Clean Energy in a Justice40 Cold Climate Community
DE-EE0010666.0000

A. Project Objectives

Budget Period 1 - Planning and Design

Project Objective 1: Design a new geothermal heating and cooling system in Duluth, MN for the Lincoln Park Justice40 neighborhood. The LNPK 156 Geothermal Coalition will devise plans to develop, design, and install a geothermal heating system that will satisfy 100% of the heating demand in a portion of Lincoln Park, a neighborhood experiencing high energy burdens, low life-expectancy, and where the natural gas and fuel oil used to heat homes and businesses results in decreased air quality and increased carbon emissions.

Project Objective 2: Develop a comprehensive career pathways plan including stackable credentials to meet the analyzed workforce needs associated with geothermal heating and cooling systems, district energy systems, heat pump designs and deployment, building electrification, and efficiency improvements.

B. Project Scope of Work Summary

Budget Period 1 – Planning and Design: LNPK 156 Geothermal Coalition will work to: finalize a site location and footprint; assess the geothermal resource; analyze environmental and permitting needs; assess planned usage; conduct techno-economic feasibility analysis and local stakeholder engagement; and identify workforce and training development needs. These analyses and design elements will be created for a baseline scenario including capturing waste heat from WLSSD to provide 100% of the heating load for 237 buildings from W. Michigan to W. First Street, proximate to the reconstruction of W. Superior Street, and include additional exploration of 1) connecting the system to the existing 3G Duluth Energy Systems to enhance decarbonization through waste heat capture, 2) extending to meet the heating needs of the MidTowne I and II public housing high-rises and Lincoln Park Resilience Hub, 3) determining applicability of snowmelt and support of transit stops, 4) creating guidance on potential

expansion into lower density housing adjacent to the district. The final deliverable will be the documents required to successfully compete for BP2 down-selection and system installation.

C. Tasks to Be Performed

Budget Period 1- Geothermal Analysis and Design

Task 1.0 Building data collection, review and qualification

Subtask 1.1 Building owner outreach

Subtask 1.2 Building review and categorization

Task 2.0 Energy source evaluation

Subtask 2.1 Model and assess waste heat recovery from waste water

Subtask 2.2 Evaluate alternative technologies for heat recovery

Task 3.0 Business structure planning

Subtask 3.1 Develop LNPK district business model

Subtask 3.2 Determination of BID/SSD for snowmelt

Task 4.0 System design and pre-permitting

Subtask 4.1 Wastewater plant heat recovery interface design

Subtask 4.2 Distribution system design

Subtask 4.3 Customer building interface design

Subtask 4.4 Permitting review and planning

Subtask 4.5 Full engineering & construction plan and bid package prep

Task 5 Workforce Planning

Subtask 5.1 Regional labor market assessment

Subtask 5.2 Modular framework for geothermal career curriculum

DEI. Expand opportunities for DEI

Subtask DEI.1 Analyze LNPK geothermal housing stock

Subtask DEI.2 Conduct geothermal & workforce info sessions

Final Deliverable- All required submissions for successful BP2 down-selection

Task 1.0 Building data collection, review and qualification (M1-6)

Task Summary: This task provides the building-by-building understanding of current and future heating and cooling loads, energy load profiles, onsite assessment of mechanicals to determine ease/cost of connectivity to a new system, and prioritizes system customer acquisition approaches.

Task Description: By completion of task 1, all properties will be evaluated to determine output needs of the system. Building owners will have a deeper understanding of district energy solutions and building specific opportunities and challenges. Completion of this task provides the inputs needed for preliminary system design.

Subtask 1.1 Building owner outreach (M1-2)

Subtask Summary: Outreach to property owners, businesses, and community members to inform and gain participation in data collection needed for system design.

Subtask Description: Public information sessions will be held with proposed district property owners/businesses/residents to educate on system potentials and project components. Community Voice partner will secure data releases from property owners for electrical usage to be combined with existing data on natural gas usage. Contemporaneous conversations will occur to define snowmelt interest and district governance/funding concerns for input into Subtask 3.1. Questions and concerns will be logged to inform the Coalition. Energy data and mechanical information will be advanced to Task 4.

Subtask 1.2 Building review and categorization (M3-6)

Subtask Summary: Through onsite building assessments and energy use data collection, this task creates an inventory of buildings categorized by connection opportunity difficulty.

Subtask Description: Collection of data directly from each building owner regarding current and future building use and onsite building assessments. Following this review, the energy load profile of each building will be determined, and each building will be categorized by connection opportunity difficulty. The outcome of this task will be the identification of the number of buildings that are suited for connection to the new district system and the combined energy profile of those buildings. This task will include the MidTowne and Resilience Hub complex. Data from inventory and prioritization will be shared via Excel spreadsheets and graphical summaries, for incorporation into the U.S. DOE Geothermal Data Repository.

SMART Milestone 1 (M6): Building inventory analysis is complete with >95% of building categorized for potential inclusion in the system based upon energy use profile and economic and technical feasibility. ***Complete building inventory and prioritization complete and ready for Task 4 pre-design.***

Task 2.0 Energy source evaluation (M1-6)

Task Summary: Modeling of the energy recovery potential from WLSSD and identification of the most viable technical alternatives to recover waste heat from the effluent.

Task Description: Assessment of three years of effluent data to determine available source energy from WLSSD. Data from design process and analysis will be shared via a combination of summary narrative and analysis Excel spreadsheets with technical alternative results, for incorporation into the U.S. DOE Geothermal Data Repository.

Subtask 2.1 Model and assess waste heat recovery from waste water (M1-2)

Subtask Summary: Wastewater source energy will be modeled and compared to LNPk 156 and Duluth Energy Systems' 3G heating loads.

Subtask Description: The energy recovery potential will be modeled by collecting and analyzing a minimum of three years of effluent flow and temperature data to determine the energy recovery profile and potential. That modeling will be compared with the estimated energy load profile for the buildings within LNPk 156 district (initially) and the combined load profile of LNPk 156 and that of Duluth Energy Systems' 3G system. The modeling will include development of scenarios that show potential reductions of industrial wastewater to ensure system resilience to economic downturns.

Subtask 2.2 Evaluate alternative technologies for heat recovery (M3-6)

Subtask Summary: Identification of the most viable technical alternatives to recover the waste heat from WLSSD effluent.

Subtask Description: Identify technologies and techniques best suited to recover waste heat from the effluent and compare the energy profile of the buildings from Task 1 to the profile of the waste heat source determined in Task 2.

Milestone 2 (M6): Technology selection determined for waste heat recovery from effluent for incorporation into Task 4.

Task 3.0 Business structure planning (M7-10)

Task Summary: Coalition partners will determine appropriate business models for construction, ownership, maintenance, and operations of the LNPk 156 system including determination of interconnection with Duluth Energy Systems and district snowmelt amenities.

Task Description: Coalition stakeholders will determine potential business models for the LNPk 156 district energy system and potential snowmelt system. Data from business model

analysis will be shared via a summary in PDF/Word, for incorporation into the U.S. DOE Geothermal Data Repository.

Subtask 3.1 Develop LNPk district heating business model (M7-9)

Subtask Summary: Determination of the business and ownership model for the system to be designed in task 4 and funded in BP2.

Subtask Description: During this task period, Analysis and Design partner will work to identify the optimal business structure for deployment of the new system. This task will be completed over a three-month period during the second half of the First Budget Period. It will be important for the coalition to provide clarity to the potential customers of the new district system regarding how it will be organized and governed.

Subtask 3.2 Determination of BID/SSD for snowmelt (M7-11)

Subtask Summary: Determination of business model for snowmelt assets to determine governance/operational viability for inclusion in Task 4 design.

Subtask Description: Community Voice partner will take the lead on working with property owners to determine potential for a business improvement district/special services district as a source for capital and operational coverage of any designed snowmelt system.

Milestone 3 (M9): Coalition agreement on business model for system construction, ownership, operations, and maintenance for incorporation into Task 4 system plans.

Task 4.0 System design and pre-permitting (M5-11)

Task Summary: Building on previous tasks, this task will create the design, permitting plan, and deliverables to submit for down-selection.

Task Description: Informed by previous tasks and Coalition stakeholders, this task will result in the final deliverables necessary for successful down-selection into BP2. This task includes heat recovery design, distribution system design, customer building interface design, and permitting review and planning. It incorporates business model determinations from Task 3 and guidance for inclusion of lower-density residential units adjacent to the baseline system, determined through Task DEI.2. Case study is written on project efforts leading to down-selection. Data will be shared through final engineering and construction plans and bid package documentation, for incorporation into the U.S. DOE Geothermal Data Repository.

Subtask 4.1 Wastewater plant heat recovery interface design (M5-8)

Subtask Summary: Preliminary design of wastewater heat recovery interface and siting.

Subtask Description: A preliminary design of wastewater heat recovery interface will be completed for initial BP2 pricing and detailed design and construction.

Subtask 4.2 Distribution system design (M6-10)

Subtask Summary: Completion of the distribution system preliminary design.

Subtask Description: A preliminary design of the distribution system will be completed for initial BP2 pricing and detailed design and construction.

Subtask 4.3 Customer building interface design (M7-11)

Subtask Summary: Customer building interface design will include specifics for each qualified customer building.

Subtask Description: Customer building interface design will be completed for initial BP2 pricing and detailed design and construction. A complementary efficiency, solar, and IRA pathways plan will be provided to interested parties.

Subtask 4.4 Permitting review and planning (M9-11)

Subtask Summary: Meetings to review all permitting requirements for development of permitting plan for BP2 down-selection.

Subtask Description: Permitting review and planning is an additional subtask that will involve identifying all necessary permitting for the proposed system.

Subtask 4.5 Full engineering & construction plan and bid package prep (M10-12)

Subtask Summary: Completion of all full engineering and construction plan.

Subtask Description: A full engineering feasibility and technical design will be completed for the system including an economical and environmental assessment, permitting plan, anticipated maintenance plan for the 4G system, and preliminary engineering and construction plan in preparation for the project to move forward into detailed design and construction. All required documents related to successful BP2 down-selection will be approved by the Coalition partners, and submitted as the final deliverable.

Subtask 4.6 Case Study (M11-12)

Subtask Summary: Case study reflecting process and results of BP1 is written for distribution.

Subtask Description: Case study is written and a webinar is presented detailing the collaboration, analysis process, resulting design, DEI efforts, and stackable credentials and workforce training plan.

Milestone 4: Engineering and construction plan is complete and submitted for incorporation into down-selection submission.

Task 5.0 Workforce Planning

Task Summary: Develop a geothermal workforce advancement plan inclusive of stackable credentials and apprenticeship opportunities as informed by a workforce analysis and Business and Industry Leadership Team.

Task Description: Anticipated growth in geothermal development resulting from the efforts of GTO and other stakeholders will drive demand for a skilled workforce across the resource spectrum—from drilling operators to GHP installers. This task will analyze workforce and training curriculum/programs that can be developed for incorporation into BP2 implementation. Data from labor analysis will be shared via PDF/Word summaries, for incorporation into the U.S. DOE Geothermal Data Repository.

Subtask 5.1 Regional labor market assessment (M1-2)

Subtask Summary: Identify and catalogue workforce-specific needs related to developing, installing, and operating geothermal heating and cooling systems

Subtask Description: Identify the occupations most likely to be employed by the geothermal industry, identify local wage and hiring trends for those occupations, and describe the characteristics of the current local workforce in related fields and industries.

Collect workforce and industry data relevant to the project from a variety of sources. Sources include, but are not limited to, the American Community Survey for labor force participant and non-participant demographics; the Census Bureau's On the Map tool for commuting patterns; O*Net for data on occupations and relevant skill sets; and the data tools provided by Minnesota's Department of Employment and Economic Development (DEED) (e.g. JobStat, Quarterly Census of Employment and Wages, job vacancy survey).

Utilize these data tools—along with a review of relevant literature and interviews with local trade/industry representatives—to perform the following tasks:

- Identify the occupations most likely to be involved in the geothermal heating and cooling industry
- Summarize the skills and tasks necessary for workers in those occupations
- Provide information (wages, demand, regional concentration, short- and long-term projections, etc.) on selected occupations
- Summarize metrics such as employment, value added, regional concentration (e.g. location quotient, cluster analysis), and expected growth for the geothermal and related industries in northeast Minnesota.

Subtask 5.2 Modular framework for geothermal career curriculum (M3-11)

Subtask Summary: Work with technical colleges, high schools, universities and unions to define stackable credentials aligned with workforce-specific needs from subtask 5.1.

Subtask Description: Conduct an environmental scan of technician education programs that include discipline-specific courses or modules in geothermal technology. Building on the labor market assessment conducted, convene local employers using the Business and Industry Leadership Team model to prioritize the specific knowledge, skills, and abilities (KSAs) that will be required of a growing local geothermal industry. These prioritized KSAs will contribute to an instructional roadmap to build a curriculum guide for geothermal technician education. The guide will offer a framework of modular content that area high schools, colleges, and workforce programs can use to educate youth and reskill adult learners for successful careers in the geothermal industry.

Engage subject matter experts from education and industry in the design of modular instructional content. SME's will collaborate with the Coalition partners in developing instructional resources that can augment existing technician education programs in adjacent disciplines or create new programs dedicated to geothermal technology. Career-technical certificate and associate degree programs in HVAC, renewable energy technologies, mechanical engineering technology, and industrial maintenance are all potential candidates for the addition of stackable credentials in geothermal technology. This approach will foster the development of a local talent pipeline to support the geothermal industry through industry validated credentials that can serve as building blocks for geothermal career pathways.

Milestone 5 (M3): Regional labor analysis complete for incorporation into Subtask 5.2.

Task DEI.0 Expand opportunities for DEI (M1-11)

Task Summary: This task ensures focus on benefits to the LNPk 156 population and broader individuals traditionally marginalized.

Task Description: The LNPk Geothermal Coalition will be working on developing a clean energy asset for a very low-income environmental justice neighborhood. This task ensures that low-income and BIPOC households within the district benefit from the project and extends information and potential workforce access to residents and those traditionally underrepresented in geothermal aligned fields. Data on adjacent housing stock will be shared via excel spreadsheet and graphically for incorporation into the U.S. DOE Geothermal Data Repository.

Subtask DEI.1 Analyze LNPK geothermal housing stock (M2-11)

Subtask DEI.1 Summary: Analyze proposed LNPK geothermal housing stock

Subtask Description: To ensure benefit of the system to neighborhood residents in the district, housing units within the district will be analyzed for incorporation into the district and potential efficiency improvements. A determination will be as to which properties have utility costs paid for by residents to assist in improvement prioritization. Property owners and residents will be invited to multiple outreach sessions to learn about geothermal and efficiency opportunities. Initial income verification will be done to match properties to IRA tax credits, rebates, and where appropriate due to non-profit or public housing ownership, direct-pay. Data collected on housing stock will be used to inform Task 4.0 project design scope.

Subtask DEI.2 Conduct geothermal & workforce info sessions (M4, 6, 8, 10)

Subtask DEI.2 Summary: Conduct public information sessions on geothermal energy and workforce opportunities.

Subtask Description: Create a strategic communications plan that includes hosting an energy, education, and job fair in the Lincoln Park neighborhood in conjunction with coalition partners. The Geothermal Energy Fair will include Coalition partners with an emphasis on workforce development.

Milestone DEI1: Energy and equity job/resource fair has been conducted in Lincoln Park.

End of Budget Period 1 Goal: All required documents are submitted for Budget Period 2 down-selection.

Down-Select to Budget Period 2:

EERE intends to conduct a competitive project review (down-selection process) upon the completion of an initial 12 months of work (Budget Period 1). Recipients will present their projects to EERE individually (not to other recipients). Subject matter experts from academia, national laboratories, and industry may be used as reviewers, subject to conflict of interest and non-disclosure considerations. Projects will be evaluated based on the following criteria:

The degree to which the Budget Period 1 deliverables show progress towards meeting the following FOA Specific Goals, as indicated in Section I.A.ii:

- 1) Deploy new or retrofitted geothermal, or geothermal-hybrid, district heating and cooling systems in U.S. districts, neighborhoods, and communities
- 2) Identify solutions for environmental justice conditions, such as cumulative environmental pollution and other hazards; underserved and disadvantaged communities; and community members who have historically experienced vulnerability due to climate change impacts

- 3) Assist U.S. communities to develop career and technical education and workforce transition initiatives to design, install, inspect, operate, and maintain new energy systems such as geothermal heating and cooling
- 4) Develop U.S. case studies about projects, including technical and economic data, to illustrate how projects can be replicated by communities throughout the United States
- 5) Publish data and information about U.S. geothermal district heating and cooling system deployment to demonstrate the success of such systems in a range of environments and geographies

Sixty days (60) before the completion of Budget Period 1, the Recipient will submit the following documents to the DOE Technical Project Officer.

Down-select application including:

- Report summarizing all work complete in Budget Period 1
- Proposed scope of deployment objectives
 - Revised Budget Justification, adding additional Budget Period (s)
 - Revised SOPO, adding additional Budget Period (s)
 - NEPA questionnaire
 - SF-424

These documents are used by the DOE Project Review Committee to conduct a project review against the criteria listed previously. The Recipient will give a presentation to the DOE Project Review Committee via webinar. The documents and reports will be available for internal use only by the review committee; however, any data delivered should be marked as specified in the terms and conditions of the award.

D. Project Management and Reporting

In addition to any DOE required management and reporting documents, LNPK 156 will provide:

- Subtask 1.2- Inventory- Buildings in LNPK 156 with district system inclusion ranking
- Subtask 2.2- Report- Technology selection for waste heat recovery
- Task 3.0- Report- Business model determination for system
- Task 4.0- Final Deliverable- Submission of BP2 down-select documents/application
- Subtask 5.1- Report- Regional labor analysis
- Subtask 5.2- Framework- Geothermal career pathway framework with curriculum

Milestone Summary Table							
Recipient Name:		City of Duluth					
Project Title:		LNPK 156 Geothermal Coalition: Designing and Deploying Clean Energy in a Justice40 Cold Climate Community					
Task Number	Task or Subtask (if applicable) Title	Milestone Type (Milestone or Go/No-Go Decision Point)	Milestone Number* (Go/No-Go Decision Point Number)	Milestone Description (Go/No-Go Decision Criteria)	Milestone Verification Process (What, How, Who, Where)	Anticipated Date (Months from Start of the Project)	Anticipated Quarter (Quarters from Start of the Project)
1	1.2	Milestone	M1	Each building in the proposed district evaluated for high, moderate, or low system connection potential	Inventory of buildings presented with the ranking	M6	2
2	2.2	Milestone	M2	Evaluation of waste heat energy source and technologies complete	Selected technology for incorporation into Task 4	M6	2
3	3.1	Milestone	M3	Agreement on LNPK 156 business model	Business model incorporated into final plan analysis	M9	3
4	4.5	Milestone	M4	Full engineering and construction plan	Required documents submitted for BP2 down-select	M12	4

5	5.1	Milestone	M5	Regional labor market analysis	Analysis report incorporated into BILT summit	M3	1
DEI	DEI.2	Milestone	MDEI.1	Energy, education, and workforce fair in LNPK 156	Attendance summary	M10	4
BP1	BP1	Go/No-Go - Downselect	BP1 Goal	All documents submitted for down-selection	Down-selection packet per FOA	M12	4