Statement of Project Objectives
City of Ann Arbor
District Geothermal Pilot in Ann Arbor

A. Project Objectives - Budget Period 1

The project team proposes undertaking seven (7) main tasks, all geared toward implementing a geothermal district heating and cooling systems that reduces thermal heating and cooling load by at least 75%, eliminates local energy burden, reduces greenhouse gas emissions by 40%, and establishes a framework for how to advance local, family-sustaining jobs in the energy field.

Budget Period 1 Project Objectives: The Project team has one goal and three shared objectives: ***Budget Period 1 Goal***: Design and implement a geothermal district heating and cooling system that reduces thermal heating and cooling load by 75% in the project area, significantly helping residents in the Bryant neighborhood reduce their energy costs while improving the quality of life and health outcomes of existing and future residents.

To meet this goal, by Spring 2024, the team will:

- **Objective 1:** Design a district geothermal heating and cooling system that reduces thermal heating and cooling load by 75% and energy costs for residents by 77%.
- **Objective 2**: Create a strategy for scaling up good paying, family-sustaining jobs necessary to replicate this project in other areas of the City, region, and state.
- **Objective** : Create a replicable model of both community engagement and geothermal design that can be scaled throughout the City and region.

B. Project Scope of Work Summary - Budget Period 1

The project team will undertake seven (7) main tasks:

1. Steering committee formalization.
2. Regular community-designed public engagement activities, including hiring two paid multi-lingual interns from the neighborhood to facilitate engagement.
3. Conduct a detailed hourly load profile analysis for current and projected future natural gas and electricity usage for all sites considered for the geothermal district heating and cooling system. Use analysis to size, locate, and price the geothermal solution. Use the same data to quantify energy savings and low-cost energy efficiency improvements.
4. Co-create a workforce development plan with residents, labor representatives, and professional societies.
5. Develop draft socio-techno-economic model for potential geothermal system(s). Define the ownership structure for system(s) and lifetime operations and maintenance plans.
6. Finalize socio-techno-economic model and community-scale geothermal design.
7. Submit final deliverables and prepare down selection documentation.

At the end of Budget Period 1, the project team will have at least one, and potentially two viable community geothermal designs for reducing thermal heating and cooling load by 75% and

eliminating energy burden in the project area, designs that have been created through robust community engagement and technical input. Geothermal potential will be validated, environmental and permitting needs identified, a robust socio-techno-economic model developed, and a local workforce development strategy created.

C. Project Scope of Work Summary - Budget Period 2

In the second budget period, the project team will finalize all civil, mechanical, and engineering designs and move into permitting, construction, operation and maintenance. This period will last for three years under this grant award and consist of 7 main tasks that culminate in an operational geothermal utility providing heating and cooling services in the Bryant neighborhood of Ann Arbor all while building the local workforce to create good, family-sustaining jobs.

The project team will undertake seven (7) additional main tasks in Budget Period 2:

8. Prepare ownership materials
9. Finalize designs and permitting
10. Implement workforce development initiatives identified in Budget Period 1
11. Ongoing and sustained community engagement
12. Competitive bidding for drilling and loop construction
13. System construction
14. Commissioning, operation, and ongoing maintenance

D. Tasks Performed - Budget Period 1

Task 1.0: Steering Committee Formalization (M1)
Task Summary: Formalize project steering committee and commence regular project meetings. Executive committee composed of engagement, workforce, and analysis leads to meet weekly. Full steering committee to meet biweekly.
Milestone 1.1: Weekly project meetings.
Milestone 1.2: Detailed (living) workplan revisited and revised as needed.

Task 2.0: Monthly Community-Designed Public Engagement Activities (M1-M12).
Task Summary: Creation of a public engagement strategy that includes the hosting of at least monthly community-designed public engagement activities to solicit feedback on needs and desires related to community heating and cooling. Includes hiring engagement leads from the neighborhood and administering design charettes with residents.

Subtask 2.1: Engagement Strategy refined based on public input (M1-M2).
Subtask Summary: Engagement strategy created outlining monthly events, modes, mediums, and messengers to equitably engage with residents.
Milestone 2.1.1: Engagement strategy created.
Subtask 2.2: Hire two community engagement interns with Spanish/Arabic language skills (M2)
Subtask Summary: Recruit, interview, and hire two neighborhood residents to assist with public engagement.

Milestone 2.2.1: Two community engagement specialists hired.
Subtask 2.3: Host two community-led design charettes. (M2-M4)
Subtask Summary: Host two community-led design charettes to understand community-centered opportunities and constraints. Use public charettes to collaboratively determine metrics of success to use in evaluating project pathways and impacts.
Milestone 2.3.1: At least 40 unique individuals given input into project, including feedback on potential design(s)
Milestone 2.3.2: Resident-centered metrics of project success created.
Subtask 2.4: Ongoing community engagement (M3-M12)
Subtask Summary: Conduct additional activities as outlined in engagement strategy, including working with residents to determine future energy opportunities and hosting at least monthly events.

Task 3.0: Conduct Detailed Assessment of Existing Infrastructure and Energy Load Profile Analysis for all Sites in Target Geography. Use Analysis to Size, Locate, and Price Geothermal Solution(s) and Use Data to Quantify Energy Savings and Efficiency Improvement Opportunities. (M1-M9)
Task Summary: Conduct all technical design, engineering, and economic analysis necessary to validate feasibility of proposed designs and generate district geothermal models for the community's consideration. Quantify reduced energy consumption potential, energy cost savings, and potential energy efficiency improvement opportunities.
Subtask 3.1: Meet with existing Bryant project team (M1)
Subtask Summary: Meet with Bryant project team to gather existing energy usage information available for the neighborhood via a separate, ongoing project.
Subtask 3.2: Compile detailed information on demographics, power infrastructure type and quality, rate and tariff structures, and projected future energy investments. (M1-M3)
Subtask Summary: Compile requisite non-energy usage information needed to build model.
Subtask 3.3: Inventory existing HVAC systems for homes and commercial buildings. (M2-M4)
Subtask Summary: Compile detailed information on HVAC systems for units to be included in district geothermal design.
Subtask 3.4: Build existing energy usage and energy cost model. (M3-M4)
Subtask Summary: Integrate data from previous tasks into an energy usage and energy cost model for the geographical area to be served by proposed geothermal system.
Milestone 3.4.1: Creation of existing energy usage and energy cost model.
Subtask 3.5: Assess energy and cost reduction associated with efficiency improvements and a switch to geothermal. (M4-M5)
Subtask Summary: Estimate the energy, and cost reduction associated with a switch to geothermal within the target geography.
Subtask 3.6: Assess impact of integrating renewable energy and other beneficial solutions into the work to understand cost and carbon reduction potential (M4-M5)
Subtask Summary: Integrate information on energy saving opportunities, beneficial electrification, and renewable energy potential compiled from a separate project in Bryant to estimate the potential energy efficiency savings of a transition to geothermal PLUS deep energy efficiency improvements, electrification, and onsite solar deployment.
Milestone 3.6.1: Updated energy usage and cost model.

Subtask 3.7: Two geothermal design charettes with experts and workforce leaders. (M5-M6)
Subtask Summary: Organize and host two geothermal design charettes with geothermal designers and installers.
Milestone 3.7.1: At least 20 technical experts attend charettes
Subtask 3.8: Create design for community-scale geothermal heating and cooling system (M5-M6)
Subtask Summary: Create draft design for community-scale geothermal heating and cooling system based on all tasks completed to-date.
Milestone 3.8.1: Draft design(s) for community-scale geothermal system created.
Subtask 3.9: Test ground suitability, size geothermal field, and assess supplemental equipment options. Preliminarily assess cost of viable options. (M6-M8)
Subtask Summary: Test ground suitability, size geothermal field, and assess supplemental equipment options for proposed systems. Preliminarily assess cost of viable options.
Milestone 3.9.1: Ground test of geothermal viability, engineering study completed, and preliminary cost estimate generated.

GO/NO-GO DECISION: Viable designs generated.

Task 4.0: Create Workforce Development Plan with Labor, Professional Societies, and Academia (M3-M8)
Task Summary: Create workforce development plan and secure commitment to implement.
Subtask 4.1: Co-host two municipal-labor-professional society-academic roundtables. (M3-M4)
Subtask Summary: Organize and co-host two roundtables to explore existing capacity, needs, and opportunities related to creating the skilled workforce needed to support large-scale geothermal deployment as well as implement other initiatives.
Milestone 4.1.1: At least 30 representatives from labor, trades, professional societies, or academia attend roundtables.
Subtask 4.2: Develop and secure commitment to workforce development strategy including in-community training plan for future O&M tasks. (M4-M6)
Subtask Summary: Develop workforce development training plan and secure commitment to implementing, or at least fundraising to implement, the plan.
Milestone 4.2.1: Workforce development strategy created and agreed to by project partners.
Subtask 4.3: Engage with trade programs at Ann Arbor and Ypsilanti public schools to host a student-focused forum on opportunities in the clean energy industry. (M7-M8)
Subtask Summary: Host a forum with young adults to educate them about opportunities in the energy industry and answer their questions.
Milestone 4.3.1: At least 10 high schoolers join forum on job opportunities.

Task 5.0: Develop Draft Socio-Techno-Economic Model of the Project Region (M4-M7)
Task Summary: Creation of a socio-techno-economic model of the proposed community geothermal systems and their benefits and the integration of additional energy waste reduction, beneficial electrification, and on-site solar generation into the model.
Subtask 5.1: Use results from Task 3 and integrate with data from residential energy assessments. (M4-M5)

Subtask Summary: Integrate results from Task 3 with data from residential energy assessments being conducted by a parallel project to understand future energy waste reduction, electrification, solar, and storge opportunities for the neighborhood.
Subtask 5.2: Evaluate the status of existing natural gas infrastructure and its ability to be re-purposed for geothermal. (M5-M6)
Subtask Summary: Conduct a rapid assessment of the type and quality of natural gas infrastructure in the project geography and assess its ability to be used in geothermal designs.
Subtask 5.3: Build draft socio-techno-economic model of future energy demand. (M4-M7)
Subtask Summary: Build draft socio-techno-economic model of future energy demand if the entire project area was efficient, electric, and powered with renewables. Integrate future energy demand findings into model created in Task 3 to have a current and future energy model.
Milestone 5.3.1: Updated socio-techno-economic model that includes current and future energy demand.
Subtask 5.4: Compare model results against existing grid capacity. (M4-M7)
Subtask Summary: Compare model results against existing grid capacity, integrating the impact of expanded onsite renewable energy potential to lessen demand on the grid.
Milestone 5.4.1: Grid and solar capacity assessment.

Task 6.0: Finalize Socio-Techno-Economic Model and Community-Scale Geothermal Design. (M7-M12)
Task Summary: Finalize the model and community-scale geothermal designs. Identify the top design(s) that are supported by residents and technically and economically feasible.
Subtask 6.1: Integrate other funding sources into financial model. (M7-M8)
Subtask Summary: Assess impact of federal funding, a Community Climate Action Millage, and utility rebates on proposed model. Integrate findings into draft socio-techno-economic model to fully understand the economic implications of the proposed designs.
Milestone 6.1.1: Updated socio-techno-economic model to include outside funding sources.
Subtask 6.2: Share draft community-scale geothermal design(s) with residents. (M8-M9)
Subtask Summary: Share draft community-scale geothermal heating and cooling system design(s) with residents, including developing a replica of the proposed system. Alter designs, as needed, based on feedback.
Milestone 6.2.1: Final designs and model of potential system(s) shared at public meeting.
Subtask 6.3: Determine environmental and permitting requirements. (M8-M9)
Subtask Summary: Identify all assessments and permits needed to move design(s) forward.
Subtask 6.4: Finalize design, including technical design and cost analysis for system. (M9-M12)
Subtask Summary: Create final design and cost analysis for proposed system(s).
Milestone 6.4.1: Final design of system.
Subtask 6.5: Develop maintenance plan for system. (M10-M12)
Subtask Summary: Create maintenance plan for proposed system.
Milestone 6.5.1: Maintenance plan created for proposed system.
Subtask 6.6: Develop a cost-of-service model for designed system. (M10-M12)
Subtask Summary: Develop a cost-of-service model for proposed system that outlines ownership, energy rates, and an all-in development cost.
Milestone 6.6.1: Cost of service model created.

Subtask 6.7: Develop a case study outlining process. (M12)
Subtask Summary: Creation of a case study outlining process completed as part of project.
Milestone 6.7.1: Case study document process and outlines created.

Task 7.0: Submit final deliverables and prepare down selection documentation (M12+)
Task Summary: Prepare and submit all final deliverables and create application for Phase Two grant.
Milestone 7.1: Grant deliverables submitted.

E. Tasks to Be Performed - Budget Period 2

Task 8.0: Finalize System Financing (M1-M6)
Task Summary: Finalize all documentation to bid and select winning financing firm to finance construction of the geothermal system under the City's new sustainable Energy Utility (SEU).

Subtask 8.1: Prepare a Request for Proposals for Financing. (M1-M4)
Subtask Summary: Prepare and release a competitive request for proposals for geothermal system financing. Prepare bid package including technical design elements, economic models, and historical documentation to share with prospective bidders.
Milestone 8.1.1: Request for Proposal package created and released.

Subtask 8.2: Engage potential financing firms in a site visit and project overview. (M3)
Subtask Summary: Host a site visit with those interested in bidding on project financing, including DTE Energy who committed to bidding under a recently agreed upon gas franchise in April 2025, to review the project site, conduct a walk through, and answer questions.
Milestone 8.2.1: Meeting notes and attendance list.

Subtask 8.3: Review competitive bids and select financing firm. (M4-M6)
Subtask Summary: Convene review committee to evaluate proposals, conduct interviews, and select the system financer.
Milestone 8.3.1: System financier identified, and contract signed.

Task 9.0: Finalize Designs and Permitting (M2-M8)
Task Summary: Finalize all civil, mechanical, and electrical designs in tandem with the system constructor and operator and submit all relevant permits. If needed, file additional NEPA paperwork.
Milestone 9.0: All civil, mechanical, and electrical designs finalized.

Subtask 9.1: Submit geothermal drilling package for permits (M3-M6)
Subtask Summary: Prepare and submit building permits and non-potable well permits required to drill the geothermal wells.
Milestone 9.1.1: Building permit secured.
Milestone 9.1.2: Non-potable water permit secured

Go/No-Go: Permits for drilling secured

Subtask 9.2: Submit geothermal loop distribution system package for permits (M3-M12)
Subtask Summary: Prepare and submit right of way and traffic control permits to install the geothermal distribution system in the right of way.
Milestone 9.2.1: Right of way and traffic control permits secured.

Subtask 9.3: Submit geothermal service line permits (M5-M18)
Subtask Summary: Prepare and submit building permits for the geothermal system service lines that will connect to households.
Milestone 9.3.1: Building permits secured.

Subtask 9.4: Submit building permits to install in-home heat pumps and air handlers (M5-M18)
Subtask Summary: Prepare and submit building permits to install indoor heat pumps and air handlers in the residential homes that connect to the geothermal system. This is an ongoing task during loop construction.
Milestone 9.4.1: First cul-de-sac building permits secured.
Milestone 9.4.2: All building permits secured.

GO/NO-GO DECISION: All building permits secured

Task 10.0: Implement Workforce Development Initiatives Identified in Budget Period 1 (M2-M30)
Task Summary: Implement the actions identified in the Workforce Development strategy created by project partners during budget period one.

Subtask 10.1: Hire workforce development team member (M2-M4)
Subtask Summary: Recruit, interview, and hire an individual to lead workforce development efforts regionally.
Milestone 10.1.1: Workforce development team member hired.

Subtask 10.2: Implement the Multi-Craft core curriculum (M2-M18)
Subtask Summary: Design and implement the multi-craft core curriculum in Ann Arbor Public Schools and Ypsilanti Community Schools.
Milestone 10.2.1: At least 50 students complete the course.

Subtask 10.3: Expand apprenticeship programs (M2-M18)
Subtask Summary: Implement a dedicated geothermal track in the U.A. 190 apprenticeship program.
Milestone 10.3.1: 40 apprentices participating in the program.

Subtask 10.4: Expand community college offerings (M3-M24)
Subtask Summary: Establish a geothermal certificate at Washtenaw Community College under their apprenticeship and union trades pathway.
Milestone 10.4.1: 12 students participating in the program.

Subtask 10.5: Aggregate regional geothermal demand (M3-M24)
Subtask Summary: Aggregate major institutional geothermal demand to help ensure a job pipeline for individuals interested in geothermal job opportunities.

Task 11.0: Ongoing and Sustained Community Engagement (M1-M30)
Task Summary: Provide regular (at least bimonthly) and ongoing community engagement related to the project. Engagement will follow a living community engagement strategy co-created with residents.
Milestone 11.0: Community Engagement Strategy created.

Subtask 11.1: Hire part-time community engagement specialist (M1-M2)
Subtask Summary: Post, recruit, and hire a part-time community engagement specialist to implement the engagement strategy and keep residents full apprised of all project-based work.
Milestone 11.1.1: Community engagement specialist hired.

Subtask 11.2: Community notification of DOE award. (M1-M2)
Subtask Summary: Host public events and distribution community information regarding successful receipt of the U.S. Department of Energy grant. Establish clear timelines and next steps for residents.
Milestone 11.2.1: Outreach conducted to 100% of all residents by end of BP2 Q5.

Subtask 11.3: Residents commit to taking service from geothermal system (M1-M12)
Subtask Summary: Through a series of outreach activities, including public forums, door knocking, neighborhood events, and more as outlined in the community engagement strategy, the team will secure formal commitments from residents interested in subscribing to the geothermal system.
Milestone 11.3.1: A financially viable number of residents on the proposed green and yellow loops have committed to take service from the geothermal utility.

GO/NO-GO DECISION: A financially viable number of residents on the proposed green and yellow loops have committed to take service from the geothermal utility

Subtask 11.4: Ongoing community engagement (M1-M30)
Subtask Summary: Implement the community engagement plan and ensure that at least bimonthly community engagement, educational, and outreach events are held.
Milestone 11.4.1: At least bimonthly community engagement events hosted with information on activities included in quarterly reports.

Task 12.0: Competitive Bidding for Drilling and Loop Construction (M3-M7)
Task Summary: Prepare and release requests for proposals to ensure the construction elements of this project are competitively bid and pricing is the most advantageous for the residents.
Milestone 12.0: Requests for proposals released.

Subtask 12.1: Geothermal drilling request for proposals compiled and released (M3-M6)
Task Summary: Request for proposal for geothermal drilling prepared and released, interviews conducted, and the selected vendor approved by City Council.
Milestone 12.1.1: Geothermal driller selected for contracting and contract approved by City Council.

Subtask 12.2: Geothermal distribution loop request for proposals compiled and released (M4-M7)
Task Summary: Request for proposal for construction and installation of the geothermal distribution loop prepared, released, interviews conducted, and the selected vendor approved by City Council.
Milestone 12.2.1: Geothermal distribution loop vendor selected for contract and contract approved by City Council.

GO/NO-GO DECISION: Viable responses to Request for Proposals Secured.

Task 13.0: Geothermal System Construction (M7-M30)
Task Summary: Construct the geothermal system, including drilling wells, laying the neighborhood distribution loops, and connecting homes to the system. Includes regular project check ins and ongoing data collection.
Milestone 13.0: Fully operational neighborhood geothermal system capable of serving up to 100 households.

Subtask 13.1: Biweekly project team check-ins. (M7-M30)
Subtask Summary: At least biweekly project team meetings to keep project team abreast of major developments, challenges, and key decision points. Include DOE team as appropriate.
Milestone 13.1.1: Meeting notes and regular reporting on metrics such as number of boreholes completed, excavation completed for vault, number of homes retrofit, and number of households enrolled in geothermal system.

Subtask 13.2: Geothermal bore field and vault installation complete (M8-M16)
Subtask Summary: All wells drilled, and the vault completed at the park site.
Milestone 13.2.1: Geothermal bore field installation complete.
Milestone 13.2.2: Vault installation complete.
Milestone 13.2.3: Restoration of field to pre-construction status.

Subtask 13.3: Pump house and pump house equipment installed (M12-M18)
Subtask Summary: Construction of a pump house and installation of all relevant equipment.
Milestone 13.3.1: Creation of a pump house that is fully operational.

Subtask 13.4: Geothermal distribution system fully built (M12-M30)
Subtask Summary: Full build out of the geothermal distribution loop in the neighborhood. This includes the yellow loop and the green loop.
Milestone 13.4.1: 25% of subscribers on green loop are connected to operational system.

Milestone 13.4.2: 50% of subscribers on green loop are connected to operational system.
Milestone 13.4.3: 100% of subscribers on green loop are fully connected to operational system.
Milestone 13.4.4: 25% of subscribers on yellow loop are connected to operational system.
Milestone 13.4.5: 50% of subscribers on yellow loop are connected to operational system.
Milestone 13.4.6: 100% of subscribers on yellow loop are connected to operational system.

Subtask 13.5: In-home heat pump and air handler installation (M12-M30)
Subtask Summary: Installation of in-home equipment needed to connect to the geothermal system, including heat pumps and air handlers.
Milestone 13.5.1: 50% of subscribers on the green and yellow loop are fully connected to the geothermal system.
Milestone 13.5.2: 100% of subscribers on the green and yellow loop are fully connected to the geothermal system.

Task 14.0: System Commissioning, Operation, and Ongoing Maintenance (M26-M30)
Task Summary: Test the system, fully commission, and then transition into full operation and maintenance of the community geothermal system.
Milestone 14.0: Fully operational geothermal system providing all the heating and cooling load for all subscribed households in the Bryant neighborhood.

Subtask 14.1: System testing (M26-M30)
Subtask Summary: Ensure the system is fully operational by conducting system testing such as pressure testing, flow rate testing, and preliminary thermal response test. If errors are found, correct and retest.
Milestone 14.1.1: All system tests are passed.

Subtask 14.2. System Commissioning (M28-M32)
Subtask Summary: Based on results from system testing, commission the system for full operation.
Milestone 14.2.1: Geothermal system commissioning agent report approved by IMEG. Commissioning report will verify that geothermal well field, pumps, and supplemental equipment was tested and is operating per the design specifications.

Subtask 14.3: Operate and conduct ongoing maintenance (M33+)
Subtask Summary: Begin fully operating the system and conducting ongoing and preventative maintenance as outlined in the maintenance plan.
Milestone 14.3.1: Updated maintenance plan.

F. Project Management and Reporting – Budget Periods 1 & 2

The City of Ann Arbor will serve as project lead and oversee coordination with all project team members, including day to day administration (Tasks 1 and 7 in Budget Periods 1 and 2), including monitoring progress toward work plan deliverables, organizing biweekly Committee meetings, and ensuring fidelity to project outcomes. Project-related decision making will be heavily guided

by the residents of the chosen neighborhood with final design authority coming from the City of Ann Arbor.

Reports and other deliverables will be provided in accordance with the Federal Assistance Reporting Checklist following the instructions included therein.

Additional deliverables as indicated in the task/subtask descriptions include the following:

1. Subtask 2.1: *Community engagement strategy*
2. Subtask 4.2: *Workforce development strategy*
3. Subtask 6.1: *Socio-Techno-Economic Model for Bryant neighborhood*
4. Subtask 6.4: *Final geothermal design*
5. Subtask 6.5: *Maintenance plan for final geothermal design*
6. Subtask 6.6: *Cost-of-service model for final geothermal design*
7. Subtask 6.7: *Case study on project*

Milestone Summary Table							
Recipient Name:	City of Ann Arbor						
Project Title:	District Geothermal Pilot in Ann Arbor						
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 Budget Period)**	**Anticipated Quarter (Quarters from Start of the Budget Period)**
1.0		Milestone	1.1	Biweekly steering committee meetings	Virtual meetings and meeting notes	1	1
1.0		Milestone	1.2	Detailed work plan	Detailed written work plan	2	1
2.0	2.1	Milestone	2.1.1	Engagement strategy created	Submission of draft engagement strategy to DOE	2	1
2.0	2.2	Milestone	2.2.1	Two community engagement individuals hired	Resumes of individuals shared with DOE	2	1
2.0	2.3	Milestone	2.3.1	40 unique Bryant residents given input into project	Workshop attendee list and meeting results shared with DOE	4	2
2.0	2.3	Milestone	2.3.2	Resident-centered metrics of success created	Workshop summary report with metrics of success highlighted shared with DOE	4	2
3.0	3.4	Milestone	3.4.1	Existing energy usage and cost model	Draft model shared with project partners	4	2
3.0	3.6	Milestone	3.6.1	Updated model that includes efficiency, electrification, and solar potential	Updated model shared with project partners	5	2
3.0	3.7	Milestone	3.7.1	At least 20 experts attend design charettes	Workshop attendee list and workshop	6	2

					report shared with DOE		
3.0	3.8	Milestone	3.8.1	Draft design(s) for community-scale geothermal system created	Draft designs shared with project partners	6	2
3.0	3.9	Milestone	3.9.1	Ground test of proposed designs	Results from ground tests shared with project partners and public	8	3
3.0	3.9	Go/No Go	3.9.1	Viable Designs Generated	Results for boring shared with project partners. Viable pathway must be found to proceed		
4.0	4.1	Milestone	4.1.1	At least 30 representatives attend workforce roundtables	Roundtable attendee list and notes shared with DOE	4	2
4.0	4.2	Milestone	4.2.1	Workforce development strategy created	Workforce development strategy shared with DOE	6	2
4.0	4.3	Milestone	4.3.1	At least ten high school students attend job forum	Forum attendee list and meeting notes shared with DOE	8	3
5.0	5.3	Milestone	5.3.1	Updated socio-techno-economic model to include projected future energy demand	Draft model shared with project partners and DOE	6	2
5.0	5.4	Milestone	5.4.1	Grid and solar capacity assessment	Assessment shared with project partners and integrated into project modeling	6	2
6.0	6.1	Milestone	6.1.1	Updated socio-techno-economic model that includes current and projected future energy usage, utility rebates, and local programs	Updated model shared with DOE	9	3
6.0	6.2	Milestone	6.2.1	Final draft designs and model of potential geothermal system developed	Model shared with public and US DOE	9	3

6.0	6.4	Milestone	6.4.1	Final geothermal system designs and agreed to by public	Final design shared with DOE	11	4
6.0	6.5	Milestone	6.5.1	Maintenance plan for proposed system	Maintenance plan shared with DOE	12	4
6.0	6.6	Milestone	6.6.1	Cost-of-service model created for proposed geothermal system	Model shared with DOE	12	4
6.0	6.7	Milestone	6.7.1	Case study highlighting project process created	Case study shared with DOE	12	4
7.0		Milestone	7.0	Submit final deliverables and prepare down selection documentation	Submit final deliverables to DOE. DOE verification of application submission	12	4
Budget Period 2							
8.0	8.1	Milestone	8.1.1	Request for proposal package created and released	RFP posted on City's procurement website	3	1
8.0	8.2	Milestone	8.2.1	RFP Bidder meeting	Meeting notes and attendance sheet	3	1
8.0	8.3	Milestone	8.3.1	System financier identified	Contract signed	6	2
9.0	9.0	Milestone	9.0	Finalized designs	Final mechanical, electrical, and civil drawings	9	1
9.0	9.1	Milestone	9.1.1	Building permit secured	Permit in hand	6	3
9.0	9.1	Milestone	9.1.2	Non-potable water permit secured	Permit in hand	6	3
9.0	9.1	Go/No Go	9.1	Not-potable water permit(s) secured	Permits to begin drilling in hand	End of month 6	
9.0	9.2	Milestone	9.2.1	Right of way and traffic control permits secured	Permit in hand	12	4
9.0	9.3	Milestone	9.3.1	Geothermal service line permits secured	Permit in hand	18	6
9.0	9.4	Milestone	9.4.1	First cul-de-sac of building permits secured	Permit in hand	12	5
9.0	9.4	Milestone	9.4.1	Building permits to install indoor heat pump and air handler	Permits in hand	18	6
9.0	9.4	Go/No Go	9.4	Building permits secured	Permits to install in-home units secured	End of month 18	

10.0	10.1	Milestone	10.1.1	Workforce development team member hired	Job description	4	2
10.0	10.2	Milestone	10.2.1	Implement multi-craft core curriculum	50 students complete the course	18	6
10.0	10.3	Milestone	10.3.1	Expand apprenticeships	40 apprentices in program	18	6
10.0	10.4	Milestone	10.4.1	Expand community college offerings	12 students participating in program	24	8
11.0	11.0	Milestone	11.0	Community engagement strategy completed	Completed strategy	6	2
11.0	11.1	Milestone	11.1.1	Hire part-time engagement specialist	Job description	2	1
11.0	11.2	Milestone	11.2.1	Community notification of DOE award	Outreach to 100% of all residents	2	5
11.0	11.3	Milestone	11.3.1	Residents' commitment/subscription to geothermal system	Financially viable number of residents committed to taking service	12	4
11.0	11.3	Go/No Go		Financially viable number of residents committed to taking service	Letters of commitment	Month 12	
11.0	11.4	Milestone	11.4.1	Ongoing community engagement	At least bimonthly events and events summarized in quarterly reports	1	1
12.0	12.0	Milestone	12.0	Competitive bids secured	Bids secured	7	3
12.0	12.1	Milestone	12.1.1	Geothermal drilling request for proposal released	Bids secured	6	2
12.0	12.2	Milestone	12.2.1	Geothermal distribution loop request for proposal released	Bids secured	7	3
12.0		Go/No Go		Viable responses to requests for proposals secured	RFP results		
13.0	13.0	Milestone	13.0	Geothermal system construction	Fully operational system serving up to 100 households	16+	6
13.0	13.1	Milestone	13.1	Biweekly project team check-ins	Meeting notes	3	3
13.0	13.2	Milestone	13.2.1	Geothermal bore field installed	Completed wellfield	16	6

13.0	13.2	Milestone	13.2.2	Geothermal vault installed	Completed vault	16	6
13.0	13.2	Milestone	13.2.3	Restoration of well field	Restoration complete	16	7
13.0	13.3	Milestone	13.3.1	Pump House installed	Fully operational pump house	18	6
13.0	13.4	Milestone	13.4.1	Geothermal distribution loop built	25% of subscribers on green loop connected	24	8
13.0	13.4	Milestone	13.4.2	Geothermal distribution loop built	50% of subscribers on green loop connected	27	9
13.0	13.4	Milestone	13.4.3	Geothermal distribution loop built	100% of subscribers on green loop connected	30	10
13.0	13.4	Milestone	13.4.4	Geothermal distribution loop built	25% of subscribers on yellow loop connected	24	8
13.0	13.4	Milestone	13.4.5	Geothermal distribution loop built	50% of subscribers on yellow loop connected	27	9
13.0	13.4	Milestone	13.4.6	Geothermal distribution loop built	100% of subscribers on yellow loop connected	30	10
13.0	13.5	Milestone	13.5.1	In-home heat pump and air handler installation	Number of units installed	28	9
13.0	13.5	Milestone	13.5.2	In-home heat pump and air handler installation	Number of units installed	30	10
14.0	14.0	Milestone	14.0	Fully operational system	All subscribers connected to operational system	29	12
14.0	14.1	Milestone	14.1.1	System testing	All system tests passed	26	11
14.0	14.2	Milestone	14.2.1	System commissioning	Fully operational system	32	11
14.0	14.3	Milestone	14.3.1	Ongoing maintenance	Maintenance plan	30	12