January 30, 2017

Karlene Fine, Executive Director
North Dakota Industrial Commission
State Capitol – 14th Floor
600 East Boulevard Ave Dept 405
Bismarck, ND 58505-0840

Re: Transmittal Letter for North Dakota Renewable Energy Grant

Dear Ms. Fine,

Terra Labs would like to present the enclosed grant proposal titled "A Novel Approach to Reduce the Energy Consumption of Residential Homes", in compliance with the requirements set forth by the North Dakota Industrial Commission. We are requesting matching funds of $500,000 from the NDIC to support this 11 month project which will run from June 21, 2017 to May 22, 2018 and has a total estimated budget of $1,461,664. Terra Labs is collaborating with Grassroots Real Estate to develop this project in Horace, ND.

Terra Labs is pursuing the development, construction and implementation of a community scale heating and cooling system for residential homes. Successful completion of this project will provide renewable heating and cooling from geothermal energy for approximately 200 residential homes. Additionally, this project will demonstrate an alternative method to finance residential renewable projects by removing the high costs of installation and slow payback period. Allowing the benefits of renewable energy to be passed from the first homeowner on to the next owner.

Due to the intricacy of this project, we have chosen to separate the process into three phases:

Phase I:	Design and feasibility
Phase II:	Infrastructure and system construction (this application)
Phase III:	Implementation of the system and instructions of its use

This letter sets forth a binding commitment on behalf of Terra Labs to complete the project as described in the application. Thank you for your considerations of our grant proposal.

If you have additional questions or concerns, I can be reached at 701.793.7386 or daniel.schwandt@terra-labs.com.

Sincerely,

Daniel Schwandt, PE MSEE
CEO and Cofounder
Terra Labs | www.terra-labs.com
daniel.schwandt@terra-labs.com

Included:

- Grant Application: A Novel Approach to Reduce the Energy Consumption of Residential Homes – Phase II
- $100 Application Fee (included with the hard copies)
- Transmittal Letter for Terra Labs
- Tax Liability Statement for Terra Labs
- Letter of Support from Grassroots Real Estate

Renewable Energy Program

North Dakota Industrial Commission

Application

Project Title:

A Novel Approach to Reduce the Energy Consumption of Residential Homes

Applicant:

Terra Labs, LLC

Principal Investigator:

Daniel J. Schwandt, PE MSEE

Date of Application:

January 30, 2017

Amount of Request:

$500,000

Total Amount of Proposed Project:

$1,461,664

Duration of Project:

11 Months

Point of Contact (POC):

Daniel J. Schwandt, PE MSEE

POC Telephone:

701.793.7386

POC Email:

daniel.schwandt@terra-labs.com

POC Address:

614 Main Ave, Suite #220
Fargo, ND 58103

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ABSTRACT

Objective:

The primary objective of this project is to demonstrate a system that reduces the energy consumption of residential, single-family homes, in an affordable way. This project will approach improving energy performance on a community scale, rather than focusing on the individual home. A secondary objective is to provide an opportunity for price sensitive home buyers to access the benefits of renewable energy.

Terra Labs will develop a community heating and cooling system that utilizes renewable, shallow geothermal energy and heat pumps to provide affordable and efficient energy for a residential community to be built in Horace, ND in 2017 and 2018.

Expected Results:

This project will develop an innovative, community-centered approach to reduce residential heating and cooling energy consumption in North Dakota, especially rural North Dakota. The expected results are:

1. Provide heating and cooling to at least two hundred residential homes that is consistent, economical and energy efficient.
2. Develop an effective load management method that improves heating and cooling load efficiencies thereby reducing the electricity demand on existing utility infrastructure.
3. Demonstrate the feasibility of and opportunities for both residential geothermal heat pumps and community scale heating and cooling projects.
4. Create job growth in the geothermal heat pump industry, both interim and permanent.
5. Promote and develop North Dakota's technical expertise in the renewable energy industry.

Duration:

This project will be completed in three phases.

- Phase I (Design): Feasibility study, design, approvals and permitting. This phase is currently in progress. The feasibility study has been completed and the comprehensive design is underway.
- Phase II (Construction): 12 months (May 2017 - May 2018): Infrastructure and system construction.
- Phase III (Implementation and management): 12 months (April 2018 – April 2019) Implementation of the system and instructions of its use.

Total Project Cost:

This application is to support Phase II. Terra Labs is using other means to completed Phase I and Phase III costs are still to be determined. The projected costs of Phase II are $1,461,664 ($500,000 NDIC and $941,664 Terra Labs).

Participants:

Terra Labs, LLC; Grassroots Real Estate, LLC.

PROJECT DESCRIPTION

Objectives:

Terra Labs will develop a community heating and cooling system that utilizes renewable, shallow geothermal energy and heat pumps to provide affordable and efficient energy for a residential community to be built in Horace, ND in 2017 and 2018. Terra Labs' objectives are to promote the adoption of geothermal heat pumps by making them available to more homeowners, to generate wealth for local businesses and customers, to develop baseline knowledge from this project that will be utilized in other communities and developments, and to funnel investment into underutilized renewable energy.

Methodology:

North Dakota's extreme annual temperature variations provide geothermal heat pumps the most efficient method of residential heating and cooling.[1][2] They transfer heat from the earth by circulating a water/antifreeze solution through plastic pipes buried vertically or horizontally in the ground. The water/antifreeze solution is circulated by an installed pump that is installed in each home.

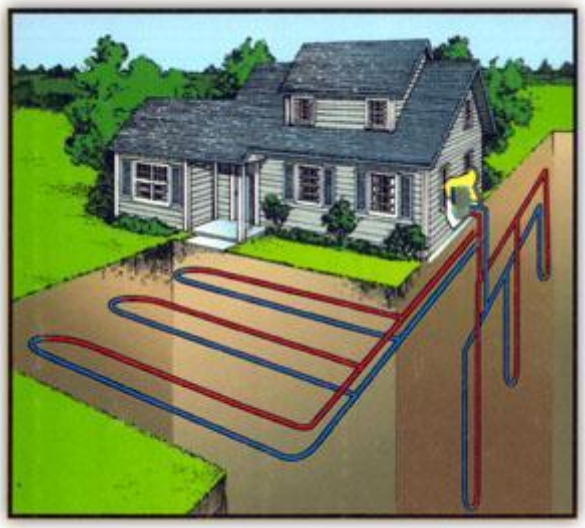

Figure 1: Residential Geothermal Ground Loops[1]

Although ground source heat pumps don't produce energy, they are classified as a renewable energy technology because they take advantage of the consistent subsurface temperatures to provide heating in the winter and cooling in the summer, using 30% to 60% less energy than traditional heating and cooling systems.[3]

Community wide geothermal provides efficiencies through:

- Economies of scale
- Installation during initial construction instead of as a retrofit
- Reduced Central Loop Field size due to load sharing
- Loop field located in water retention area to increase heat transfer.

Community geothermal is a great option in the Red River Valley for the following reasons:

- The soil type is clay based and the area has a high water table. This leads to high water content, increasing the heat transfer between the ground and the system loops.
- North Dakota has extreme season temperatures. The bitter cold winters and hot summers make the technology more attractive by increasing net energy savings.

[1] http://lifefreeenergy.com/g/geothermal-energy-residential.html
[2] https://www.centerforsocialinclusion.org/wp-content/uploads/2012/07/Geothermal_Energy_Development.pdf
[3] https://www.epa.gov/rhc/geothermal-heating-and-cooling-technologies

Terra Labs will design, install, and pay for a community wide geothermal system that will provide heating and cooling to each home. This system will consist of a central ground loop field, distribution network, and each home's individual heat pump.

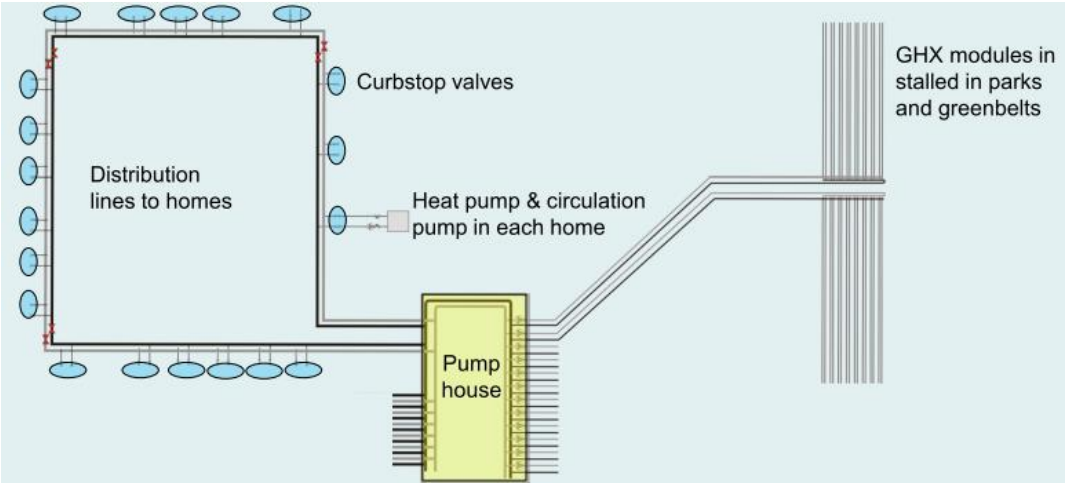

Figure 2: Example Central Loop Field (GHX = Geothermal Heat Exchange = Central Loop Field) [4]

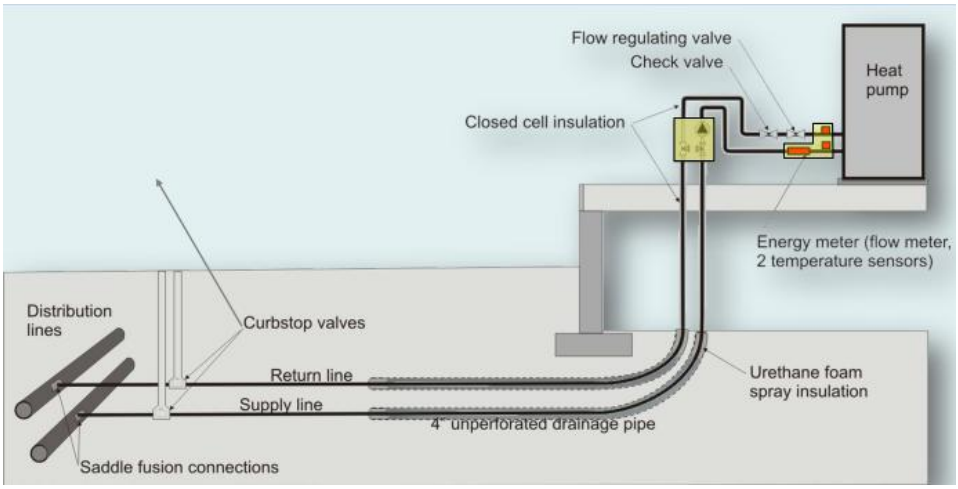

Figure 3: Example Heat Pump Connection [4]

The biggest obstacles to widespread geothermal heat pump use are the initial cost and lack of technical knowledge. Terra Labs will pay a qualified engineering firm to design the system and work with qualified geothermal installers to install the system. Terra Labs will collect a service rate from the

[4] http://www.oit.edu/docs/default-source/geoheat-center-documents/quarterly-bulletin/vol-30/30-1/30-1-art2.pdf?sfvrsn=4

connected homes to pay for the initial cost over time. Homeowners will gain the benefits without the upfront burden and risks of the installation costs.

To be successful, Terra Labs will work with:

- Grassroots Development LLC to acquire the land necessary to install the system.
- City of Horace to get approval and permitting for this project.
- The Public Utilities Commission to discuss delivering heat as a service.[5]
- A local bank to acquire a project loan
- Qualified North Dakota engineering firms to get cost estimates and to design the network and central loop field
- North Dakota geothermal drilling companies to perform the drilling and install the loops
- Local heat pump installation companies to install the heat pumps inside the home
- The local electric utility, Cass County Electric, to install a demand management system to allow for heat pump cycling

Terra Labs has already begun discussions with Grassroots Real Estate LLC, the developer of this community. Grassroots has agreed to have this system installed and has made a commitment to dedicate land for the loop system and the pump house. The proposed space for the ground loop field is underneath the community greenspace.

Anticipated Results:

This project will provide comfortable heating and cooling for 200 homes. The state of the art system will deliver residential heating and cooling that is consistent, economically stable, and energy efficient.

The local utility, Cass County Electric, will be able to install a demand management system to cycle the system. This reduces the peak load of the electrical infrastructure, increases efficiency, and could reduce costs for thousands of electricity customers.

This project will demonstrate the feasibility of a multi-building geothermal heat pump system and create opportunities for other communities to adopt a similar strategy. This strategy could make geothermal heat pumps accessible to more demographics of people, including first time homebuyers.

[5] https://www.greentechmedia.com/articles/read/geothermal-utility-launches-in-colorado

This project will bolster North Dakota's technical expertise in the renewable energy industry. It will also bring economic sustainability to local geothermal businesses that are experiencing added pressure due to the recent expiration of federal tax credits for geothermal heat pumps.

Phase II Deliverables:

- Finalize construction schedule.
- Selection of contractors to perform the work required for each of the system's components.
- Final permits from the governing bodies.
- Completed construction of each of the system's components.
- Commissioning and testing of the complete system.

Facilities: The project will be constructed in Horace, ND.

Resources:

Terra Labs is a local, early stage company focused on developing renewable and sustainable technology in North Dakota. Terra Labs will provide the project management throughout the project.

Grassroots Real Estate is the developer for this land in Horace, ND. Grassroots has communicated their commitment and desire to develop sustainable communities.

Obermiller Nelson Engineering (ONE) - Building Systems Consultants in Fargo is an example of an engineering firm qualified to design this system. ONE has experience designing large commercial geothermal systems. An engineering firm such as ONE will collaborate with Terra Labs to design this project to fulfill the requirements.

Experienced drillers and heat pump installers will make the construction of this project successful. An example of an experienced installer is Ambient Geothermal, a residential geothermal company based out of Grand Forks, ND. Ambient has experience installing geothermal in various locations across the Red River Valley.[6] Experience like this will assist in the successful completion of this project.

[6] http://www.ambientgeothermal.com/

William E. Schwandt, a local engineering manager with renewable project management and utility experience, will act as a consultant to provide guidance to Terra Labs. He has over 30 years of experience managing a municipal utility and he has managed the installation and operation of award winning renewable energy projects, such as Capture the Wind and Capture the Sun.

Techniques to Be Used, Their Availability and Capability:

Geothermal heat pumps are a proven renewable energy technology. Heat pumps have been installed successfully for over 60 years.[7] These heat pumps have lifetimes nearly double that of conventional heaters and AC units, require minimal maintenance, and are safer and cleaner than burning fuel.[8]

Vertically drilled ground loops will be installed to a depth of 200 feet. The combination of a clay based soil and high water table in eastern North Dakota make vertical drilling efficient and cost effective. The plastic ground loops have warranties of 50 years and are known to last significantly longer.[9]

There are existing, successful examples of interconnected multi-building geothermal systems that are similar to the proposed project. The town of Gibsons, British Columbia, Canada installed a similar central network in one of their residential communities.[10] Ball State University in Indiana has a campus wide system[11] and Minot State University has a system that heats a few large campus buildings.[12] These projects provide useful technical data and show the viability of a multi-building interconnected system. However, useful data on project economics is dependent on geographic location and each system presents its own unique challenges.

[7] https://energy.gov/energysaver/geothermal-heat-pumps
[8] http://www.igshpa.okstate.edu/geothermal/residential.asp
[9] http://www.igshpa.okstate.edu/geothermal/faq.asp
[10] http://www.geoxergy.com/gibsons-district-energy-system/
[11] http://cms.bsu.edu/about/geothermal
[12] http://ndus.edu/uploads/resources/4973/misu-capital-projects.pdf

Environmental and Economic Impacts while Project is Underway:

The installation of this system has minimal environmental impacts. Shallow Geothermal drilling has a proven track record and is not harmful to the environment. No special drilling fluids are used that will contaminate or compromise the ground or water aquifers. Plastic loops will be encased in grout. An antifreeze solution will circulate through the plastic loops. This solution will not directly contact the ground and it is not harmful if accidently leaked. Geothermal heat pumps arrive with the refrigerant installed. It is a green refrigerant that does not contain environmentally harmful greenhouse gases. [13]

Some renewable projects, such as wind, are limited on where they can be installed. Few can be installed within a residential community because of space constraints or the negative visual impact. The loops and network of this system will not be visible once installed. The only component visible in the community will be the pump house. [14]

Figure 4: Example Community Pump House [14]

This project will have a positive impact on the local economy:

- An engineering firm will receive compensation for engineering design services.
- Local drilling companies, distribution network installers, and heat pump installers will be employed.
- The installed heat pumps will provide ongoing maintenance revenue for local service technicians.
- It will help to sustain the geothermal heat pump industry which will struggle to overcome the loss of federal residential and commercial geothermal tax credits, which expired in December 2016.

[13] http://www.climatemaster.com/downloads/RP917.pdf
[14] http://www.geoxergy.com/gibsons-district-energy-system/

Ultimate Technological and Economic Impacts:

The success of Terra Labs' community geothermal project would enable the construction of other community scale projects. Community geothermal could also be used in rural communities that don't have access to natural gas, which is a more affordable and cleaner burning fuel.

Collaborating with the electric utility will reveal the technological impact of energy management. The utility will benefit from having more efficient equipment, reducing the cooling peaks during the summer, and further benefits may result from having a connected community where 200 heat pumps can be managed.

Gaining more experience with a community-style heating system could allow for expansion to other applications that share heat loads. Many commercial buildings require cooling year-round because of large internal heat gains. Combining different heating and cooling loads like this with residential would lead to a reduced system installation cost and added operating efficiency. For example, a high school could use their indoor hockey arena to transfer heat to the rest of the school during winter. There are more applications like this that would benefit by sharing heat loads.

This project will provide stable, affordable heating and cooling to these 200 North Dakota homes, benefitting 200 families. Terra Labs will manage the system and is focused on investing in local sustainable projects. Managing peak electricity demand allows the utility to reduce costs. Cass County Electric is a not-for-profit cooperative utility, meaning these savings benefit the local community.[15] This system will lead to ongoing wealth retention in North Dakota.

This project uses proven technology in an innovative way to increase the efficiency of a home's heating and cooling demand for 50-100 years, while saving customers money and providing work to local businesses.

[15] https://www.kwh.com/content/cooperatives

Why the Project is Needed:

Energy security is key to economic growth. Energy demand is growing worldwide and recent history shows us that supply disruptions and shortages can cause uncertainty and volatility. In addition, our energy security could be at risk from future federal regulations related to the environment. North Dakota needs solutions that reduce our level of emissions and balance our reliance on fossil fuels.

Community geothermal addresses these needs by creating sustainable developments in North Dakota. Per the Energy Information Administration (EIA),[16] North Dakota's residential sector consumes the most energy per capita in the United States due to our rural cities and cold climate, and residential and commercial buildings account for 40% of our nation's annual energy consumption while the heating and cooling account for nearly half the annual energy consumption of a home. Developing community geothermal is an excellent and realistic first step toward sustainable housing. Furthermore, North Dakota cities are seeing large population growth and residential development, making now a good time to address these needs.

This project makes geothermal accessible to more people. Renewable energy is often a product only the wealthy can afford. Younger people and price sensitive families can't afford the risk that comes with large upfront costs, especially if they may not be planning to live in the home long-term. This project would make geothermal heat pumps accessible to more demographics of the population by taking away the burden of initial costs while still allowing them to experience the benefits of geothermal.

[16] http://www.eia.gov/

STANDARDS OF SUCCESS

Phase II Success: Implement design, logistics and accomplish construction deliverables.

Measurable Project Deliverables:

- 200 homes connected to efficient geothermal heating and cooling
- Utility savings and benefits through balanced demand on the electric grid
- Demonstration of a renewable geothermal energy system
- Developing local business knowledge on community geothermal potential

Jobs: This project will provide contracts to local businesses during the design and construction phases (I and II). It will provide permanent jobs through regular equipment maintenance and system management (phase III).

The Value to North Dakota: This project introduces a novel approach to reduce the energy consumption of residential homes by developing a community scale heating and cooling system using geothermal energy. This method provides an opportunity for homeowners to finance renewable energy projects by removing the high installations costs and allowing the benefits to be passed from the first homeowner on to the next owner.

BACKGROUND/QUALIFICIATIONS

Terra Labs is a local, early stage company founded by three siblings who grew up in the Fargo Moorhead area. Terra Labs is focused on developing renewable and sustainable technology in North Dakota. Terra Labs staff includes:

- Daniel J. Schwandt, CEO and cofounder of Terra Labs and POC for the proposed project. Daniel graduated from NDSU with an undergraduate degree in Electrical and Computer Engineering in 2008 and a graduate degree in Electrical and Computer Engineering, specializing in Control Theory, in 2011. Daniel is a registered Professional Engineer in the state of North Dakota. Previous work experience includes systems integration at CNH Industrial and embedded software and model based systems design at John Deere Electronic Solutions.
- Brian W. Schwandt, CTO and cofounder of Terra Labs. Brian graduated from NDSU with an undergraduate degree in Electrical and Computer Engineering in 2009 and a graduate degree in Electrical Power Engineering from RWTH Aachen University (Germany) in 2017. Previous work experience includes designing hybrid vehicles for John Deere Electronic Solutions.

- Thomas E. Schwandt, Project Engineer and cofounder of Terra Labs. Thomas graduated from NDSU with an undergraduate degree in Electrical and Computer Engineering in 2014. Previous work experience includes electrical systems integration for John Deere.
- William E. Schwandt, father of Daniel, Brian, and Thomas, will serve as a consultant. William has extensive leadership and strategic planning experience. As well as a comprehensive knowledge of the utility industry and development of award winning renewable projects, such as *Capture the Wind* (Moorhead, MN) and *Capture the Sun* (Moorhead, MN).

The engineering design firm has not been chosen but the example above, Obermiller Nelson Engineering (ONE),[17] has designed several large commercial geothermal projects. Their projects include the first Geothermal VA campus in the United States (St. Cloud MN), the largest geothermal nursing home in North Dakota (Lisbon ND), NDSU's downtown business campus – Barry Hall, and UND's new LEED alumni center, Gorecki Hall. [18]

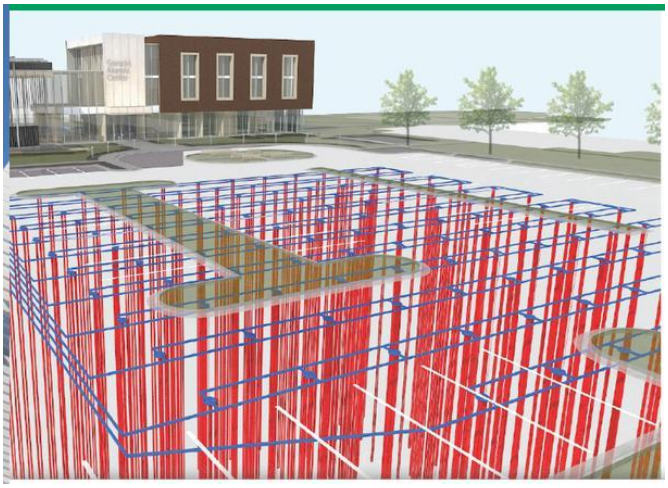

Figure 5: UND's Gorecki Alumni Center [17]

MANAGEMENT

Daniel Schwandt, Terra Labs' principal investigator, will be responsible for the overall management of the project. Terra Labs follows a variation of the Agile framework for project management, utilizing the scrum method. The timeline is scheduled into eight-week releases (Potentially Shippable Increment (PSI), consisting of four two-week sprints. At the start of each release, Terra Labs' team meets to discuss major milestones, the tasks needed to fulfill them and which sprint each tasks should be completed in. Each sprint begins with a discussion of the tasks at hand, who will be responsible for their completion and an initial team evaluation of how to accomplish the tasks. Throughout the sprint, Terra Labs holds regular

[17] http://buildingdashboard.com/clients/und/gorecki/
[18] https://www.obernel.com/

standup meetings Monday, Wednesday and Friday to quickly discuss current tasks, upcoming tasks and any issues or problems that have occurred.

Since the development of this project is so intertwined with Grassroots' land development, each sprint, Terra Labs will communicate with Grassroots to ensure joint progress and milestones are being accomplished and any issues that have transpired.

Throughout the construction of the different systems, Terra Labs will hold meetings, informal or formal, each sprint to discuss progress and issues.

Terra Labs will prepare progress reports at the end of each release or every other release, depending on if the scheduled progress requires a report.

Major milestones and their schedules are detailed below.

TIMETABLE

As stated before, Terra Labs has completed the feasibility study and is currently initiating the comprehensive design process. The estimated project costs are being determined. Throughout the progression of the project, the construction schedule will be refined.

The following table details the project schedule for Phase II.

Potentially Shippable Increment - Sprint	1-1		1-2		1-3		1-4		2-1		2-2		2-3		2-4		3-1		3-2		3-3		3-4	
Month	May				June				July				August				September				October			
Start of Sprint	5/10/2017		5/24/2017		6/7/2017		6/21/2017		7/5/2017		7/19/2017		8/2/2017		8/16/2017		8/30/2017		9/13/2017		9/27/2017		10/11/2017	
End of Sprint	5/23/2017		6/6/2017		6/20/2017		7/4/2017		7/18/2017		8/1/2017		8/15/2017		8/29/2017		9/12/2017		9/26/2017		10/10/2017		10/24/2017	
Project Kickoff, May 20, 2017																								
PSI Planning																								
Sprint Planning																								
Interim Report																								
Final Report																								
Coordinate with land developer																								
City of Horace, approvals/permits																								
Finalize construction schedule																								
Coordinate with Cass County Electric																								
Secure project financials																								
Request for construction quotes																								
Award to Contractors																								
Distribution system																								
Pump house																								
Equipment installers																								
Well drillers																								
Permits for construction																								
Construction of subsystems																								
Distribution system																								
Pump house																								
Equipment installation																								
Well drilling and connection																								
Commissioning and testing of system																								
Project Complete																								

BUDGET

Project Associated Expense	NDIC's Share	Applicant's Share (Cash)	Applicant's Share (In-Kind)	Other Project Sponsor's Share
Daniel Schwandt		$84,480		
Brian Schwandt		$81,920		
Thomas Schwandt		$75,264		
Distribution system	$230,000	$230,000		
Pump house construction	$40,000	$40,000		
Well drilling	$230,000	$230,000		
Geological site assessment		$20,000		
Equipment installation		$60,000		
Contingency	$0	$140,000		
Indirect Costs	$0			
Subtotal	$500,000	$961,664	$0	$0
Project Total				$1,461,664

The budget contains costs for the construction of the infrastructure, well fields, pumping house and equipment, and a contingency fund to directly meet the project deliverables. Terra Labs' members have budgeted approximately 512 hours for the duration of the phase.[19] The matching capital for Phase II will come from a project loan secured from a local bank.

If less funding is available, Terra Labs believes the project may be delayed 3 to 6 months, which could cause conflicts with the construction schedule of the residential land. Terra Labs would use its best efforts to maintain the schedule and milestones of the project.

CONFIDENTIAL INFORMATION

There is no confidential information shared in this document.

PATENTS/RIGHTS TO TECHNICAL DATA

Terra Labs, LLC reserves the right to file patents related to the intellectual property generated from this proposal and will work with legal counsel to determine if additional patents could be filed.

[19] To calculate the value of the in-kind services, Terra Labs utilized the rates set forth by the IEEE-USA Consultants Fee Survey Report - 2015 Edition.

January 30, 2017

Karlene Fine, Executive Director
North Dakota Industrial Commission
State Capitol – 14th Floor
600 East Boulevard Ave Dept 405
Bismarck, ND 58505-0840

Re: Tax Liability Statement for North Dakota Renewable Energy Grant

Dear Ms. Fine,

Terra Labs, LLC is stating and confirming that there are no outstanding tax liabilities to the State of North Dakota.

If you have additional questions or concerns, I can be reached at 701.793.7386 or daniel.schwandt@terra-labs.com.

Sincerely,

Daniel Schwandt, PE MSEE
CEO and Cofounder
Terra Labs | www.terra-labs.com
daniel.schwandt@terra-labs.com

January 27, 2017

Karlene Fine, Executive Director
North Dakota Industrial Commission
State Capitol – 14th Floor
600 East Boulevard Ave Dept 405
Bismarck, ND 58505-0840

Re: Letter of Support for North Dakota Renewable Energy Grant

Dear Ms. Fine,

This letter of support is with regards to the proposal prepared by Terra Labs entitled "A Novel Approach to Reduce the Energy Consumption of Residential Homes".

I am writing to confirm Grassroots Real Estate's commitment to participate in Terra Labs' approach to provide renewable, community heating and cooling to residential homes. Terra Labs' method removes the initial barrier to entry for residential renewable energy and provides incentives for projects that have a longer payback period, which can then be passed from the first homeowner to the following owners.

As a sign of commitment to this renewable project, Grassroots Real Estate has pledged a portion of the land the system will reside on, up to $100,000 of the appraised land value. This sign of commitment is contingent on the positive results conveyed by the detailed engineering and feasibility reports.

Grassroots Real Estate is committed to provide individuals the ability to build wealth through quality and sustainable home ownership. We are excited to collaborate with Terra Labs to bring this novel approach of community heating and cooling to a new residential development.

Thank you for the opportunity to share my support for this project. If you have any additional questions, please feel free to contact me at justinberg@parkcompany.com.

Thank you,

Justin Berg
Grassroots Real Estate, LLC

April 18, 2017

Andrea Holl Pfennig
Program Administrator
North Dakota Department of Commerce
State Capitol 14th Floor
600 E. Boulevard Ave. Dept. 405
Bismarck, ND 58505-0840

Dear Ms. Pfennig,

My name is Bryan Schmidt, City Council member for the city of Horace responsible for city infrastructure.

I am writing this letter in support of Terra Labs' grant application titled "A Novel Approach to Reduce the Energy Consumption of Residential Homes." Kory Peterson (mayor), James Dahlman (city engineer) and I had the opportunity to discuss the project being considered in Horace, ND with Terra Labs and Grassroots Development.

Given the potential benefits of the community geothermal system, we have conditionally agreed to fund the local cost share of the engineering design and evaluation of the system by assessing the cost against the property that benefits from the system. After the detailed engineering and construction proposal is evaluated, the City of Horace would determine if the risks and operational plans are acceptable to provide financing and begin construction of the system. We see this as an opportunity for the citizens of the development to have a high-quality heating and cooling system for their home at a reasonable cost. The system also has the potential to create a source of revenue for the city to fund additional community programs and projects

This as an opportunity for the City of Horace to be a part of something new and innovative. The city has been expanding rapidly in recent years and is expected to continue to expand. If this project is successful, we see the opportunity to replicate the system in other new developments

We would be delighted to hear that Terra Labs was the recipient of this grant. If you have any questions regarding our support for this project, please do not hesitate to contact me.

Sincerely,

Bryan Schmidt