

**Environment and Natural Resources Trust Fund  
2010 Request for Proposals (RFP)**

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**LCCMR ID: 071-B2**

**Project Title:**

RTR Eliminates Carbon Footprint

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**LCCMR 2010 Funding Priority:**

B. Renewable Energy Related to Climate Change

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**Total Project Budget: \$** \$5,194,702

**Proposed Project Time Period for the Funding Requested:** 1 year, 2010 - 2011

**Other Non-State Funds: \$** \$535,470

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**Summary:**

The Russell-Tyler-Ruthton Public Schools is leaving a large carbon footprint.

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**Location:**

**Region:** SW

**County Name:** Lincoln

**City / Township:** Tyler, Russell, Ruthton

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_____ Knowledge Base	_____ Broad App.	_____ Innovation
_____ Leverage	_____ Outcomes	
_____ Partnerships	_____ Urgency	_____ TOTAL

PROJECT TITLE: RTR eliminating carbon footprint

## **I. PROJECT STATEMENT**

The Russell-Tyler-Ruthton Public Schools is leaving a large carbon footprint. If we are expecting a change in the footprint of our children we need to provide an example for them to follow. It is our desire to remove the footprint that we are currently creating on the world through the burning of fossil fuels and natural gas usage. As we are looking to go year round it is necessary to cool the building during the summer. We will also have the opportunity to be the leader in our three communities and the area schools to show the advantages of not leaving a carbon footprint for our children to have to deal with in their future. We have completed an engineering study of replacing the current heating system for all three school buildings with Geothermal heating and cooling as of January 5, 2009 to remove the district carbon footprint. We are also looking to be the model for schools in Minnesota that a retro fit can be completed with cost savings for the district. These funds then can be used for the education of the children. The study addresses our use of 40,734 gallons of fuel oil and 59,041 therms of natural gas per year. The challenge is before the project is to retro fit the project to our current buildings. Applicant currently owns all land and building involved in this project. There are no known zoning or permitting issues. In addition, no long term permits are required for this system.

### **2. Goal #1 To eliminate the footprint of the school district by using geothermal energy**

The impact on the district will to reduce the use of fossil fuels and natural gas for heating of the school district. We will no longer use 40,734 gallons of heating fuel and 59,041 therms per year. The study shows that we will totally remove our footprint for heating of the three school buildings through geothermal heating. The study states that the system will increase the indoor air quality and cost effective use of geothermal heating and cooling in future use is the engineers recommendation choice of heating and cooling systems. The study also considered the electrical use operation and maintenance cost analysis along with the economic analysis. There is no doubt that the cost of operation and maintenance is affordable for the school district with geothermal which is total of \$59,000 of savings per year for the district. The other savings that is available for our use is the rate of electricity cost in using geothermal over the use of fossil fuels. We currently are paying 7.2 cents per KWH and in using geothermal we will have the ability to purchase KWH at a reduced rate of 4.2. The renewable resource system to be used is a ground source heat pump. The energy is transferred to and from the earth through a series of bore holes.

### **Goal # 2 To educate the students and community of the advantages of using geothermal energy.**

Through the education process and making the geothermal process part of science and math classes student will have a true understanding of geothermal and the carbon footprint we are leaving on the earth. The impact of the project will be wide spread among the parents, students, and communities of Russell,- Tyler, Ruthton, Pipestone, Lincoln, and Lyon counties. It will have a larger impact that just in our direct area. Because schools have not attempted to retro fit a school for geothermal we will be open for the rest of the schools in the state of Minnesota and South Dakota to tour.

3. We will achieve the goals of the project by complete the retro fit of the geothermal project and eliminating our footprint. We will educate our students, parents and communities by putting the emphasis of renewable energy on the forefront of the school district. We will give tours and include renewable energy as part of our community education program.

## **II. DESCRIPTION OF PROJECT RESULTS**

Result 1: Eliminate the carbon footprint of the school district through the use of geothermal energy.

Budget: \$5,194,702

The Engineering firm MPE recommends geothermal as the "preferred choice" for heating and cooling. We will begin the project in July of 2010 to bid the total project starting with drilling the wells for the geothermal

heat. There are three schools in which the project will take place. According to the study the following wells will need to be drilled: Russell 77, Tyler 168, and Ruthton 99, all wells will be 200 – 230 feet in dept. We have completed the test wells with a conductivity of 1.1 for the wells, we will begin drilling as soon as bids are accepted. The project of the retro fit will begin with the removal of the current heating system and replacing it with the geothermal heating system in July with the replacement of boilers and piping and replacing with 8 chillers, 68 convectors, 30 FCU, 14 energy recovery units, 9 variable frequency drives, 18 pumps, 324 Valves, 144 automatic controls, 24840 lf of piping, 70,716 ft of loop field, electrical, AHU's, and domestic HW heat exchanges. It is important to remember that due to the size of the project and three schools being retro fitted that there is a 16% savings in the cost of the project through group purchase. The RTR school district will cover the 10% contingency since this is an unknown number and will be considered part of the in-kind cash the district is will to pay at a time of cuts shows the districts belief in the project.

Result 2: Educating the students through the example of the geothermal system in the school. Energy and the effects on the environment. Budget: \$ 0

Starting in September the students will learn about the project that has been completed throughout the district including all three school buildings. The will learn how geothermal heating works and how it has eliminated the carbon footprint that had been left in previous years. We will not be using trust funds

Deliverable	Completion Date
1. 100 % of the students in grades 7-12 will be given educational instruction in math, science and agriculture classes about geothermal. Students will participate in the calculating the amount of carbons reduced, calculated the number of gallons of fossil fuels reduced and the effect on the climate do to the geothermal heating and cooling.	06/01/2010

### III. PROJECT STRATEGY

#### A. Project Team/Partners

Russell-Tyler-Ruthton School Board: will oversee the project and engage in contracts and approval of the final project

Bruce Houck : Superintendent will oversee the day to day operation of the project construction and ensuring that the project meets its goals

Engineering Firm: To design, bid, and oversee the technical writings of the project and will oversee the total project. MEP has completed the study for the school district of all three buildings. To be announced after the bid process.

General Contractor: the general contractor will have at least 10 years experience in the geothermal development of retro fit of large businesses and/or public buildings. After bids have been let the school board will accept a bidder that is providing a quality system and meets the above requirements.

RTR Science, math and agriculture teachers – The staff will ensure that students have a firm understanding of geothermal energy and how the system works.

#### B. Timeline Requirements

The project will begin in July when the frost is out of the ground and snow cover has melted. The project will be completed by December 30, 2011 so that heat can be returned to the ground to heat the ground in the summer to be used in the winter. The project will need to be completed during the summer when students are not in the building and repairs and construction can occur.

#### C. Long-Term Strategy

The continued repairs and maintenance will be the responsibility of the RTR School District. The School district has budgeted for repairs and maintenance of the current system. The geothermal system will be less expensive, a saving of \$59,000 for the district as stated in the study from MPE for repairs to the current fossil burning system.

## Project Budget

RTR Public Schools

### IV. TOTAL PROJECT REQUEST BUDGET 2009-2011

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
<b>Personnel:</b>	
<b>Contracts:</b> Engineering services is 8% of the total dollar amount, the school board has not made a motion to declare the engineerign firm	\$ 384,792
Labor: Labor cost for the general contractor who is low bid for the project	\$ 761,629
<b>Equipment/Tools/Supplies:</b>	\$ 4,048,281
<b>Acquisition (Fee Title or Permanent Easements):</b>	\$ -
<b>Travel:</b> <i>Be specific. Separate in-state and out-of-state travel; explain each. Only travel essential to completing project activities can be included.</i>	\$ -
<b>Additional Budget: Detailed budget on sheet 2</b>	\$ -
<b>TOTAL PROJECT BUDGET REQUEST TO LCCMR</b>	<b>\$ 5,194,702</b>

### V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
<b>Other Non-State \$</b> This is the contingency for the project which will be paid by the district for the project. The RTR School board is committed to the project and will make a motion as soon as the project is approved. Dollars have been <b>set aside for the project.</b>	\$ 519,470	General Fund dollars Unsecured
<b>In-kind Services During Project Period:</b> Superintendent serves to the project to ensure all services are provided	\$ 10,000	Secured
<b>Funding History:</b> <i>We have completed a study of geothermal heating and cooling from MPE, this has already been paid.</i>	\$ 6,000	Secured

The Russell-Tyler-Ruthton Public Schools is located in Southwestern Minnesota. We are located in four different counties, Lincoln, Lyon, Murray and Pipestone counties. We also serve the communities of Russell, Tyler, Ruthton and Woodstock and provide high school opportunities for the students of Lynd.

Brue Houck will be the project manager to keep the project on time and ensuring that all bid and project laws are met. Mr. Houck has been a superintendent for the past 23 years and has extensive experience in construction and repair experience of schools. Mr. Houck has a Specialist Degree in Educational Administration.

