

Annual  
Report

2007

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**RREAL**  
Rural Renewable Energy Alliance



## Mission Statement

Making Solar Power  
Accessible to People  
of All Incomes.



*The Power to Make a  
Difference!*

## History

RREAL was established in November of 2000, being lead entirely by a team of dedicated volunteers until August 2005, when we first hired our director, Jason Edens.

Jason Edens' unwavering commitment to social and environmental justice issues has shaped and directed RREAL since its inception in 2000.



Since that time, we have been expanding rapidly. We are excited about our potential, and looking forward to continuing our planned expansion resting on a solid organizational footing. With the support and attendance of our Board of Directors, we are participating in an organizational strategic planning workshop sponsored by the Initiative Foundation, to make certain that we are prepared for the next stage in organizational development. Additionally, we have detailed financial plans, worked through with the local Small Business Development Center. With a highly qualified staff in addition to numerous professional contacts, we are confident in our planning and capabilities to move ahead with our development.

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### **2007 RREAL Staff**

*Jason Edens, Director*

*Sarah Hayden, Research Coordinator*

*BJ Allen, Operations Manager*

*Tim Ollhoff, VISTA Volunteer*

*Graham Wright, VISTA Volunteer*

*Ryan Matthews, Installation Leader*

*Bob Jones, Manufacturing Team Leader*

*Heather Butcher, Manufacturing Assistant*

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In 2007 we focused primarily on the development of our own solar air heat collectors. These air heat collectors were the result of an extensive research and development project, funded through the Minnesota Pollution Control Agency among other sources. We began manufacturing this innovative design in fall of 2007, specifically created for low-cost, widespread, easy installation for residential Solar Assistance but with the flexibility to be utilized in larger projects as well. The results of this project will be to build the capacity within our organization to have a broader impact, improving the lives of low-income families by utilizing a renewable heat source that will remain maintenance-free for decades, and improving the environment by reducing space-heating related emissions. This project will enable us to broaden our impact by accomplishing a greater number of installations at a reduced cost.

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### **2007 RREAL Interns**

*Erik Lindgren*

*Janelle Stauff*

*Danielle Butenhoff*

*Holly Lubowicki*

*Dave Thomas*

*Eric Hofer*

*Jesse, courtesy Happy Dancing Turtle*

*Phyllis, courtesy Happy Dancing Turtle*

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We have had over 2600 people participate in all program areas, with ??? Solar Assistance recipients. We have worked with local youth, providing educational and community service opportunities in renewable energy; presented at numerous conferences and meetings; and worked with a variety of organizations and foundations supporting our mission.

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## RREAL qualifies as Charities Review Council Smart Givers Organization



In 2007, RREAL applied for and was awarded status with the Charities Review Council as an organization which complies with all private donor standards for nonprofits. For more information on those standards, visit [www.smartgivers.org](http://www.smartgivers.org) and look for RREAL!

## Program Areas

**Community:** Our programs primarily serve Low-Income Households.

RREAL is working to address the root cause of fuel poverty. Many families on Public Energy Assistance have been receiving this important service for generations. Our community includes those families experiencing chronic fuel poverty.

RREAL is headquartered in Cass County, a county with poverty levels twice as high as the State as a whole. In Cass County, 19% of children are living below poverty, 33% are living below 150% of poverty, and 48% of children are living below 200% of poverty. Northern Minnesota Counties also host a larger proportion of elderly people who do not work and depend on Social Security and Medicare.

Rising fuel costs began drastically affecting a greater number of families through the winter in 2007. As fuel prices rise, it is the low-income communities who are most gravely affected, and who end up being faced with very difficult choices between two of our basic necessities: food or heat.

RREAL has 4 primary program areas:

1) **Solar Assistance:** We work in partnership with low-income families qualifying for energy assistance to install clean solar heating systems on their households at no cost to them. This program pairs Social Activism with Solar Energy, improving the quality of life for low-income families by reducing dependence on fossil fuel, alleviating

poverty, ending program dependency, and reducing greenhouse gas emissions.

2) **Research & Development:** We currently have 2 major research projects underway. The first is a research project is a Cost Benefit Analysis on the financial costs and social benefits of using solar heat for public energy assistance programs.

The second is a research project on the potential of utilizing solar air heat in agricultural applications.

3) **Outreach & Education:** We provide course, workshop and seminar leading, as well as providing unique volunteer opportunities. We additionally offer hands-on training, experience and internship opportunities in renewable energy design and installation targeting youth.

4) **Solar Contracting:** We install Solar Electric, Solar Water Heat, and Solar Air Heat Systems at market rate, with all proceeds being funneled to support our Solar Assistance Program. Solar Contracting is one of the ways in which we are pursuing long-term financial sustainability.

### Solar Assistance

RREAL has a unique and innovative way of working to decrease our reliance on fossil fuels, and make renewable energy more accessible. Through our flagship program, **Solar Assistance**, we install solar heating systems in partnership with low-income families qualifying for public energy assistance (LIHEAP), at no cost to the homeowner.

Each full-sized system saves up to 9,000,000 Btus, and 818 lbs. CO<sub>2</sub> annually. Solar Assistance is an idea that has the potential to make systemic change, and RREAL envisions leading that change through appropriate Solar

Assistance installations all across the United States in the years ahead. Society as a whole benefits through an improved environment and energy independence.



### RREAL Teams up with HUG

RREAL provided 67 solar air heating collectors to the Hunt Utilities Group campus research facility. At 2,500 square feet, the finished solar array is the largest solar air heating systems in the world. This contract assisted RREAL in establishing our own Solar Heat Collector Manufacturing Facility.



Manufacturing Team making Solar Powered Furnaces



Solar Assistance Installation Crew



Solar Assistance installation in Duluth.



Solar Contracting PV (Photovoltaic) System in Brainerd

## Vision for the Future

In the short term, we would like to continue doubling the number of Solar Assistance installations annually, affecting more families each year.

Through a grant from the Minnesota Pollution Control Agency, we are in the process of Research and Development for the Manufacture of our own Solar Thermal Collectors. Manufacturing our own Collectors will provide revenue for us, create local jobs, and reduce the per-installation cost of Solar Assistance jobs. We additionally would like to reinvigorate our Youth Outreach program, and received a grant to host a VISTA volunteer charged with that task. We will be hosting the first-ever Solar Assistance Symposium in Fall 2008 with the goal of empowering other agencies to replicate our program elsewhere.

*We envision Social Service agencies across the Nation utilizing solar systems in their low-income weatherization and energy assistance programs.*

Over the long term, we would like to become self-sufficient, and impact an increasing number of low-income households across the nation. To that

end, we are currently developing our own SRCC-Certified Solar Thermal Collectors for manufacture. We plan to begin the manufacturing phase in fall 2007. This will enable us to reduce the per-installation cost for Solar Assistance, as well as to generate sustainable revenue through market-rate sales of excess collectors.

We envision Social Service agencies across the nation utilizing solar systems in their low-income weatherization and energy assistance programs. RREAL is poised to be a part of the energy transformation of the United States in the coming decade.

RREAL is a relatively young, grassroots organization, boasting energetic, enthusiastic, and highly qualified staff. We have a highly committed and engaged Board of Directors bringing a wide variety of experiences to our organization, including constituents. We received a grant earlier this year to participate in the Healthy Organizations Partnership, an organizational strategic planning process sponsored and coordinated by the Initiative Foundation. We worked extensively with the Brainerd Small Business Development Center in developing a

financial plan for our manufacturing process, and continue to foster a good relationship with their office, with a plan to return later this year to revise as updates occur. We have developed a relationship with the Manufacturing department at Bemidji State University, and they have a team of student engineers working to assist us in improving our manufacturing procedures. We are very fortunate to have our Manufacturing and Office space generously donated to us for 2 years by the Hunt Utilities Group. At our fundraiser in 2007, we experienced

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*RREAL enhances people's lives,  
reduces poverty,  
improves the environment, and  
shares knowledge by making renewable energy  
widely used and accessible to people of all  
incomes.*

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an incredible outpouring of community support. We have the capacity and capability to achieve our vision, with an excellent track record working with clients and supporters, and are excited about the positive changes to which we are contributing.

## Plans

- ❑ Begin PROJECT SOLTICE. Beginning summer 2008- Provide 50 Solar Assistance Installations to low income households and increase this program to 100 Solar Assistance Installations in 2009
- ❑ Manufacture 90 RREAL SPFs (Solar Powered Furnace) in 2008 and 300 Solar Furnaces in 2009.
- ❑ Establish Patent or similar intellectual property rights for design system of the Solar Powered Furnace
- ❑ Establish dealer network for Solar Powered Furnace
- ❑ Create demonstration trailer for Solar Powered Furnace
- ❑ Present and exhibit at the National Low-income Energy Consortium Annual Conference Denver, Colorado June 16<sup>th</sup> 2008.
- ❑ Present and exhibit at Midwest Renewable Energy Association Annual Fair (Worlds largest Renewable Energy Fair) June 19-22, 2008, Custer, Wisconsin
- ❑ Present and exhibit at the Duluth Energy Design Conference, February 27<sup>th</sup> 2008
- ❑ Publish article and advertisement in Home Power Magazine 2008
- ❑ Create an professional quality website
- ❑ Hire seasonal help for manufacturing
- ❑ Offer health insurance and benefits to full time employees
- ❑ Create the opportunity for one youth training internship at each Project Solstice installation
- ❑ Contract 11 fee for service installations of Photovoltaic/Hot Water/Air heat systems in 2008 and 20 fee for service installations in 2009
- ❑ Initiate feasibility study of Solar Powered Furnace use as agricultural crop/livestock drying technology
- ❑ Create a Youth Energy Summit with the Harbor City

International School in Duluth,  
Minnesota

- ❑ Continue trainings for Board of Directors, staff, organization and grant writing
- ❑ Realize an annual budget approaching a three quarters of a million dollars in 2008
- ❑ Create long term plan for suitable office and manufacturing facilities
- ❑ Embark on a capital campaign for RREAL building
- ❑ Obtain a stronger commitment from volunteers and board to provide better logistic support for marketing, sales, advertising, educational services and outreach programs
- ❑ Develop easier methods of scheduling education and outreach services, gathering information, and recording outcomes and numbers of people served.
- ❑ Reduce Manufacturing costs.
- ❑ Obtain SRCC certification for the Solar Powered Furnace
- ❑ Plan for a more efficient and effective means of collaborating with Community Assistance Programs to identify households that can benefit from this program
- ❑ Create stronger partnerships with existing resources such as

Minnesota Power, Allete, and local energy cooperatives to increase participation in services and seminars in areas other than current areas served.

- ❑ Increase and diversify funding from current donors and expand funding base to include a foundation grants, membership dues, individual donations, planned giving, government contracts, government grants, corporations, events, self generated income, sales, and fee for service installations.
- ❑ Continue to develop marketing programs for prospective donors and fee for service customers.
- ❑ Offer ongoing seminars to people receiving indirect services from Community Assistance Programs, which is a way to target and reach people with energy assistance needs.
- ❑ Conduct training for Community Assistance Programs on the use of RREAL's program.
- ❑ Continue to network with Minnesota State Legislature and Community Assistance Program Directors
- ❑ Plan for increase staff and funding to cover workload
- ❑ Create a manageable workload with pay commensurate with the education and experience of staff.

## Funding and Collaborating Organizations

Thank you to all of our supporters. The Rural Renewable Energy Alliance Program was made possible through support from the following organizations:

- BEMIDJI STATE UNIVERSITY
- BUSH FOUNDATION
- CAROLYN FOUNDATION
- CLEAN ENERGY RESOURCE TEAMS (CERTs)
- COMMUNITY ACTION PROGRAM AGENCIES - VARIOUS
- GROTTO FOUNDATION
- HAPPY DANCING TURTLE
- HIGHER EDUCATION CONSORTIUM FOR URBAN AFFAIRS (HECUA) PIP PROGRAM
- HUNT UTILITY GROUP LLC
- INITIATIVE FOUNDATION
- LINDBERGH FOUNDATION
- LLOYD K JOHNSON FOUNDATION
- MINNESOTA PROJECT
- MN POLLUTION CONTROL AGENCY--OFFICE ENVIRONMENTAL ASSISTANCE
- OTTO BREMER FOUNDATION
- PATAGONIA
- RURAL POVERTY FUND
- SPARKPLUG FOUNDATION
- UNIVERSITY OF MINNESOTA CENTRAL REGION PARTNERSHIP
- UNIVERSITY OF MINNESOTA CENTER FOR URBAN & REGIONAL AFFAIRS (CURA)
- UNIVERSITY OF MINNESOTA DULUTH MAPL PROGRAM
- WESMIN RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL
- WHITE EARTH LAND RECOVERY PROJECT
- AND PRIVATE DONATIONS

*Through these partnerships, people who are typically at great risk of cold uncomfortable winters have received the specialized services they needed to keep warm in the winter climate of Minnesota.*

**Thank you to all the volunteers who committed their time helping us succeed in 2007.**

**Part of those committed volunteers include the RREAL board members: thank you for your invaluable advice and dedication.**

### *RREAL*

#### *Board Members*

*Charles Krysel*

*Tom Anderson*

*Wendell King*

*Ben Butcher*

*Steve Benson*

*Steven Spigarelli*

*Danielle Butenhoff*

## 2007 Highlights

- Awarded second VISTA volunteer – Tim Ollhoff, previously employed at Lutheran Social Services
- Conducted extensive research and testing of solar air heat technology
- Researched and developed solar air collector: RREAL SPF (Solar Powered Furnace)
- Began manufacturing of the SPF
- Sent one freshly manufactured solar thermal panel in December, 2007 to the Solar Rating and Certification Corporation (SRCC) for approval so that the SPF will be certified.
- Lindbergh grant was awarded to fund a project to evaluate solar heating as a long term solution to fuel poverty for low income families in the Midwest. A cost benefit analysis for using solar thermal heating systems for public energy assistance resulted. Results of this

study will help increase the number of low-income people served by energy assistance while reducing our dependence on nonrenewable energy sources.

- Awarded North America's largest solar air heat research and installation contract
- **Saved tons** of CO2 emissions and tons of other greenhouse gases (methane, nitrous oxide, hydroflourocarbons, perflourocarbons and sulfur hexaflouride released by burning fossil fuels).
- Each solar forced air system provides to the average home between 30-90 million BTUs-- British Thermal Units of heat (and saves the environment the pollutants used to generate that heat)

### Solar Assistance

- Checked in with 80% of past Solar Assistance Program installations
- Conducted 5 new Solar Assistance Installations
- Awarded first electric utility CIP contract



- Installed Solar Furnaces to 3 families on heating assistance in collaboration with Minnesota Power's Conservation Improvement Program

### Solar Contracting (non solar assistance)

- Conducted 3 Solar Electric Installations Bemidji and Emily, Minnesota)
- Conducted 1 Solar Water Heat Installation Bay, Minnesota)



(Brainerd,  
(Silver

### Presented at:

- Back to Basics
- Legislative Renewable Energy Forum
- Region 5 Development Commission

- State Weatherization Conference
- Bemidji State University
- Clean Energy Resource Team Quarterly Meeting

- Lindbergh Foundation Board Meeting
- Minnesota House of Representatives Energy Committee
- Participant/Host 12<sup>th</sup> Annual Minnesota Solar Tour October 6, 2007. Sponsored by Minnesota Renewable Energy Society, American Solar Energy Society, Aveda, East Central Electric, Great River Energy, Izzy's Ice Cream, Minnesota Department of Commerce, Minnesota Pollution Control Agency, Minnesota Power
- Presented at BSU Senior Seminar on Environmental Careers November 17, 2007
- Initiative Foundation Presentation November 14<sup>th</sup> 2007
- Lake Superior Energy Fair September 8, 2007. Exhibit and Workshop
- Presented Solar Seminar to the program JUSTLIVING in Little Falls, Minnesota November 15, 2007
- Presented Solar Heat Seminar for Families on Energy Assistance at the Minnesota State Energy Conference, May 2-4, 2007.
- Presented Solar Heat Seminar with Charlie Poster from United States Senator Amy Klobachar's office. November 5, 2007
- Presented Solar Seminar at The Energy Conference Renewable Energy Opportunities for Minnesota's Economy August 17, 2007.
- Presented Solar Seminar at the 2007 ECOSQUARED Fair July 19<sup>th</sup> -21<sup>st</sup>

#### Licensure

- MN General Contractor's
- Joelt Electric NABCEP- Certified (RREAL's electrician)

#### Other notable accomplishments

- Awarded second Vista Volunteer Tim Ollhoff CAP Director Lutheran Social services
- Exceeded fundraising goals by nearly \$100,000
- Ended fiscal year with \$20,000 surplus
- Research commenced rigorous Cost/Benefit Analysis of our Solar Heat for Energy Assistance study.
- Selected to receive summer internship grants from the Higher Education Consortium for Urban Affairs (HECUA)

The SPF Series Solar Air Heat Collectors From RREAL!

**RREAL**  
Rural Renewable Energy Alliance

**SPF**  
Solar Powered Furnace

- ★ Engineered for seamless airtight coverage in small or large installations
- ★ Works with positive or negative airflow
- ★ All glass and aluminum construction NO FIBERGLASS OR PLASTIC
- ★ SPF40 generates about 4.5 million BTUs in a Minnesota winter
- ★ Durable construction designed for a 50 year life span
- ★ Available in SPF40 (4x10'), SPF32 (4x8'), and SPF26 (4x6.5')
- ★ Dealer Inquiries welcome

Exclusive Interconnect system allows for airtight connection of collectors.

Low-iron glass has excellent transmittance properties - 91.8%.

Unique airflow design results in uniform airflow across the absorber plate for maximum heat scrubbing.

Selectively coated aluminum absorber plate has an absorptivity of .933 and emissivity of .049 - the best available for solar thermal.

Custom extrusion rail accommodates a hidden mounting system, making installation easier and safer.

[www.rreal.org](http://www.rreal.org) Call For Quote (218)587-4753

*RREAL proudly unveils the  
Solar Powered Furnace!*

