



## **Farmers Electric Cooperative – Iowa Mennonite School Iowa Office of Energy Independence**

### **Monitoring/Tracking/Auditing & Energy Efficiency/Conservation & Renewable Energy**

Like Farmers Electric Cooperative (FEC) the Iowa Mennonite School (IMS) is a locally funded and local owned non-profit organization. Like all businesses we are facing major budget constraints due to higher costs and the economic slowdown. By helping each other save we are retaining those dollars within the community. The economic development professionals use a value of 4 to 1; that for every dollar spent in the community it will turn over four more times within that community. We believe that saving energy accomplishes the same economic return within the local community. Partnering with the great staffs at the Office of Energy Independence (OEI) and IMS has educated and benefited all of us.

**ANNUAL ENERGY SAVINGS \$ 17,000 -- \$ 20,000**

#### **Monitoring/Tracking/Auditing (know and identify)**

- IMS – SCADA on HVAC System – analyzing the power bill
- FEC – 6 separate electric meters with reduced heating rate on Geothermal
- FEC/IMS – Shared cost of complete Energy Audit in 2009 @ \$ 3,500

#### **Energy Efficiency Measures (reduce through implementation)**

- 65 Ton Geothermal System on new addition (\$ 23,000 FEC rebate)
- Replaced 750,000btu 50% eff. boiler with a 300,000btu boiler at 92% eff. @ \$ 13,000
- Upgrade 200+ lighting fixtures @ \$ 4,500 (ongoing & \$ 1,900 FEC rebated)
- Outdoor lighting – Timer and change over to induction lighting for 50% savings potential

#### **Renewable Energy (lock in your rates)**

- 1.8 kW Solar Array – Energy Savings and Teaching tool @ \$ 16,000 plus (\$ 11,850 OEI grant, and FEC rebates and donations of time and labor)
- Labor from array assembly to digging in the underground wire was a school project

#### **Future Goals**

- Upgrades and conservation habits could save from 1/3-1/2 the 43% of electricity used for lighting
- Conserving by turning down thermostats just 1 degree could produce annual savings of 4%
- Adding a renewable energy system as a part of gymnasium roof replacement

#### **Project(s) Participants and Contributors**

- David A. Pearson, P.E., IEFM Consulting Engineers, Coal Valley, Illinois (Audit)
- Joe Swartzentruber, Maintenance Director, Iowa Mennonite School (GSHP, Audit)
- Doug Slaubaugh, Consultant, Iowa Mennonite School (GSHP, Audit)
- Dale Yoder-Short, Science / Electrician, Iowa Mennonite School, Yoder-Short Electric (Solar)
- Tony Miller, Principal, Iowa Mennonite School (GSHP, Audit, Solar)
- Maria Urice, Energy Consultant, Farmers Electric Cooperative (Audit, Solar)
- Warren McKenna, General Manager, Farmers Electric Cooperative (GSHP, Audit, Solar)
- Brenda Easter, Iowa Office of Energy Independence, Solar Grant (Solar)
- Jessica Turba, Iowa Office of Energy Independence, Solar Grant (Solar)
- Pat Higby, Educator, Center for Energy and Environmental Education (Solar)

| <b>Audit Facts</b>            |                   |
|-------------------------------|-------------------|
| Building --                   | 80,000 sq ft      |
| Total Energy LP & Electric -- | \$ 75,000/yr      |
| Electricity --                | 562,581 kWhrs     |
| LP Gas --                     | 13,320 gallons    |
| Heating – Air/Boiler --       | LP Gas            |
| Heating & Cooling --          | 65 Ton Geothermal |
| Usage Percentage              |                   |
| Heating --                    | 73%               |
| Hot Water --                  | 18%               |
| Kitchen --                    | 9%                |
| Electric                      |                   |
| Heating --                    | 17%               |
| Cooling --                    | 17%               |
| Lighting --                   | 43%               |
| Kitchen --                    | 6%                |
| Other --                      | 17%               |
| Solar Production --           | 2470 kWhrs        |

