A MARRIAGE OF HELIO AND GEO ENERGY SOURCES
Merrick, Inc.

- A nonprofit agency founded in 1964, working to meet the employment, personal development, and transportation needs of adults with developmental disabilities
- Licensed Day Training & Habilitation (DT&H), Supported Employment Services (SES), and Ticket to Work (TTW) provider
- We serve over 330 clients with a staff of 115 at our facility in Vadnais Heights and at over 80 businesses throughout the Twin Cities
Merrick’s Mission

Our mission is to empower adults with disabilities through vocational and social opportunities, and guide them toward realizing their goals and dreams.
A Core Belief at Merrick

Civic Responsibility

“Action for the common good”

Green Initiatives

- Energy Use Reduction
- Renewable Energy
A Core Belief at Merrick
Civic Responsibility

“Action for the common good”

Green Initiatives
• Energy Use Reduction
• Renewable Energy
Energy Reduction—
**R21** thermal envelope
Energy Reduction—
16 Custom-built skylights
See the sky from inside
Bathe the work areas with natural light
White “Durolast” roof
$263,000
(will result in reduction in thermal load during summer)
A Core Belief at Merrick
Civic Responsibility

“Action for the common good”

Green Initiatives

- Energy Use Reduction
- **Renewable Energy**
Geothermal System

- 110 ton system provides all heating and cooling needs for the 52,000 sq ft building
- 3 heat pumps circulate glycol through 108 vertical wells that go down 200 ft into the ground to capture heat in winter and shed heat in summer
• Glycol pumped to 21 heat exchangers which heat or cool the fresh air circulating throughout the building
• No natural gas consumption
$150,000 upgrade in 2003 to build over standard HVAC natural gas system

- Upgrade has paid for itself in less than 5 years
Photovoltaic System

- 100 kW system is expected to provide 33% of all electrical needs of building
- 125,000 kWh per year, range of production
  - May-Jun-Jul: 13,750 kWh
  - Nov-Dec: 6,250 kWh
- Grid connected—no energy wasted
525 Evergreen
190 W Panels,
South facing arrays
13 degree slant
(less than optimal because of snowload and wind shear issues)
Rooftop combiners
Inverter DC to AC Grid Connected (no lost energy even on sunniest days)
<table>
<thead>
<tr>
<th>PV Project Costs</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Modules</td>
<td>$380,000</td>
</tr>
<tr>
<td>Inverter</td>
<td>$50,000</td>
</tr>
<tr>
<td>Construction Materials - other</td>
<td>$166,000</td>
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<tr>
<td>Solar Installation</td>
<td>$175,000</td>
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<tr>
<td>Engineering &amp; Permits</td>
<td>$16,000</td>
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<tr>
<td><strong>Total Costs - prior to roof</strong></td>
<td><strong>$787,000</strong></td>
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<tr>
<td>New white roof</td>
<td>$263,000</td>
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<tr>
<td><strong>Total Cost with roof</strong></td>
<td><strong>$1,050,000</strong></td>
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<tr>
<td>RDF</td>
<td>$735,000</td>
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<tr>
<td>Other Grant Funds</td>
<td>$70,000</td>
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<tr>
<td>Merrick’s Investment</td>
<td>$245,000</td>
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</table>
Photovoltaic System

Environmental savings over 25 years

By not burning coal to generate 1.8 MWh electricity, this system will eliminate from the air:

- 6,237,000 lbs of CO₂;
- equivalent to planting 312,000 trees
- 10,850 lbs of sulfur dioxide; and
- 18,100 lbs of nitrous oxide.
Project Results

- Generated 14,080 kWh’s in the first 49 days of operation.
- Participated in MN Solar tour and had approximately 50 people tour the solar array.
- Have had many groups and politicians, including Senator Klobuchar and MN Dept. of Commerce, tour the project.
- Have been highlighted in Star Tribune, White Bear Press, KARE 11’s Earth KARE segment, and on Blue Print for Green TV show.
- Presented project to MN Waste Wise Annual Conference.
A Marriage of Helio and Geo
Energy Sources

Thank you Xcel Energy
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