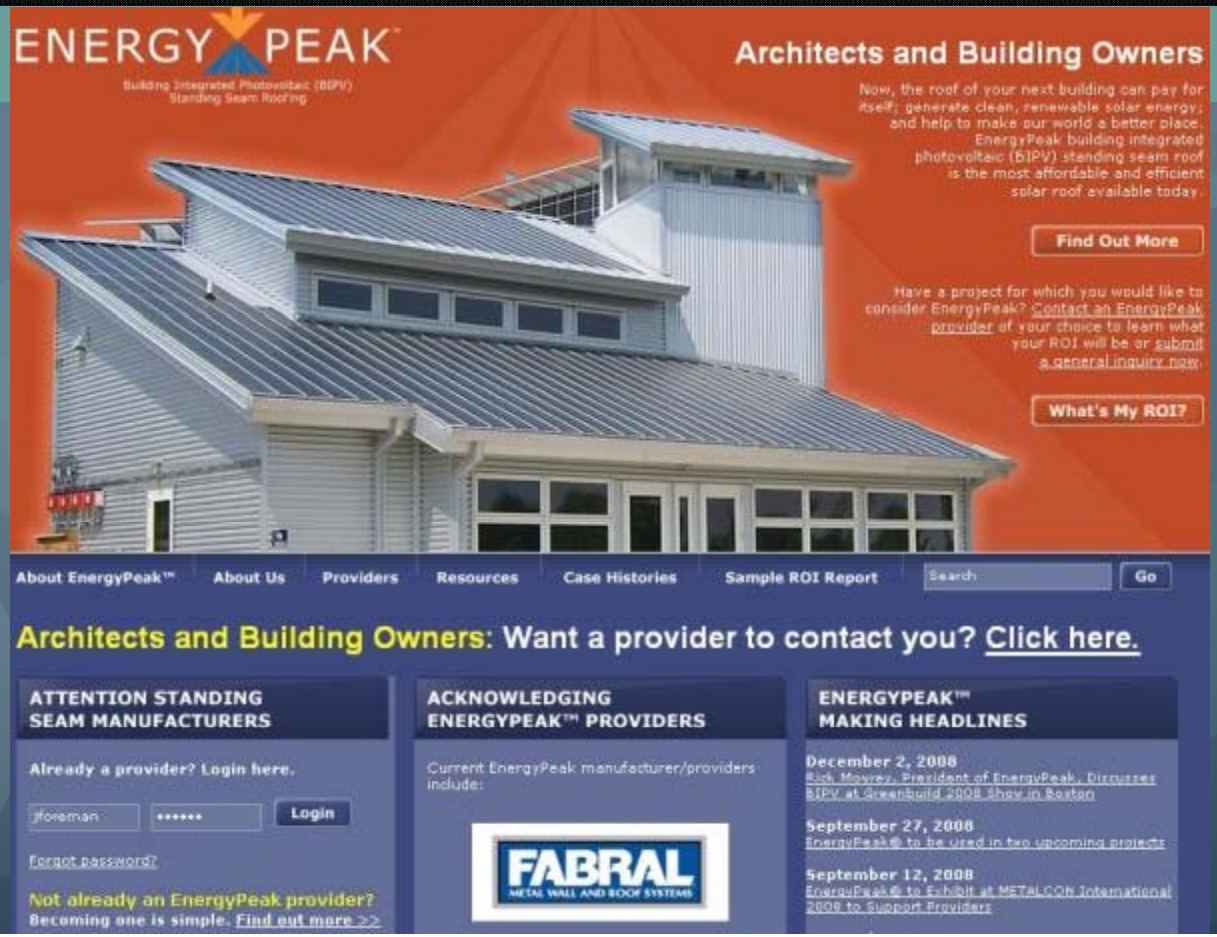
# DOE – S.E.T.P. (PEER REVIEW)

## *BIPV Mass Market Integration, distribution, and commercialization*



# I. Quality, Productivity, & Accomplishments

I. **Nationwide Network of BIPV Partners (Productivity, Accomplishment)**
   I. **50% of North American Standing Seam Market**
   II. **Shares common BIPV ROI System, 72 hour nationwide turnaround.**
II. **Leverage CENTRIA's Advanced Architectural Engineering, manufacturing knowledge (Productivity and Quality)**
   I. **100+ years combined via 3 prior companies**
III. **Sunderman Laboratories (Quality)**
   I. **20+ years Experience of Building Product and Accelerated Exposure Conditions testing.**
IV. **Uni-Solar (Quality)**
   I. **20+ years Experience in cutting-edge thin film BIPV integrated flexible PV laminates**
V. **Oak Ridge National Labs (Quality)**
   I. **10-11 year Uni-Solar Triple junction live from field.**
      I. **PV laminate, power, bond, emissivity**
   II. **Next (2nd) Generation BIPV thin-film head-to-head comparison**
VI. **Vectre (Productivity)**
   I. **Advanced Web-site monitoring, real-time nationwide/international ROI development & maintenance, BIM when needed.**

# EnergyPeak - Nationwide Network of BIPV Roof Providers


- 100 + Years of CENTRIA
- Innovation

## EnergyPeak Providers

The following manufacturers are EnergyPeak providers and are prepared to process your inquiry. Please contact these manufacturers directly about their unique EnergyPeak product offering.

**AEICOR**
450 West McNab Road
Fort Lauderdale, FL 33309
Ken Schulte
954-974-3358
http://www.aeicormetals.com/solar-solutions/index.html

**ATAS**
6612 Snowdrift Road
Allentown, PA 18106
John Van Den Elzen
610-395-8445
http://www.atas.com

**B&B Sheet Metal Works, Inc.**
12087 Key West Salvage Road
Bentonville, AR 72712
Keith Pearson
479-466-150
http://www.brownhouseroofing.com

**Fabral**
3449 Hempland Road
Lancaster, PA 17601
Daisy Lilley
1-800-477-2741
http://www.fabral.com/product.php?id=62

**Premium Panels**
5930 Ingalls St
Arvada, CO 8002
Rod Taylor
303-420-8538
http://www.premiumpanels.com

**PV Solar Planet**
Statewide Wholesale, Inc.
5856 S. Garland Way
Littleton, CO 80123
Tom Cook
303-744-7111
http://www.pvsolarplanet.com

**Retro Design**
366 W 6100 S
Murray, UT 84107
Richard Green
801-263-8188
http://www.retro-design.com/solar_pv_metal_roofing.htm

**Metal Systems, Inc.**
3301 Paul Buchman Highway
Plant City, FL 33565
Steve Waller
813-752-7088

**Square Deal Roofing**
PO Box 4, North Side
Grand Cayman Cayman Islands
B.W.I.
Krusie Smith
345-947-9579

**Whirlwind Steel Buildings, Inc.**
8234 Hansen Road
Houston, TX 77075
Fred Reardon
310-748-5428
http://www.whirlwindsteel.com

**All Rounder Systems, LLC**
USVI Office
5021 N. Grapetree Bay
Christiansted, VI 00820
Steve Larchuk
340-719-5500
http://www.allroundersystems.com

**Petersen Alum.**
1005 Tonne Road
Elk Grove Village, IL 60007
Blake Batkoff
847-228-7150
http://www.PACGREENINFO.com/

**ASI Building Products Consolidated Metals of FL**
4720 East Adamo Drive
Tampa, FL 33605
Mike Smith
352-483-9370
http://www.asibuildingproducts.com

**Sheffield Metals International**
5467 Evergreen Parkway
Sheffield Village, OH 44054
Jason Watts
800-283-5262
http://www.sheffieldmetals.com

**Englert**
1200 Amboy Avenue
Perth Amboy, NJ 08862
Tom Dyzdkiewicz
732-826-8614
http://www.englertinc.com

**Dimensional Metals,Inc.**
58 Kiena Drive North
Reynoldsburg, OH 43068"
David Dodds
800-828-1510
http://www.dmimetals.com

**Merchant & Evans (Zip-Rib)**
308 Connecticut Drive
Burlington, N.J. 08016
Jim Webster
609-387-3033
http://www.ziprib.com

**Construction Metal Products**
Solar Systems of NC, Inc.
2204 West Front Street
Statesville, NC 28677"
Mike Roux
Mike Morton
704-871-8704
http://cmpmetalsystems.com

**Custom Built Metals**
13940 Magnolia Ave.
Chino, CA 91710
Joe Chiovare
909-664-1500
http://custombiltmetals.com

**Centria**
1005 Beaver Grade Road
Moon Township, PA 15108
Tom Zombek
412-299-8183
http://www.centria.com


VECTRE
Engineering Services
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process
our value
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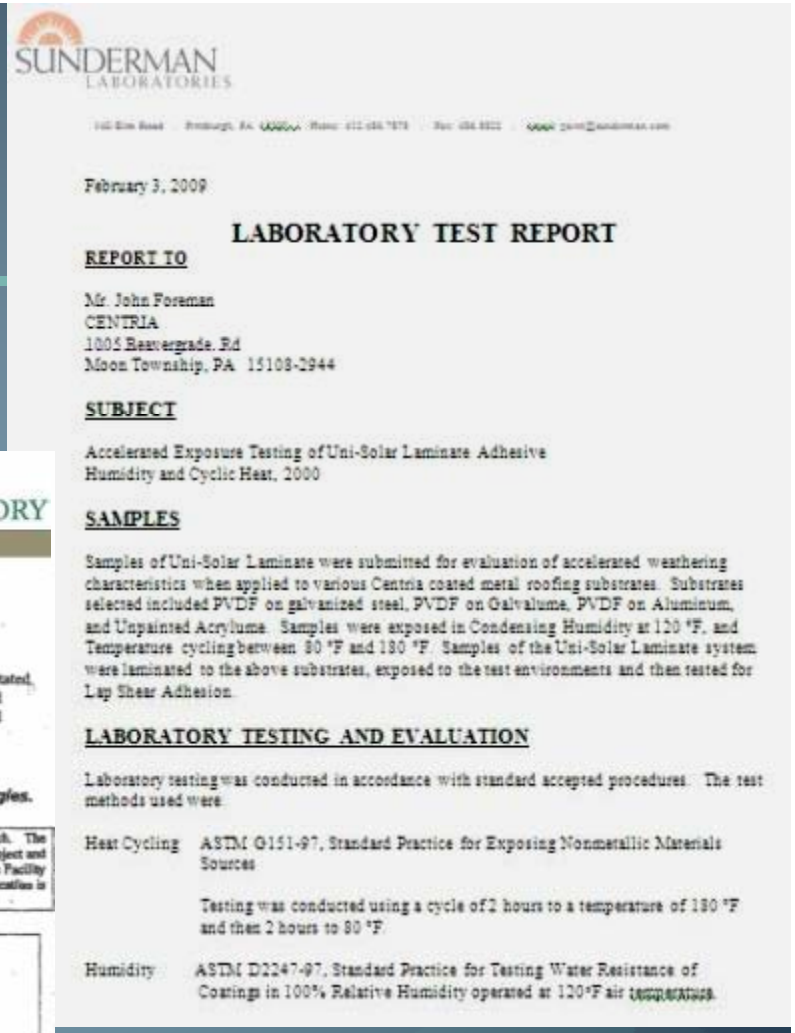
Engineering Drawing & Detailing
Estimation & Quantity Survey
3D Drawing, Animation & Modeling
Client Testimonial
"The level of service and attention to detail that Vectre provides is excellent. Its almost as if we have a dedicated employee to work on all our plans. In fact, before discovering the service we were going to hire one to do just that."
James McCarthy
Marketing Manager
CB Richard Ellis
Featured clients
CENTRIA
Vectre is a global, cost-effective
Automation Solutions, Drafting/
and Estimation & Audit Services
leveraging an offshore solutions
presence. At Vectre, partnership
clients. We take both short ter
achieve the following business
Cost-effectively scale your exi
Optimize existing CAD or engi
Reduce fixed operational cost
Help innovate new products a
Standards
AIA


APPENDIX A
OAK RIDGE NATIONAL LABORATORY
Managed by UT-Battelle for the Department of Energy
UT-BATTELLE, LLC
and
Centria Incorporated (USER)
Pursuant to the above-identified User Agreement and subject to the terms and conditions stated therein, UT-Battelle shall provide, furnish, or otherwise make available to duly authorized employees or representatives of User the following facilities, equipment, services, material and/or information for the following purpose:
Facility: Buildings Technology Center (BTC)
Purpose: Performance Analysis of Building-Integrated Photovoltaic Technologies.
Export Control Notice: Access to the facilities listed above is limited to work for fundamental research. The Principal Investigator on this project is responsible for monitoring the performance achievements of the project and keeping export control requirements in mind. The Principal Investigator is required to notify the applicable Facility Manager in writing, if there is a material change in the scope of work or if an end-point performance/application is identified.
Please complete all applicable fields
Term:
One Year
Estimated Time of Use: Intermittent
Cost: $ 42,800.00
Billing address:
Centria Incorporated
Attn: Rick Mowrey
1005 Beaver Grade Road
Moon Township, PA 15108
Billing period(s) or interval(s):
$20K due upon receipt, balance of $22.8K billed in May 09.
Ph: 412-299-8101
Fx: 412-299-8316
email: rmowrey@centria.com
Organization Classification:
Small Business
Non-profit Organization/University
Large business
Foreign Owned
Federal Agency
National Laboratory
Other
Technology Area:
Advanced Materials
Chemical
Computer
Environmental
Diagnostic & Analytical Equipment
Instrumentation
Manufacturing
Microwave
Other
ORNL Contact: Dr. Jan Kosny
Proposed on behalf of User
Signature: RA Mowrey
Name(typed): RA Mowrey
Title: Dir. Mktg
Date: 1-26-09
Accepted on behalf of UT-Battelle LLC
Signature: W Painter
Name(typed): William P. Painter
Title: User Facilities Program Manager
Sponsored Research Programs
Technology Transfer
Date: 01/23/2009
A-1
Revised 05/24/2007


SUNDERMAN
LABORATORIES
February 3, 2009
LABORATORY TEST REPORT
REPORT TO
Mr. John Foreman
CENTRIA
1005 Beavergrade Rd
Moon Township, PA 15108-2944
SUBJECT
Accelerated Exposure Testing of Uni-Solar Laminate Adhesive
Humidity and Cyclic Heat, 2000
SAMPLES
Samples of Uni-Solar Laminate were submitted for evaluation of accelerated weathering characteristics when applied to various Centria coated metal roofing substrates. Substrates selected included PVDF on galvanized steel, PVDF on Galvalume, PVDF on Aluminum, and Unpainted Acryluma. Samples were exposed in Condensing Humidity at 120 °F, and Temperature cycling between 80 °F and 180 °F. Samples of the Uni-Solar Laminate system were laminated to the above substrates, exposed to the test environments and then tested for Lap Shear Adhesion.
LABORATORY TESTING AND EVALUATION
Laboratory testing was conducted in accordance with standard accepted procedures. The test methods used were:
Heat Cycling ASTM G151-97, Standard Practice for Exposing Nonmetallic Materials Sources
Testing was conducted using a cycle of 2 hours to a temperature of 180 °F and then 2 hours to 80 °F.
Humidity ASTM D2247-97, Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity operated at 120°F air temperature.

# Additional Design Acknowledgements

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HIGH SUN ENGINEERING

- Company Profile
- People
- Services
- Photos
- Projects & Awards
- Eco-Impacts
- Contact Info
- Home
- Solar Workshops

PHOTOVOLTAIC SYSTEM DESIGN
PHOTOVOLTAIC TECHNOLOGY CONSULTATION
ENERGY EFFICIENCY CONSULTATION

About PV | Program Info | System Design | Components | Publications | Partnering | Contact Info | Links | Search | Home

Sandia National Laboratories

## Photovoltaic Systems Research & Development

Publications ----> Codes and Standards ----> John Wiles Code Corner

### Code Corner Columns

(Reprinted with Permission of John Wiles, Author, and Home Power Magazine)

- Working with Inspectors - 5/06
- Questions and Answers - 11/05
- PV Systems and the 2005 National Electric Code - 2/05
- Flexible Cables and Proper Termination - 12/04
- PV Array Grounding Continued -10/04
- PV Array Grounding -8/04

# I. Quality, Productivity, & Accomplishments

I. **Nationwide ROI (Accomplishment)**
   I. International (Canada, Mexico, China) soon.
   II. Accurate PV Systems and Financials Modeling.

II. **Completed Accelerated Exposure Testings on numerous metal substrates and coatings (Accomplishment)**
   I. Excellent results,
   II. Wide range of climate conditions,
   III. Robust Metal Roof LCA + ETFE (PV) material construction (Quality).

III. 8 **Standard Systems Sizes (Accomplishment, Quality)**
   I. Available in any combination of standard systems
      I. Complex / Multiple roof(s) planes available.

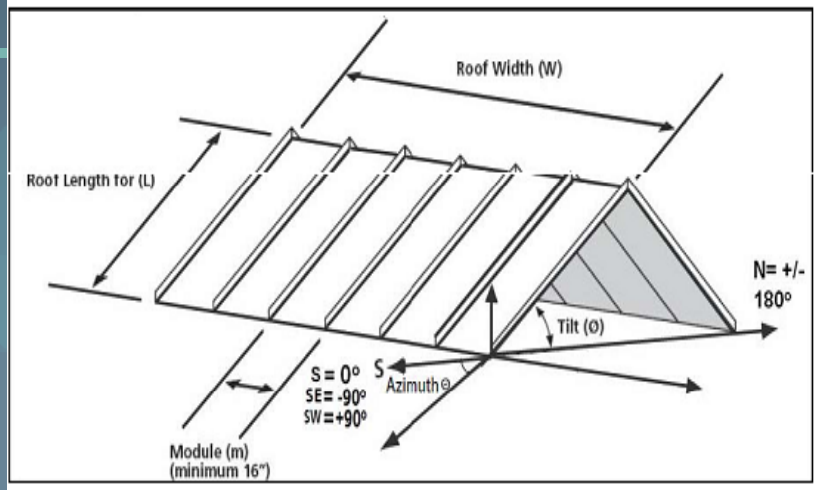
IV. **Nationwide Distribution Network (Productivity)**
   I. Drop ship of BIPV to job-site (Providers)
      I. Factory Integrated BIPV
   II. Drop ship Balance of Systems (Wholesalers)
      I. Easy “Shopping Lists” via Standard Packages

V. **DOE Total Project Complete (Accomplishment)**
   I. Budget-tasking

# EnergyPeak ROI + Feasibility

- Site-Survey (Satellite)
  - In-Person (Provider)
- Site-specific PV BIM Design intelligent-combos
- 25-year Cash-Flow analysis including:
  - Tax methods
  - All Incentives
  - Accurate time-series power simulations

Reference Diagram




| | | |
|---|---|---|
| Total Roof Area | 21,460 | Sq. Ft |
| Roof Area facing South / South E / South W | 13,108 | Sq. Ft |
| Length of roof (L) *see ref. diagram above* | 56 | Ft |
| Width of Roof (W) *see ref. diagram above* | 232 | Ft |
| Tilt angle of the roof *(Φ, see ref. diagram below)* | 35 | degrees relative to horizontal |
| Azimuth angle between the roof orientation and true South | 0 | degrees relative to true South |

| Total Rated Power (kW - DC) | Roof Panel Module (inch) | Total No. of PVL Modules Required | Total Rectangular Roof Area Required(sq. ft.) | |
|---|---|---|---|---|
| | | | L (ft.) | W (ft.) |
| 29.376 | 18 | 216 | 40 | 165 |
| | | | Roof Area covered by PVL Modules (sq.ft.) | |
| | | | 6,077 | |

ENERGY PEAK **16"**

| Nominal System Output (kW) | No. of PVL-136 Modules | Minimum Required Southern Exposure Roof Area (SQ. FT.) |
|---|---|---|
| 1.5 | 12 | 336 |
| 3.0 | 24 | 624 |
| 5.0 | 40 | 1008 |
| 10.0 | 80 | 1968 |
| 15.0 | 108 | 2640 |
| 30.0 | 216 | 5232 |
| 60.0 | 432 | 10416 |
| 120.0 | 900 | 21648 |

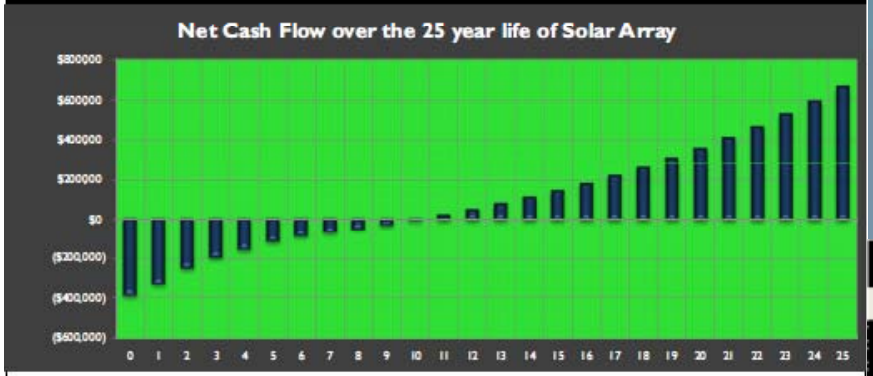
NOTE: Minimum Width Re
extra space per PVL mod

ENERGY PEAK **18"**

| Nominal System Output (kW) | No. of PVL-136 Modules | Minimum Required Southern Exposure Roof Area (SQ. FT.) |
|---|---|---|
| 1.5 | 12 | 378 |
| 3.0 | 24 | 702 |
| 5.0 | 40 | 1134 |
| 10.0 | 80 | 2214 |
| 15.0 | 108 | 2970 |
| 30.0 | 216 | 5886 |
| 60.0 | 432 | 11718 |
| 120.0 | 900 | 24354 |

Sheffield Metals International

## STANDING SEAM BIPV
## RETURN ON INVESTMENT ANALYSIS



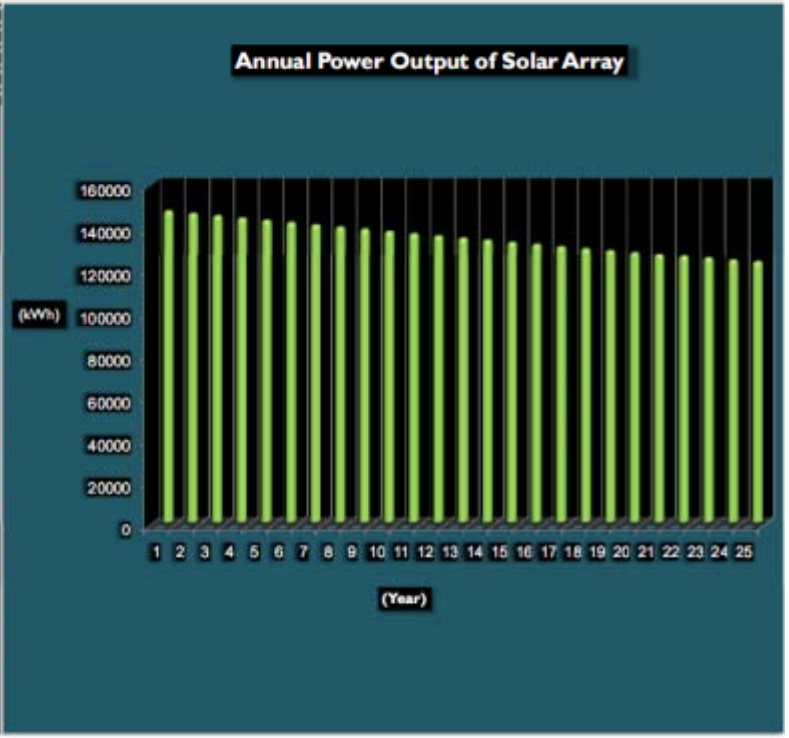

| Project | | Results | |
|---|---|---|---|
| *ID No:* | | 25 yr. Total Power Output (kWh) | 3,352,417 |
| *Rated System(s) Power (DC) kW* | *119.68* | 25 yr. Cash Flow of Electricity (cost of electricity avoided) | $885,010 |
| *Nominal System(s) Power* | *120* | | |
| *Project:* | | Internal Rate of Return | 9.66% |
| *Location* | *Ohio* | Years to Payback | 11 |
| *Date* | *15-Dec-08* | Annual $CO_2$ Reduction (Lbs) | 221706.50 |

- Feasibility and ROI
- 25-year Net Cash Flow
  - Annualized IRR (Internal Rate of Return)
    - "Opportunity Cost"
  - "At-a-glance" decision making
  - Driven by:
    - Highly accurate time-series power/climate modeling
    - Equipment specific efficiencies
      - PV Array, Inverter, etc.

- 25-year Power Output
  - Climate Specific
  - Any combination, number of PV systems in varying geometries

## Annual Output & Annual Cash Flow for 25 years

| Year | Annual Output (kWh) 25yrs | Annual Cash flow from returning Electricity to Grid(25yrs) |
|---|---|---|
| 1 | 146558.85 | $13,615.32 |
| 2 | 145459.66 | $14,594.26 |
| 3 | 144368.72 | $15,643.59 |
| 4 | 143285.95 | $16,768.36 |
| 5 | 142211.31 | $17,974.01 |
| 6 | 141144.72 | $19,266.34 |
| 7 | 140086.14 | $20,651.56 |
| 8 | 139035.49 | $22,136.43 |
| 9 | 137992.72 | $23,728.04 |
| 10 | 136957.78 | $25,434.06 |
| 11 | 135930.59 | $27,262.80 |
| 12 | 134911.12 | $29,223.00 |
| 13 | 133899.28 | $31,324.13 |
| 14 | 132895.04 | $33,576.34 |
| 15 | 131898.32 | $35,990.47 |
| 16 | 130909.09 | $38,578.16 |
| 17 | 129927.27 | $41,351.96 |
| 18 | 128952.81 | $44,325.17 |
| 19 | 127985.67 | $47,512.15 |
| 20 | 127025.78 | $50,928.27 |
| 21 | 126073.08 | $54,590.01 |
| 22 | 125127.53 | $58,515.03 |
| 23 | 124189.08 | $62,722.27 |
| 24 | 123257.66 | $67,232.00 |
| 25 | 122333.23 | $72,065.98 |



- Up to the day: Incentives / Financials
  - Federal, State, Local / Utility
  - Project Specific Notes:

## SUMMARY OF AVAILABLE REBATES

**Instructions**

** Please place "1" on the rebate that is of interest. Multiple rebates can be chosen by placing 1 on top of t

| STATE | Ohio | | | |
|---|---|---|---|---|
| User Selection | 1 | | | |
| Property_Type | Commercial | 0 | 0 | 0 |
| Rebate_Name | ODOD - Advanced Energy Program Grants - Distributed Energy and Renewable Energy | 0 | 0 | 0 |
| Value ($/W) | $3.50 | $0.00 | $0.00 | $0.00 |
| State tax credit | $0 | $0 | $0 | $0 |
| 2008 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2009 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2010 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2011 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2012 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2013 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2014 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2015 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2016 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2017 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2018 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2019 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2020 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2021 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2022 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2023 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2024 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2025 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2026 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2027 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2028 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2029 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2030 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2031 | $0.00 | $0.00 | $0.00 | $0.00 |
| 2032 | $0.00 | $0.00 | $0.00 | $0.00 |
| Limit on Max Incentive Value($) | $200,000 | $0 | $0 | $0 |
| Minimum System Size (kW) | 0 | 0 | 0 | 0 |
| Maximum eligible system size (kW) | 0 | 0 | 0 | 0 |
| OTHER COMPLEXITIES | Grant funds will not be dispursed until a project passes final inspection | 0 | 0 | 0 |

25 Years PBI Summary

**Project Specific Notes (if any):**

1. *As this is a "Sample Report" utility rebate program has not been considered ,only the State rebate program has been taken in to consideration. The Break even year would decrease further on consideration of Utility Rebate Programs.*
2. *The given project (Provider/Qualified facility) will have to enter into a contract with Georgia Power to be eligible for the rebate program offered by them. GA Power will install single directional metering or bi-directional metering depending on the Provider's method of installation. The provider will bear the incremental metering costs which will be billed monthly ( charges for single directional metering - $2.68, bi-directional metering - $4.18).*
3. *In May 2008, Georgia enacted legislation establishing corporate tax credits (35% of the cost of the system, including installation with a max amount of $500000) for renewable energy equipment. Excess credit may be carried forward for five years from the close of the taxable year in which the installment of the clean energy property occurred.*
4. *Taxpayer must prove eligibility for credit and credit amount. Taxpayer must maintain adequate records and make system available for inspection.*

- Accurate Environmental Benefits

## ENVIRONMENTAL BENEFITS ANNUALLY

| | | POLLUTANTS AVOIDED via SOLAR GENERATED ELECTRICITY (Annually) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Fossil Fuel Atmospheric Pollutant | Coal* based Energy | | Gas based Energy | | Oil based Energy | | Pine Trees capturing $CO_2$ | SUV miles not Driven |
| $CO_2$ | **$CO_2$, Carbon Dioxide,** is a non-toxic gas, however a strong heat-retaining greenhouse gas. | 268,193 | lbs | 171,644 | lbs | 225,282 | lbs | 15,836 | 141,214 |
| $NO_x$ Gases | **Oxides of Nitrogen -** Created when nitrogen is burned as part of the combustion process, one of the causes of ozone loss & smog , also associated with acid rain. | 777.76 | lbs | 152.87 | lbs | 168.96 | lbs | | |
| $PM_{10}$ | **Particulate matter smaller then 10 microns -** associated with lung ailments. | 26.82 | lbs | 5.36 | lbs | 5.36 | lbs | | |
| $SO_2$ | **Sulphur Dioxide -** Associated with visible pollution (haze) and acid rain. | 466.66 | lbs | 0.80 | lbs | 136.78 | lbs | | |
| VOC | **Volatile Organic Compounds -** One of the causes of ozone loss & smog, also some of the individual compounds are toxic. | 16.09 | lbs | 13.41 | lbs | 8.05 | lbs | | |

**average of eastern and western coal*

ENERGY PEAK

Building Integrated Photovoltaic (BIPV)
Standing Seam Roof Program

**Application of Unisolar PVL Laminates to Standing Seam Metal Roof Panels: The EnergyPeak System**

This manual illustrates the correct method for applying Unisolar PVL laminates to standing seam metal roof panels, and should be used in conjunction with the application video entitled "Applying UNI_SOLAR PVL Laminates to Metal Roof Panels." It is vitally important to the long-term performance of the system that these instructions be followed in all cases.

This printed manual illustrates the application of laminates in an indoor environment. The laminates may also be applied in an outdoor environment at the jobsite prior to panel erection, as long as the temperature of the panels is between 50 and 100 degrees Fahrenheit at the time of the laminate application.

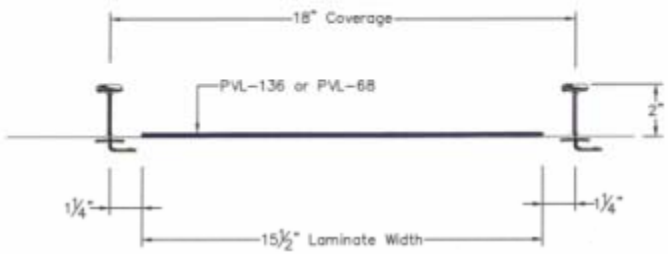
Prior to application, ensure that the roof panel profile is suitable for lamination. Suitable panels must have a nominal 16" wide flat area between ribs, with no pencil beads or stiffener ribs. Light striations, with an angle of 15 degrees or less relative to horizontal, are usually acceptable.

This panel is only 12 inches wide – obviously not an acceptable profile.

This panel is 16 inches wide, and has a flat surface between ribs. But this panel has shoulder ribs adjacent to each vertical leg, and the width of the flat surface between these shoulder ribs is only 14 inches. Therefore, this profile is also not acceptable for application of the laminate.

This panel is 18 inches wide, and the surface between the vertical legs does not have stiffener beads of any kind. It does have light striations across the full width of the panel, but these are less than 15 degree angles, and are acceptable. This panel profile also has shoulder ribs, but the distance between the shoulder ribs is approximately 16 inches. Therefore, the laminate can be applied between these ribs.

SRS2–1.5 Profile

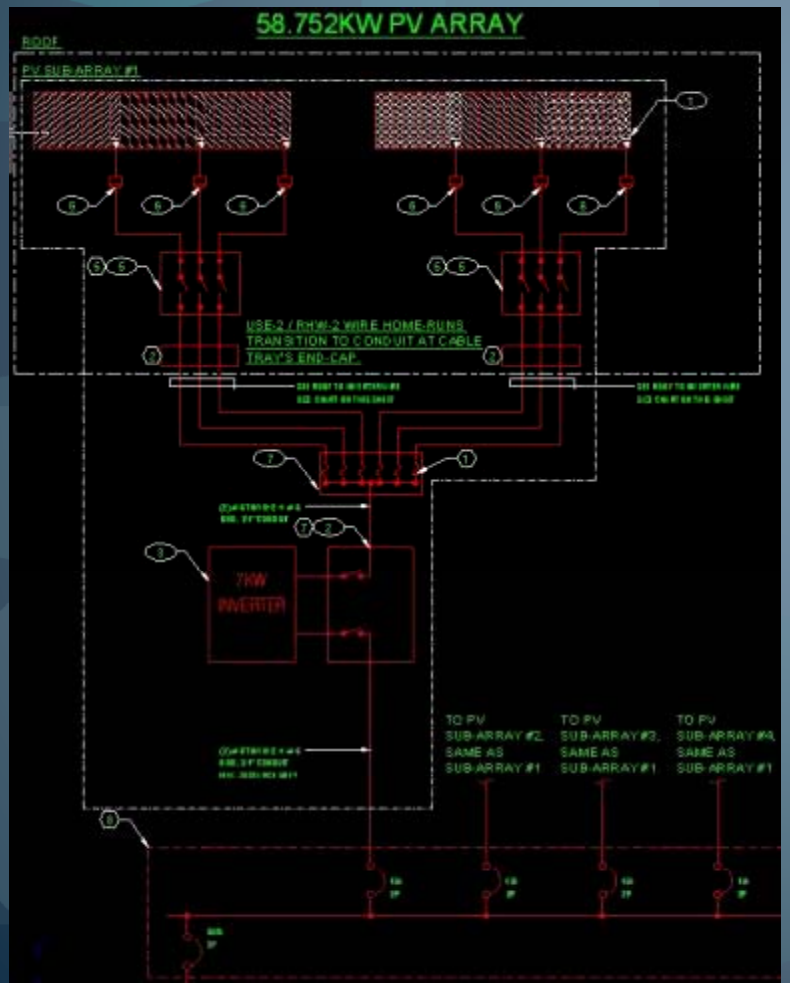


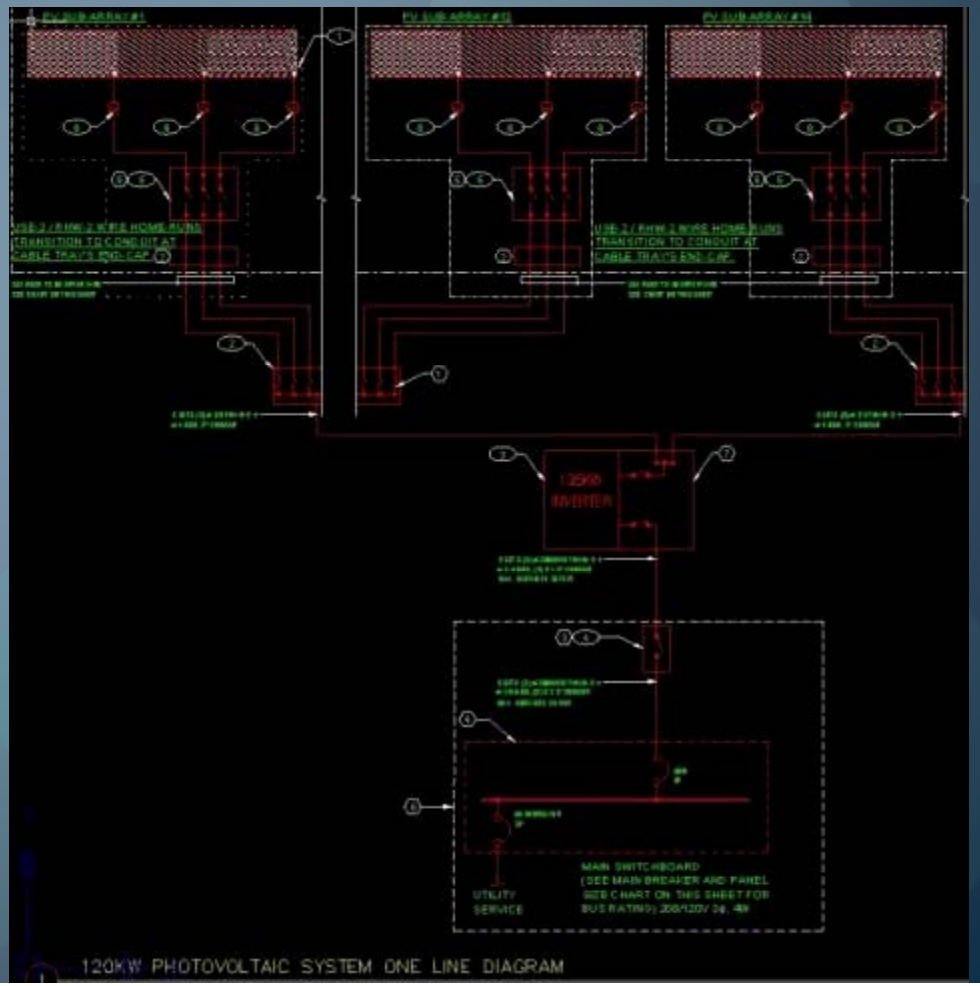

CENTRIA

| April 2008 | SRS2–1.5 Profile |
|---|---|

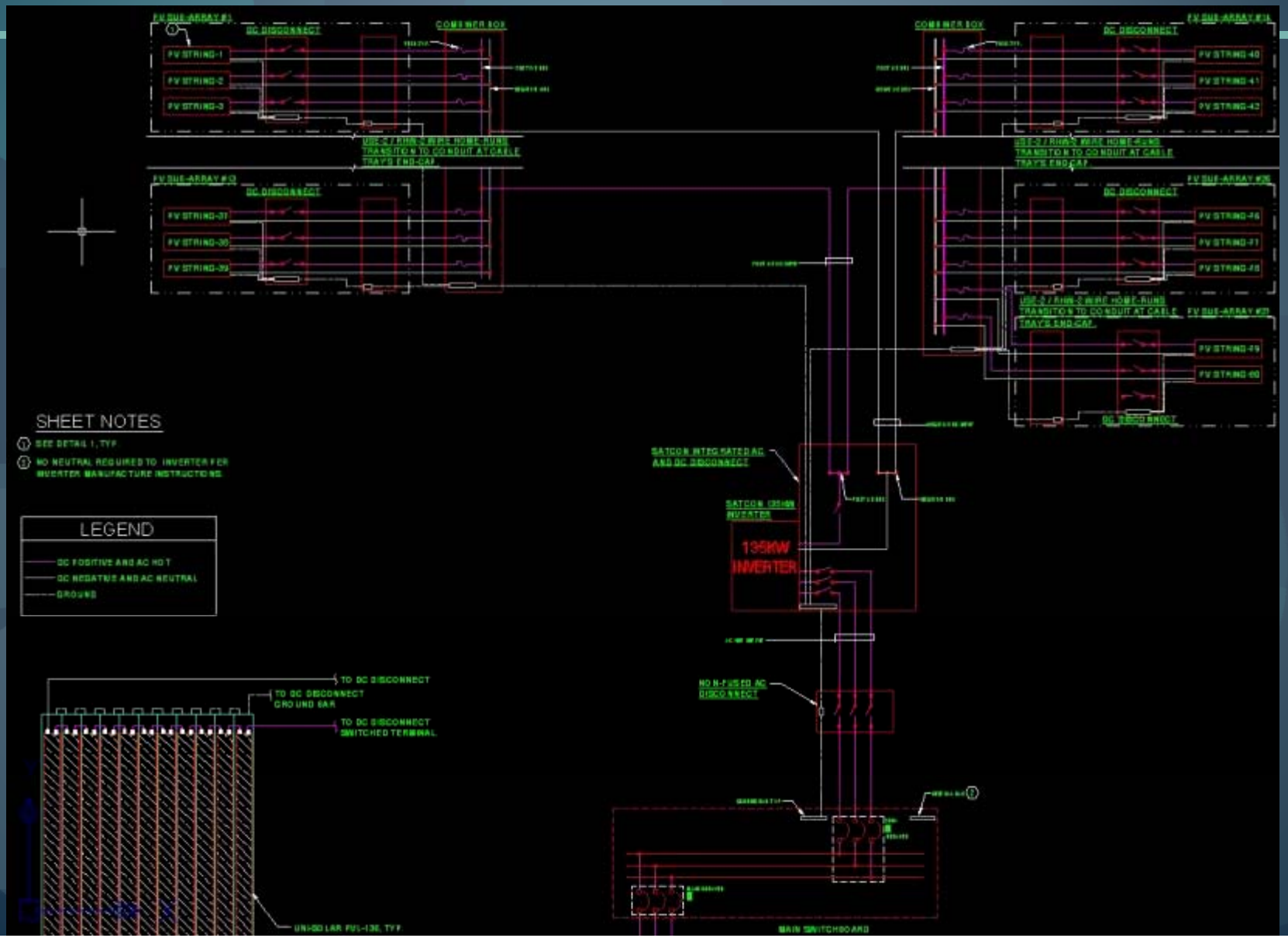
# Modular 1-line, PV-String Layout

- Upon Offer from BID - Fast Turnaround and Precisely Designed:
  - Providers / Electricians "Shopping Lists" for Wire Schedules & Exact Equipment Schedules
    - Auto-built & verified System Designs (AutoCAD-Electrical + Excel).



# 3-line Electrician's Diagrams



# DOE – BIPV:
# Total Project Complete

QtrMajorTask — Quarterly Report Major Task Schedule

Recipient: Rec
DOE Award #: DE-FX

**Significant Accomplishments during this Quarter:**

Provide a BRIEF summary of what was accomplished, and its significance or reason it is important.
All tasks were completed in the 4th Quarter of 2008. Total Project is complete.

**Plans for Next Quarter:**

Provide a few sentences or bullets about the plann
Beyond Project - Continued commercialization, Ne

| Task # | Item: Task = T Milestone = M Deliverable = D | Task Title or Miles Descri |
|---|---|---|
| 1 | T | System Design |
| | D | PV 5,10,15,30,60,120 kW |
| | D | Electrical |
| | D | Roof Integration |
| | D | PV 1.5, 3kW |
| | D | Electrical |
| | D | Roof Integration |
| | | |
| 2 | T | Electrical Schematics |
| | D | CAD Drawings 5-120kW |
| | D | Specs |
| | D | CAD Drawings 1.5-3kW |
| | D | Specs |
| | | |
| 3 | T | BIPV Standing Seam Roo |
| | D | Code Review |
| | D | UL Review |

QtrMajorTask — Quarterly Report Major Task Schedule

Recipient:
DOE Award #: DE-

**Significant Accomplishments during this Quarter:**

Provide a BRIEF summary of what was accomplished, and its significance or r
All tasks were completed in the 4th Quarter of 2008. Total Project is complete.

**Plans for Next Quarter:**

Provide a few sentences or bullets about the planned accomplishments for the
Beyond Project - Continued commercialization, Next Gen PV Technology Revi

Ma

| Task # | Item: Task = T Milestone = M Deliverable = D | Task Title or Milestone/Deliverable Description | (if |
|---|---|---|---|
| 4 | T | Roof Wire Management | |
| | D | Consultant Concept | Ven |
| | D | Design | |
| | D | Prototype Fab | |
| | D | Final Fab & Assembly | |
| | D | Grommett Supply | |
| | | | |
| 5 | T | Testing Performance | |
| | D | Bond Tests | Ven |
| | D | Accelerated Exposure | |
| | D | Structural | |
| | | | |
| 6 | T | Commercialization | |
| | D | Advertising & Articles | Ven |
| | D | PR | Ven |
| | D | Presentations | |

QtrMajorTask — Quarterly Report Major Task Schedule

Recipient:
DOE Award #: DE-

**Significant Accomplishments during this Quarter:**

Provide a BRIEF summary of what was accomplished, and its significance or reason it is important.
All tasks were completed in the 4th Quarter of 2008. Total Project is complete.

**Plans for Next Quarter:**

Provide a few sentences or bullets about the planned accomplishments for the next quarter. Note any changes expected in the schedule fo
Beyond Project - Continued commercialization, Next Gen PV Technology Review, DOE PeerReview

**Major Task Schedule**

| Task # | Item: Task = T Milestone = M Deliverable = D | Task Title or Milestone/Deliverable Description | Performer (if different from recipient) | Task Completion Date: Original Planned | Revised Planned | Actual | % Complete |
|---|---|---|---|---|---|---|---|
| 7 | T | Standards | | 8/1/2008 | | 12/31/2008 | 100% |
| | D | Marketing Branding | Vendor | | | | |
| | D | Selling | Vendor | | | | |
| | D | Estimating | | | | | |
| | D | Engineering | | | | | |
| | D | Manufacturing | | | | | |
| | D | Tech Data | | | | | |
| | D | Warranty | Vendor | | | | |
| | | | | | | | |
| 8 | T | Project Management | | 12/31/2008 | | 12/31/2008 | 100% |
| | D | Weekly Meeting - Tasks | | | | | |
| | D | Budget Review | | | | | |
| | D | PV Supply Negotiation | | | | | |

QtrMajorTask — Quarterly Report Major Task Schedule

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | D | NEEC Review | | | | | |
| | D | Supplier Review | | | | | |

**Status of Funding**

I. **$590,400** first annual investment
   I. ½ DOE
   II. ½ CENTRIA