

SMUD's Solarport Demonstration Project

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Project Scope

- Build a modular 8 vehicle carport with a 10Kw grid connected PV system
- Minimize cost
- Make design and engineering available to other users



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Structure Details

- Lightweight 14 gauge sheet metal structure
- No on-site welding required
- Cantilever construction
 - No posts at back end of space
- Designed for 75 mph wind load



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PV Details

- 10,009 watts AC CEC
- Seventy two each Schott SAPC 165 polycrystalline modules
- Xantrex CB12H20 combiner
- DC and AC disconnects
- Xantrex PV10208 inverter
 - Three phase 208 VAC output
- PV meter
- Isolation transformer



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Structure is 71' long x 16' deep
8' maximum vehicle height



First System Cost

- After deducting NRE costs, system total installed cost was \$81,702
 - Equals \$8.16/CEC AC watt
- Includes glass at \$3.57/ CEC DC watt



Potential Cost Reducers

- SMUD carport was a first time installation
 - Subsequent installations and increased volume will reduce cost
- Assuming glass may be bought at \$2.50/CEC DC watt, turnkey cost would be \$70,500



Project Status

- Construction completed 26 January 04
 - Installation of long lead lighting is pending
- System checkout and certification pending clear weather



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Lessons Learned

- Gauge of sheet metal columns raised concerns about possible denting from bumper strikes
 - Bollards added after the fact
 - Future installations should include concrete cylinder around column, up 2 feet from grade or fill column with concrete to same height



Lessons Learned, continued

- Location of columns partially obstructs vehicle door swing
 - Increased cantilever length would improve door clearance but would add to structure cost



Planned Additional Solarport Activities

- Procure Schott CB (curved beam) structure
- Build another 10Kw system this year



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Meter Beater[®] Demonstration



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Project Scope

- Build and evaluate three low cost ground mount arrays
- Gravel ballasted mounting requires no concrete footings or other anchors



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Scope, continued

- One array each facing east, south, and west
- Determine energy and power output as a function of aspect



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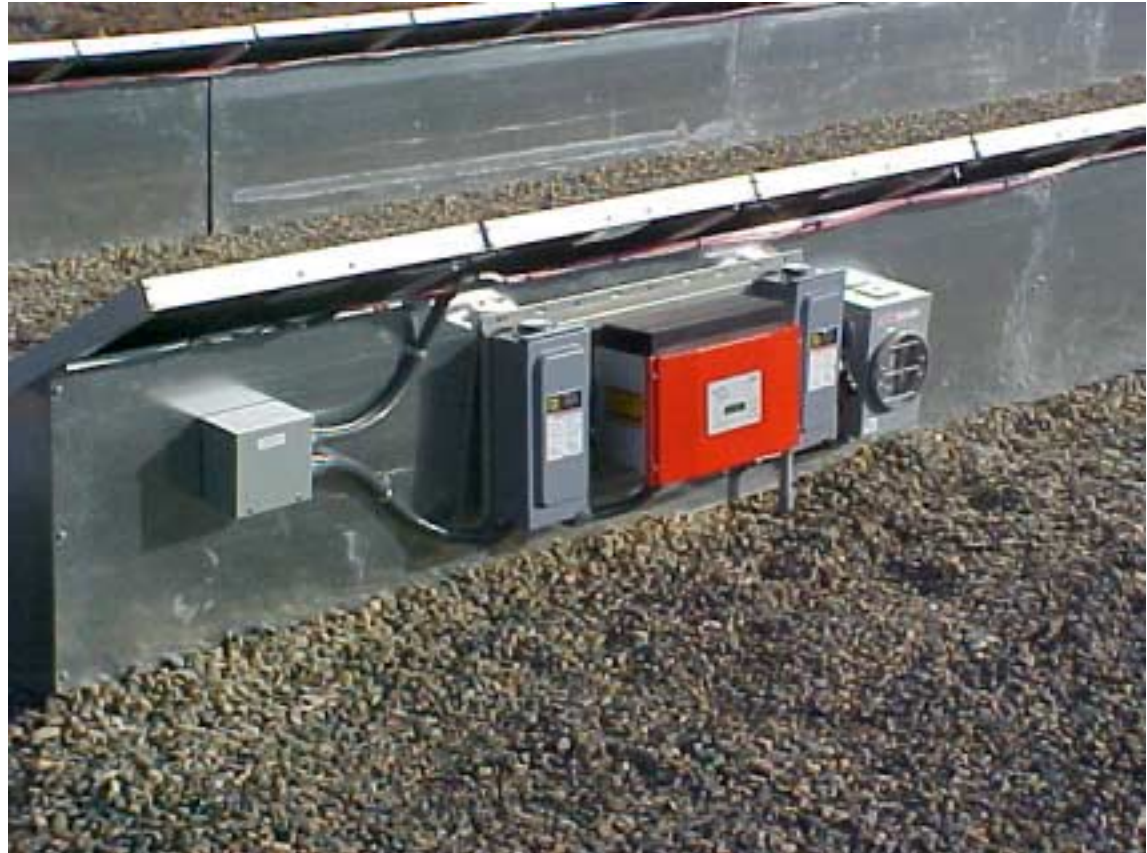
Design Description

- Each array consists of
 - Sixty each BP-MST 50 thin film modules
 - One SMA 2500U-SBD inverter
 - Disconnects and dedicated PV meter
 - Gravel ballasted sheet metal mounting pans
 - 24 degree module angle to the horizontal
 - Troughs set on 4-6” of crushed gravel



Design Description, continued

- Patented clip for mounting modules to pans reduces assembly cost
- Inverter, disconnects, and meter socket mount to sheet metal pans



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Turnkey System Cost

- System total installed cost (three arrays) was \$63,589
 - Equals \$7.98/CEC AC watt
 - Includes glass at \$2.69/ CEC DC watt
 - Sheet metal pans were fabricated in a non-production manner



Potential Cost Reducers

- Sheet metal pans built in production quantities would reduce cost
- Use of polycrystalline modules would decrease sheet metal and gravel costs for same power output

