

# PETALUMA GREEN

USCG Training Center Petaluma  
Energy & Water Conservation and  
Natural Resources Protection



Joint Service Power Expo

U.S. Coast Guard  
May 2011



# Solar Photovoltaic Power Purchase Agreement

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- ❑ 875 kW photovoltaic array
- ❑ Contractor financed, built, operated and maintained
- ❑ 5232 panels on 4 acres
- ❑ USCG purchases power at contracted rate for 25 years
- ❑ Helps meet EPACT 2005 requirements for USCG



# Solar Photovoltaic Power Purchase Agreement

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- ❑ Construction completed Oct 2009
- ❑ Grid-tied into 12.47 kV distribution system
- ❑ Estimated \$1.7M energy savings over life of project
- ❑ Over 1,910,000 kWh produced since March 2010
- ❑ Reduction of over 2,400,000 lbs of CO<sub>2</sub> greenhouse gas per year



# Solar Photovoltaic Bauer North Array

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- ❑ 45 kW Array
- ❑ Non-penetrating mounting
- ❑ Seismic Zone 4
- ❑ Installed Dec 2003
- ❑ 135 mph wind tested
- ❑ Fixed 5 degree tilt
- ❑ Has produced over 775,000 kWh to date.



# Solar Photovoltaic Bauer South Array

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- ❑ 35 kW Array
- ❑ Non-Penetrating Mounting
- ❑ 135 mph wind tested
- ❑ Seismic Zone 4
- ❑ Installed Dec 2003
- ❑ Fixed 5 degree tilt



# Solar Photovoltaic

## Horsley Hall East Array

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- ❑ 45 kW Array total
- ❑ Rail Mounting
- ❑ Installed Dec 2003
- ❑ Fixed 22 degree tilt
- ❑ Has produced 495,000 kWh to date



# Solar Photovoltaic

## Petaluma Rooftop Solar Arrays

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- ❑ Grid-tied into building main distribution panels
- ❑ Partially funded with 50% solar initiative incentive.
- ❑ 125 kW combined arrays have produced over 1,270,000 kWh to date
- ❑ Also avoided nearly 1,700,000 lb. in CO<sub>2</sub> greenhouse gas to date



# Solar Energy

## Swimming Pool Solar Pre-Heat

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- ❑ Passive ground mounted solar hot water system
- ❑ Pre-heats swimming pool water
- ❑ Heats to desired temp and automatically shuts off
- ❑ Completed July 2009



# Solar Energy

## Swimming Pool Solar Pre-Heat

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- ❑ 72 panels @ 48 s.f. arranged in 9 arrays totaling 3456 s.f. of collector.
- ❑ Two 2hp pumps circulate water through system.
- ❑ Saves \$12-17K per year in propane costs for heating.
- ❑ 8-12 year payback.



# Solar Photovoltaic Solar School Gate

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- ❑ Remote controlled PV powered school gate and streetlight
- ❑ Avoided significant costs for trenching, conduits and wiring to a remote location



# Solar Photovoltaic Solar Seismic Station

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- ❑ Solar powered seismic monitoring station
- ❑ Avoided significant costs for trenching, conduits and wiring to a remote location



# Solar Energy

## Solar Streetlights

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- ❑ Energy savings
- ❑ Low installation costs
- ❑ Excellent for remote areas
- ❑ Substantial savings in avoided costs for trenching, conduits and wiring.
- ❑ Converting from HID to LED



# Solar Energy

## Harrison Hall Solar Thermal Refurbishment

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- ❑ Solar hot water system used as water pre-heat for the building boilers.
- ❑ Originally installed in 1985. Reconditioning scheduled for FY-11
- ❑ Refurbishment will alter piping to expand and incorporate space heating.



# Solar Energy

## Harrison Hall Boiler Solar Pre-heat

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- ❑ Estimated savings of \$7-12K per year in propane costs for heating.
- ❑ Offsets 3,300 therms of domestic hot water heating annually.
- ❑ Incorporation of space heating will increase that to 4,500 therms
- ❑ 3-4 year payback

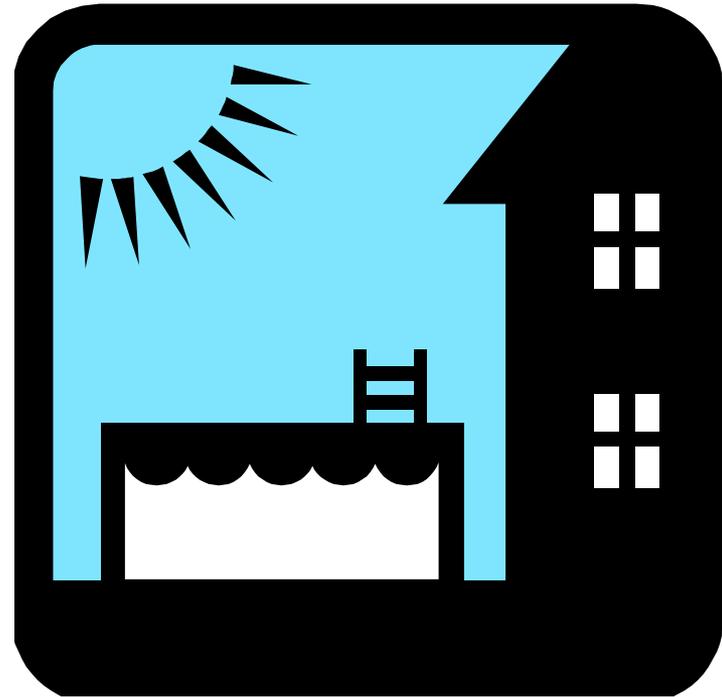


# Other Solar Energy Initiatives

## Solar Thermal for Domestic Hot Water

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- ❑ Assessing solar thermal domestic hot water systems for two barracks
- ❑ Facilities similar to 84 and 114 room hotels.
- ❑ 60%-80% savings can be achieved in some systems
- ❑ Possible combined savings of \$18K/yr.
- ❑ 15-20 year payback without incentives



# Other Power Initiatives in Planning

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- Solar Hot Water Systems for Housing



- NEPA underway on Meteorological Tower



# Questions?

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