

Solar in the City - 2009 Update



Bruce Plenck, Solar Energy Coordinator
Solar 101-July 13, 2009



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2009 Solar Summary

- Tucson's 10 Years of Solar- 1999-2009. Ward 4 started it!
- 5% solar in new city buildings; solar ready ordinance.
- Clean Renewable Energy Bonds (CREBs) projects.
- CAVSARP PPA/Avra Valley solar farm potential.
- Community solar initiatives.
- Federal and state incentives for solar



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City's 5% Solar Requirement

- Since 2005, the SES has included a 5% solar requirement in all city funded buildings.
- This means that “5% of the total annual building lighting, mechanical system and domestic hot water heating energy consumption is offset by the use of solar energy for all methods of compliance.”
- This requirement is connected with the City policy of meeting LEED Silver Standard on all new buildings



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Recent City Solar Activities

- Solar Ready: Tucson now requires all new houses and duplexes to be preplumbed for solar hot water and designed for future PV installation
- Solar Access: To be considered as part of new Flexible Lot Design ordinance
- Track solar production at <http://www.tucsonaz.gov/energy/solarintucson.htm>



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Solar on City Buildings: Fire Station #22 - LEED Gold



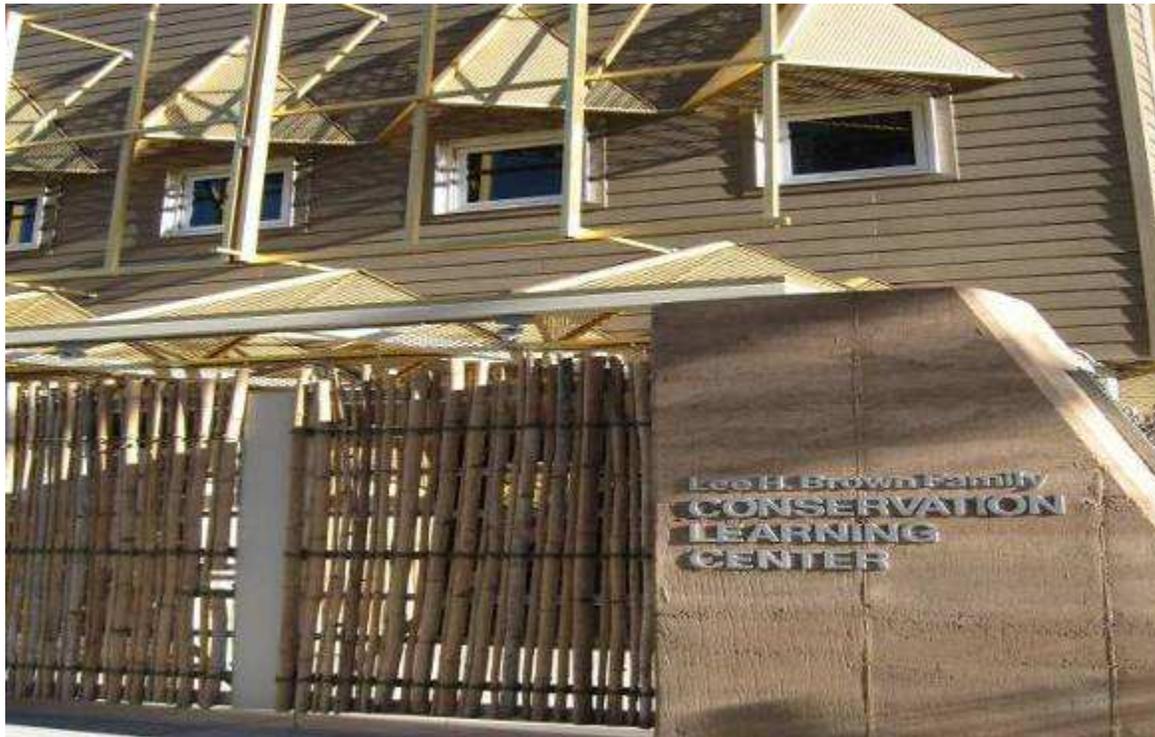
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Fire Station #22 - Solar hot water system



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Brown Conservation Learning Center (aka “Zoo School”) - LEED Platinum



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The Zoo School - 14 kW PV & rainwater harvesting systems



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The Zoo School - Solar hot water too !



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Pennington Street Garage Shaded Solar Parking - 64 kW



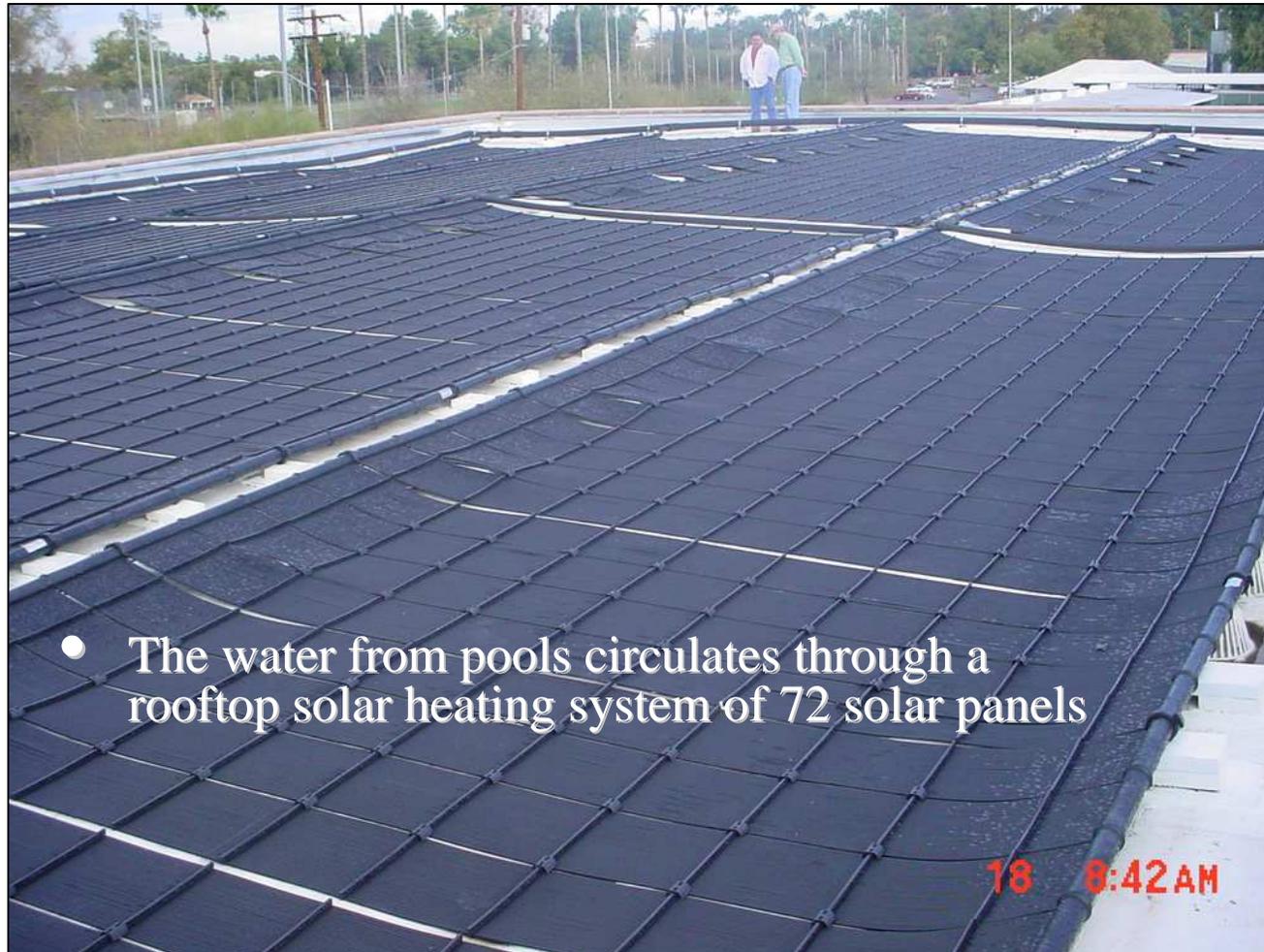
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Edith Ball Adaptive Recreation Center



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Adaptive Recreation Center - Solar pool heating



- The water from pools circulates through a rooftop solar heating system of 72 solar panels



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More solar this year - CREBs

- \$7.6 million financing through interest-free Clean Renewable Energy Bonds (CREBs).
- Solar photovoltaic (PV) installations on 7 City sites.
- City owned and maintained with 10 year service contract.
- Approximately 1 MW capacity – 2000 pounds of CO₂/year reduced.
- Construction complete on 4 sites, others underway.
- Opportunity to demonstrate new-to-Tucson solar technology including ballasted systems, trackers, and Solyndra panels



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CREBs Project Sites



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El Pueblo 97 kW ballasted



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Solyndra Solar Panels at Parks Store



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Solyndra Panel Closeup



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Tracker System at Public Safety Training Academy-473 kW



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Tracker system at Hayden Udall-229 kW



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Avra Valley Solar Potential

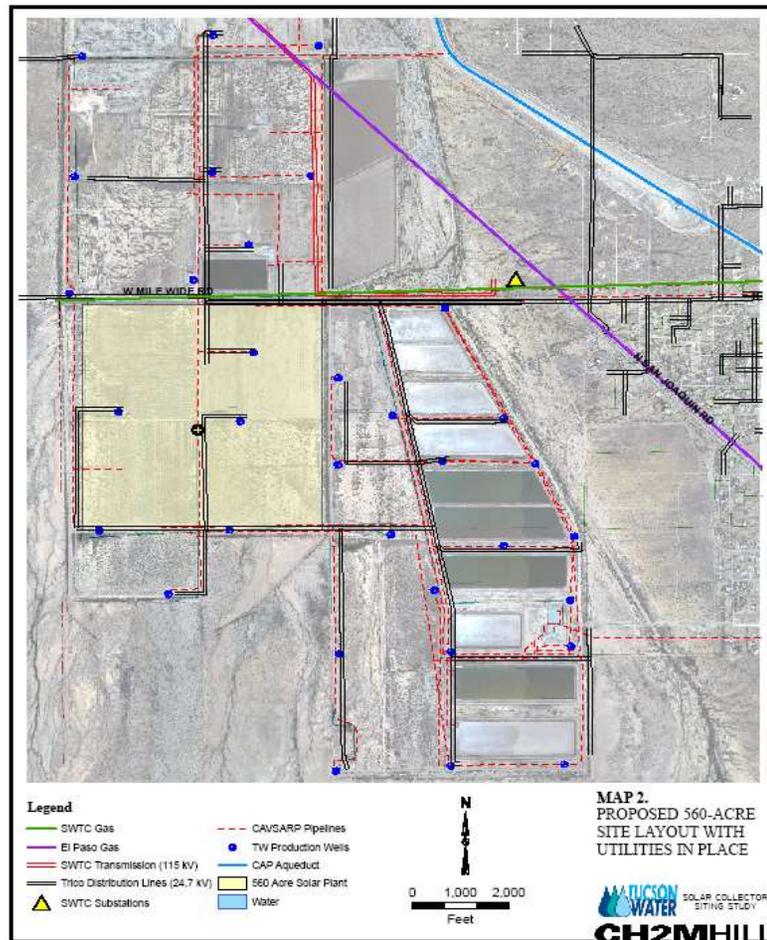
- Tucson Water taking lead with support from Trico and Arizona Electric Power Cooperative (AEPSCO) for 1-5 MW PV project
- Contractor selected: SunPower; lease approved
- Power Purchase Agreement (PPA): no capital required, contractor owned & maintained over life of contract, 20 years. City agrees to purchase power at set rates for 20 years; developer takes tax credits.
- Also, possible lease of city land for 20-100 MW solar farm projects (possibly for concentrating solar power plant (CSP)).



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CAVSARP Solar Site

- Ideal solar farm location.
- 7 MW load.
- 100 MW site potential.



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Solar America City: Street Signs

Recognizing Tucson Solar Installations

- Civano Community
- Conservation Learning Center
- El Rio Education Center
- Pennington Street Garage
- Sonora Cohousing
- Tucson International Airport
- TUSD - Doolen Middle School & Project MORE
- U of A - Farm & Visitor Center
- Ward 4 Office



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Other Community Solar Initiatives

- TEP's REST program provides rebates for photovoltaic, solar hot water and day-lighting projects.
- Rep. Gabrielle Giffords' continues to work on federal solar initiatives including stimulus package money for solar
- U of A AzRISE/TEP solar test field, Solar Decathlon house, solar race car.
- University of Arizona, Pima County and Davis-Monthan AFB using PPA's for large scale solar installations.
- Pima Community College offering solar installer training classes.
- TREO focusing on solar economic development as one of four major areas.



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Solar Incentives: Utility and Government

- TEP: PV: \$3000/kW(residential) or PBI auction (commercial); solar hot water (gas or electric backup-\$750-1750 depending on electricity saved)
- Federal incentives for renewables: 30% tax credit (or grant) + accelerated depreciation (MACRS)
- State tax credit: 25% to \$1000; 10% business deduction
- City of Tucson: \$1000 permit fee waiver if solar included
- Stimulus Bill Funds; DOE Loan Guarantee Program, EECBG, etc
- No sales tax on solar; no increase in assessment for taxes based on adding solar
- Best resource: www.dsireusa.org/ ; TEP information at: <http://www.tucsonelectric.com/Green/>



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Commercial solar

- Tucson businesses are installing solar:

- Canyon Ranch
- Latitudes factory
- Brooklyn Pizza



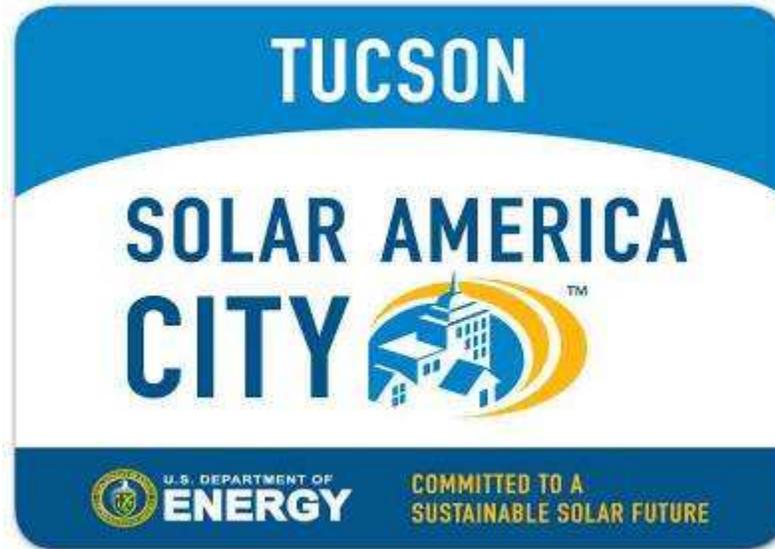
- Neighborhoods with solar:

- Sonora Cohousing, Milagro Cohousing, Armory Park del Sol, Civano, Stone Curves Cohousing



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Questions??



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