



Case Study: Solar in New Construction



**Affordability Through Sustainability:
Energy Efficiency and Solar**

September 16, 2011

- **Overview: Community HousingWorks**
- **Affordable Housing**
- **Considerations in Design of New Affordable Housing**
- **Case Study: Design Choices - Kalos (Florida Street)**
- **Case Study: Policy Changes - SOLARA**

Overview: Community HousingWorks



- Nonprofit, 27 years
- 1,600 apartments in 29 communities
- Member NW, Urban Land Institute



Affordable Housing Finance

MASH 201– Affordable Housing Finance for Contractors and Consultants– see on CCSE website

What is Affordable Housing?

- Low Income Housing Tax Credits are <60% of Area Median Income (AMI)
- 2011 San Diego County, family of 4 = \$49,440
- Rents – 3 bedroom, 60% AMI = \$1,285/mo, inc utilities
- Utility Allowances- set locally, reduce rent
- Finance: Includes mortgage
 - Includes equity paid by investor who “buys in” to get 10 years of income tax credits
 - Includes other “gap” finance

Tax Credit Finance

- State allocation agencies, “TCAC” in California
- Requirements:
 - 55 year income restrictions (deed restricted)
 - Minimum size units, mix of units, amenities, operating costs, energy efficiency for new construction
 - Monitoring– incomes, amenities
- Capital costs of development are in “basis” for calculation of tax credits – but maximums
- Build to own- quality, reduction in operating costs

Tax Credit Finance

LIHTC

9%

(capped at \$2.5m/yr for 10 years)

Competitive, usually 2 rounds/yr (in 2009, one round).

Usually new construction vs acquisition.

- unit sizes (at least 30% 3-bd to point)
- risk and windows of timing

4%

Combined w/tax exempt bonds (CDLAC)
Rolling allocation rounds annually.

Often very large development or acquisition.
Usually priced less than 9%.
Current appetite by investors low.

Considerations: Design of New Affordable Housing

- Long Lead Times – getting to construction is often years of finance
 - Changes in codes, financing markets, politics
 - Community input, City input
 - Team must be partners
 - Example-- 36 month reservation for PV rebates
- Solar contractors– design-build, but generally will be under GC, may need to be bondable
- Affordable Housing-- often cutting edge of technology, have been CEC pilots

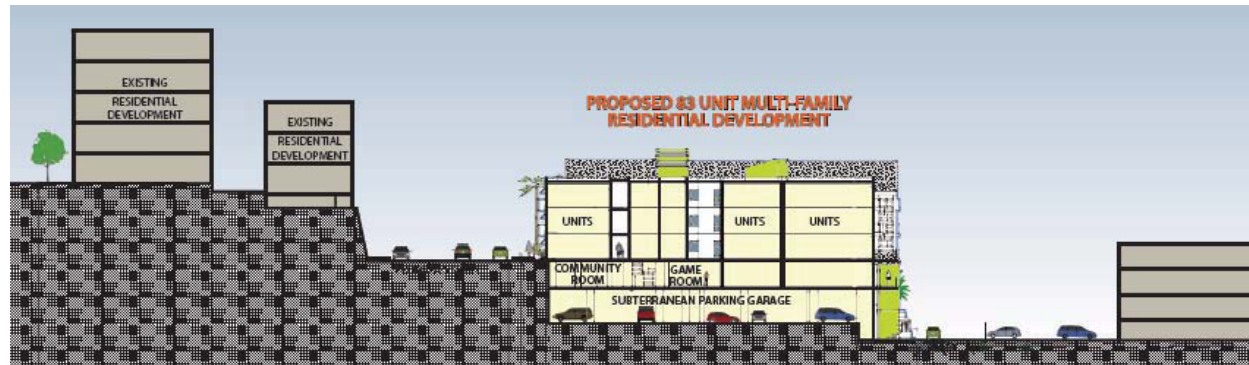
Considerations: Design of New Affordable Housing

- Concerns with costs of development vs building in quality
- Renewables add to Total Project Cost, albeit worthwhile
- TOD Infill – product type differences, e.g. elevators, underground parking w/ventilation, etc
- Less roof to load solar
- Exceed Title 24 – all solar is not alike
 - Demand reduction of solar hot water for T24 calcs
 - But, adding PV to offset demand has no T24 effect

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Case Study: Kalos Background

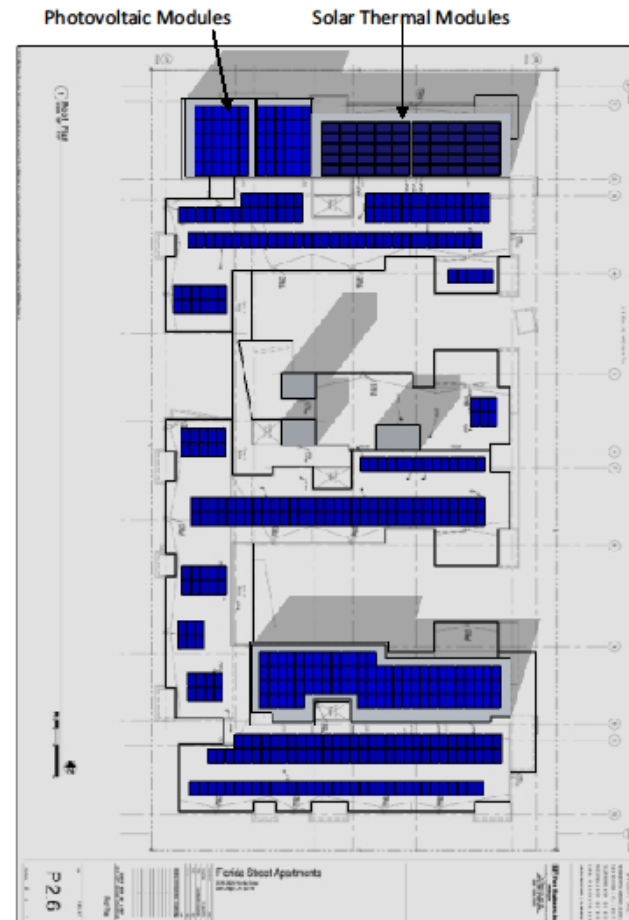
- 83 units, 4 story over parking.
- 1 acre, Florida Street
- 110 parking (96 in garage)
- Underground parking, terraced site
- LEED for Homes
- Funders include: San Diego Housing Commission, San Diego Redevelopment Agency



Case Study: Kalos

PV versus Solar Hot Water

- Central boiler for hot water and hydronic heating
- High common area demand due to elevators, parking garage lighting/ventilation
- 17% of roof for solar thermal = 76% solar fraction for hot water
- T24 less than 15% over T24 *before* solar thermal, almost 30% over *with* solar thermal
- PV – 110kw, 83%+ of the common area load



Case Study: Kalos

- Iterative process of energy design
- Final systems later in the design process
- Loading order—design building for threshold $> T24$ plus 15%, *then* start layering in renewables



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Case Study: SOLARA

Background

- 56 apartments, Poway
- 2 story garden apartments
- 6 residential buildings plus 2k sf community building
- 90 surface parking (including 56 carports)
- Before LEED for Homes pilot



Case Study: SOLARA

Background



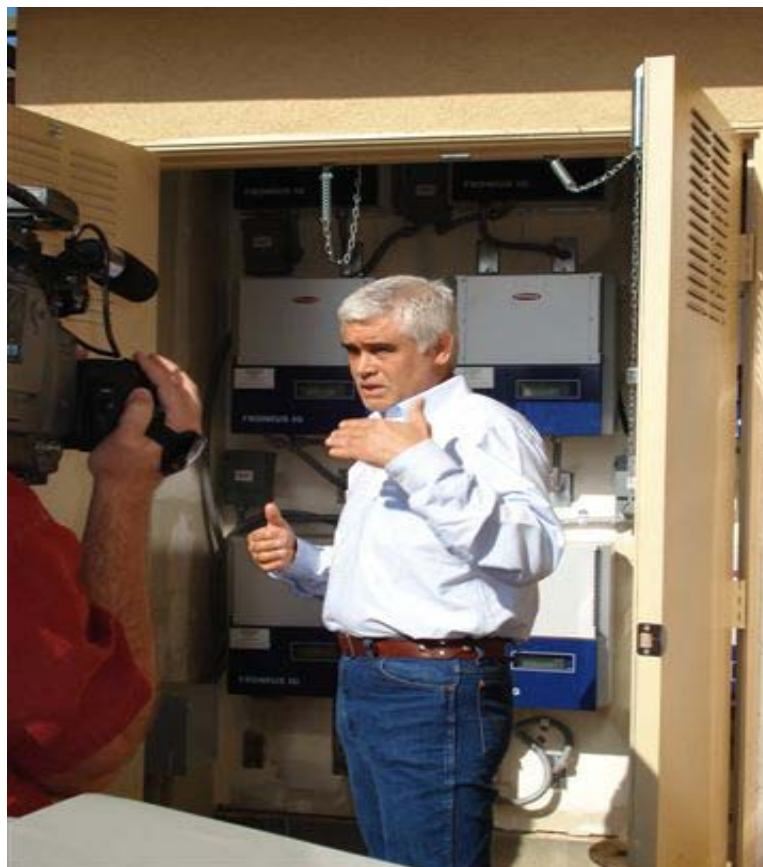
First apartment complex in CA to be fully powered by Solar
First apartment complex in CA to be Zero Energy New Home (ZENH)

Carbon Footprint– reduced by 95%

- Equivalent: Planting > 5,400 trees/y
- Equivalent: Eliminating > 300 cars/yr

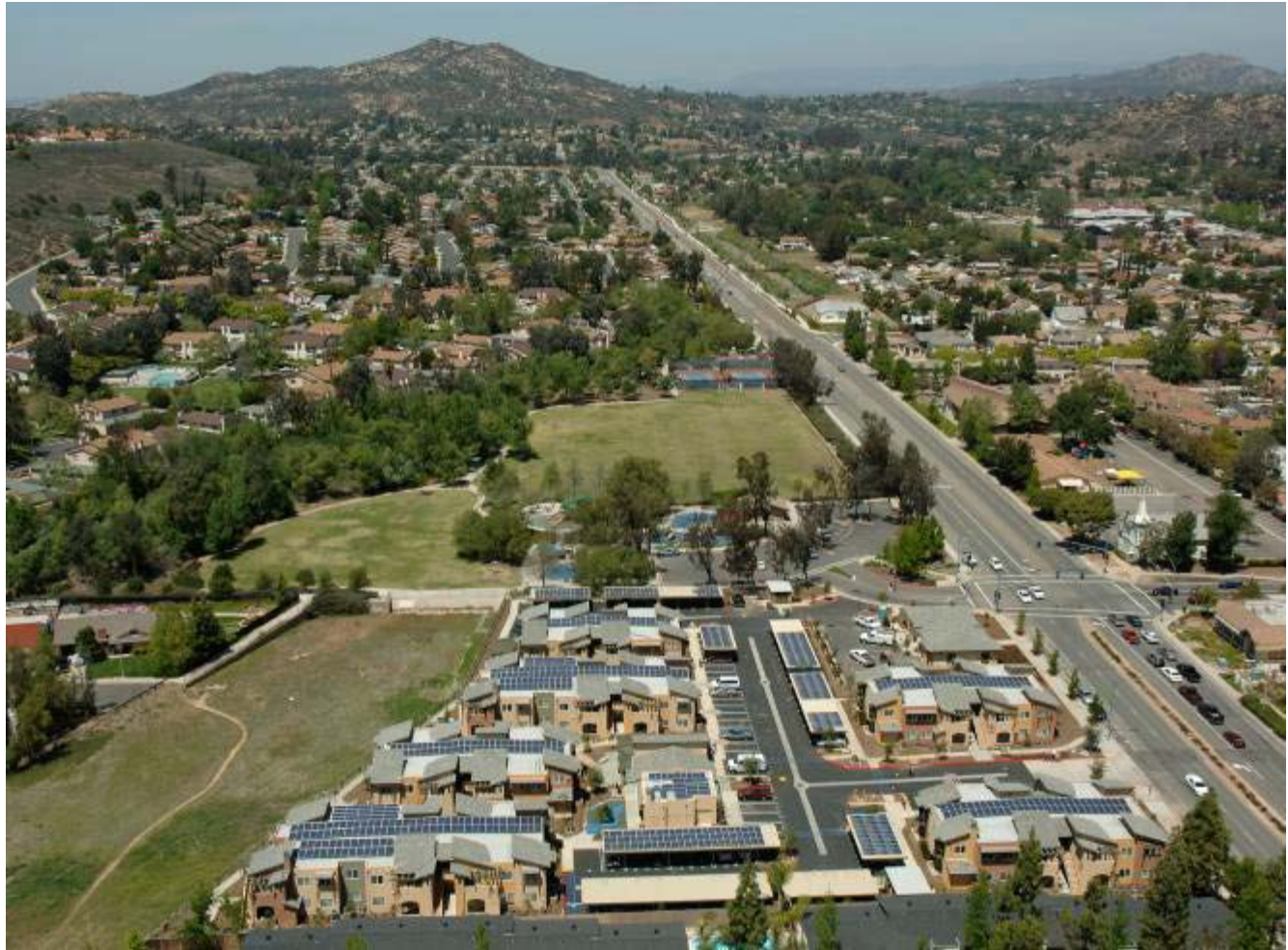
Policy Issues: SOLARA and VNM

- Energy and water efficiency
- Apartments individually metered.
- 142kw, 836 panels on buildings and carports
- 2 miles of wiring
- Net metering– 63 PV arrays, 64 inverters including common area, community building
- Standard electric utility allowances too high, no project based utility allowances. Decision for management to pay electric bills



Policy Issues: SOLARA and VNM

- Meeting with SDGE (Leslie Sabin) in October 2004
- “Pooled Billing” proposal
- Artificial silo – example, if half the residents are very energy conserving, and half are not, pay
- SDGE Advice Letter 1895-E (May 2007) re tariff changes
- Withdrawal in August 2007, PUC



Policy Issues: SOLARA and VNM

- 2008 – 08-11-005 PUC decision re Virtual Net Metering for MASH program
- Limited to affordable housing
- More about limitations in Las Serenas use of MASH
- 2011 – 11-07-031 PUC expands to all multifamily and more
- Legacy of SOLARA



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