

Finance and Design with Project Specific Utility Allowances

PERFORMANCE CERTIFICATE: Residential		(Part 1 of 5)		CF-TR
Project Name	County	City	State	Year
Client Name	Address	City	State	Year
Address	City	State	Year	Year
CF-TR	CF-TR	CF-TR	CF-TR	CF-TR
FIELD INSPECTION ENERGY CHECKLIST				
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Not Applicable <input type="checkbox"/> Not Inspected <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Special Features <input type="checkbox"/> Yes, see Part 2 of 5 of this form for details.				
INSULATION				
Construction	Type	Quality	Area (sq ft)	Special Features (see Part 2 of 5)
Roof	Asph/Flt	Good	1000	None
Walls	Block	Good	1000	None
Floors	Asph/Flt	Good	1000	None
Basement	Asph/Flt	Good	1000	None
Attic	Asph/Flt	Good	1000	None
Other	Asph/Flt	Good	1000	None
PENETRATION				
Orientation	Area (sq ft)	Factor	U-Value	Insulation
Roof	1000	0.05	0.05	None
Walls	1000	0.05	0.05	None
Floors	1000	0.05	0.05	None
Basement	1000	0.05	0.05	None
Attic	1000	0.05	0.05	None
Other	1000	0.05	0.05	None
HWAC SYSTEMS				
Dry	Heating	Min. Eff.	Cooling	Min. Eff.
None	None	None	None	None
HWAC DISTRIBUTION				
Location	Heating	Cooling	Dist. Location	Dist. Status
None	None	None	None	None
WATER HEATING				
Dry	Type	Capacity	Min. Eff.	Distribution
None	None	None	None	None

Professional Experience

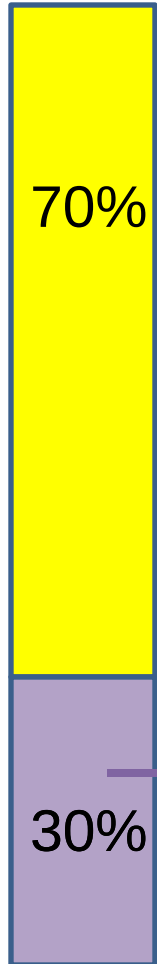
- **1996-2011** Lived in and taught at a net-zero demonstration house at Humboldt State University
- **2001-2011** Organized and co-designed the net-zero Manila Beach Eco-hostel
- **2005** PM with Danco Communities on a deep conservation/solar hybrid AH community
- **2006-2007** CEC sub-committee to design AH solar rebate and the California Utility Allowance Calculator
- **2011** Four net-zero AH projects start construction

IRS Utility Allowance Rules

1. Any RHS funds trigger an RHS utility allowance
2. A HUD-regulated building uses the HUD utility allowance
3. A Section 8 voucher tenant uses the HUD utility allowance
4. Before 7-28-09, a non RHS or HUD project can use the PHA utility allowance OR a utility company estimate
5. After 7-28-09, a non RHS or HUD project can use a PHA, utility, housing credit agency or **engineer's estimate utility allowance**

Using the IRS Housing Allowance Rules

**Tenant
Income:
\$25K/yr
Annually**



PHA



PSUA



**\$400 Monthly
Housing
Allowance:**

**Rent
+
Utilities**

Can You Afford A Net Zero Project?

- USDA 514, 515 and 538 nearly require net-zero to win the competition. CTCAC's energy and LEED requirements are almost there. Code in CA in 2020, US in 2030
- Utility costs in CA have increased annually by an average of **6.7%** every year since 1970, outstripping rent increases.
- Net Zero costs 2-4% more in construction costs

Humboldt County's PHA Utility Allowance

Utility or Service	0 Bdrm	1 Bdrm	2 Bdrm
Heating			
Electric		\$0.69	\$1.40
Natural Gas		\$0.00	\$0.00
Cooking			
Electric		\$1.73	\$2.05
Natural Gas		\$0.00	\$0.00
Lighting			
Electric		\$1.10	\$1.35
Other			
Electric		\$4.43	\$5.26
Natural Gas		\$0.00	\$0.00
Air Conditioning			
Electric		\$0.00	\$0.00
Water Heating			
Electric		\$2.05	\$2.10
Natural Gas		\$0.00	\$0.00

Financing With a Project Specific Utility Allowance

PLAZA POINT

MIXED-USE w/ SENIOR APARTMENTS
789 I STREET
ARCATA, CA 95521
A.P.N. 021-154-002



Annual Additional Revenue for 29 Apts

\$26,388

Increased Revenue over 15 years

\$395,000

<u>Unit</u>	<u>Housing Authority</u>	<u>PSUA</u>
1 Bed	\$79	\$10.00
2 Bed	\$104	\$12.16

Yolo County PHA Utility Allowance

Allowances for Tenant-Furnished Utilities and Other Services

U.S. Department of Housing and Urban
Development
Office of Public and Indian Housing

HUD Approval No. 237-0109 (4/30/2011)

LOCALITY	UNIT TYPE						DATE
Yolo County Housing	Townhouse						2/25/2010
UTILITY OR SERVICE	MONTHLY DOLLAR ALLOWANCE						
	0-BR	1-BR	2-BR	3-BR	4-BR	5-BR	
HEATING							
a. Natural Gas	\$16	\$19	\$21	\$23	\$26	\$29	
b. Electric	\$21	\$26	\$31	\$35	\$40	\$46	
c. Heat Pump	\$13	\$15	\$18	\$20	\$23	\$27	
AIR CONDITIONING	\$16	\$20	\$26	\$33	\$41	\$48	
COOKING							
a. Natural Gas	\$7	\$7	\$9	\$9	\$10	\$11	
b. Electric	\$12	\$12	\$14	\$15	\$17	\$17	
OTHER ELECTRIC	\$22	\$25	\$29	\$35	\$40	\$49	
WATER HEATING							
a. Natural Gas	\$10	\$14	\$18	\$25	\$33	\$41	
b. Electric	\$12	\$20	\$28	\$44	\$61	\$79	
WATER							
a. City of Woodland	\$29	\$29	\$29	\$29	\$29	\$29	
b. City of Davis	\$15	\$18	\$21	\$26	\$32	\$37	
c. City of Winters	\$37	\$37	\$37	\$37	\$37	\$37	
d. City of W. Sacramento	\$38	\$38	\$38	\$38	\$38	\$38	
SEWER							
a. City of Woodland	\$41	\$41	\$41	\$41	\$41	\$41	
b. City of Davis	\$25	\$30	\$34	\$44	\$53	\$62	
c. City of Winters	\$47	\$47	\$47	\$47	\$47	\$47	
d. City of W. Sacramento	\$9	\$13	\$16	\$23	\$30	\$37	
TRASH COLLECTION (Avg.)	\$25	\$25	\$25	\$25	\$25	\$25	
REFRIGERATOR	\$5	\$5	\$5	\$5	\$5	\$5	
RANGE	\$4	\$4	\$4	\$4	\$4	\$4	
OTHER:	\$0	\$0	\$0	\$0	\$0	\$0	

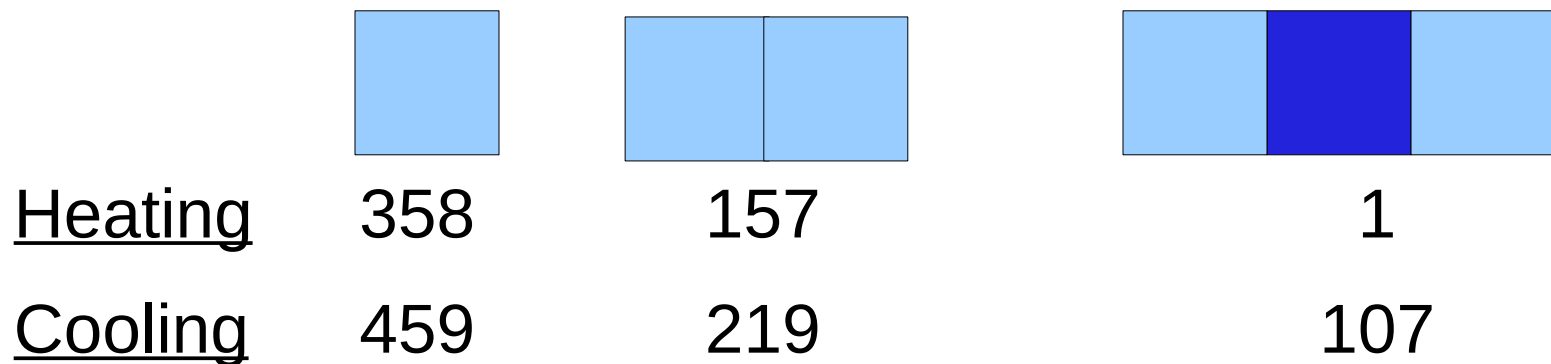
A Net Zero PSUA in Woodland Farmworker Housing

Amount and Size of Units	Monthly Standard Utility Allowance	Annual Revenue from a Net Zero Utility Allowance
35 2 Beds	\$71	\$29,820
35 3 Beds	\$122	\$51,240
30 4 Beds	\$147	\$52,920
	ANNUAL TOTAL	\$133,980

**Value of Utilities Over 15 Years:
\$2,009,700**

The Importance of Massing in Woodland

Shown with Annual Kilowatt/hour Demand



- The developer will spend \$2500 more per apt. for PV to meet the extra HVAC load for no shared walls

How Do You Design for Net Zero?

- Study all the various energy savings measures you can adopt
- Get accurate installation costs from contractors
- Rank the results by cost-effectiveness



Study the Sweet Spot with Insulation

In Arcata, the diminishing returns start after R-5 in the slab, R-19 in the walls and R-30 in the roof.



HVAC Air Source Heat Pumps

- They use 1/3 of the energy of a gas furnace and are the most efficient air conditioners on the market
- They cost as much as a gas wall heater and window-mounted air conditioner



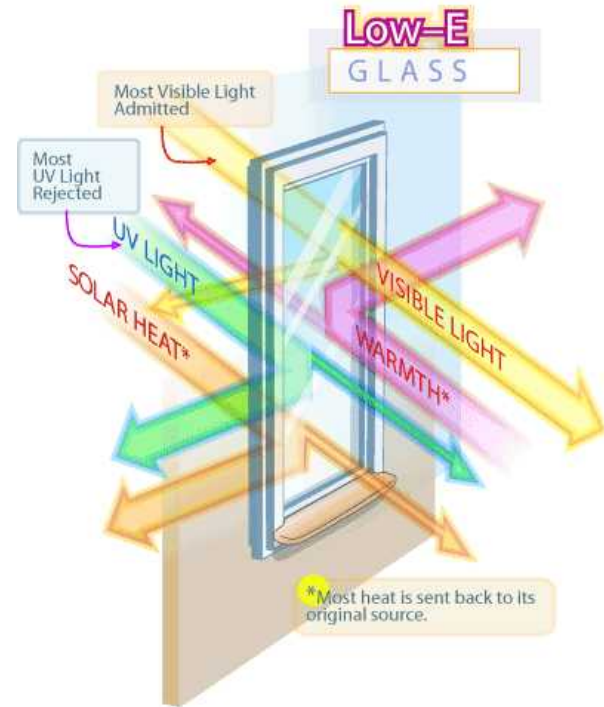
Reduce Hot Water Demand

- Drain Water Heat Recovery
- Air Source Heat Pumps
- Efficient Showerheads



Windows

- Each climate has the right window type for each orientation (N,S,E,W), to let in heat or block it out. Study it.
- The right window is the same price as the wrong window



	Treatment	SHGC	U-Value	Visual Transmission	Cost/Window	T-24 Compliance	kBTU/sq-ft/year
Milgard Styleline	No Grid Glazing	-		No Grid Glazing			
Vinyl Slider 6110 Series	Clr / Clr	0.63	0.49	0.64	\$ 124.00	30.7%	7.52
	Clr/LOF LowE	0.58	0.39	0.62	\$ 130.00	32.4%	6.72

Roofs

- Light roofs for hot summer climates, dark roofs for cool maritime climates
- The right roof and the wrong roof cost the same amount to install



Chilly Arcata



Hot L.A.

Add Solar Thoughtfully...



\$6,900



\$13,000



\$8500



Redwood Energy and Design Management

Sean Armstrong & Micheal Winkler

seanarmstrongpm@gmail.com

707.502.9513