		Standard Design (2008 Title 24)	Proposed Design	% better than Standard	LEED H points	total conditioned floor area
Pasta Factory		27.43	**19.17**	30.1%		16254
Apartment		25.22	**13.24**	47.5%		59895
Townhouses:						
A1 & A2	N	14.51	**11.39**	44.0%		9297
	E	14.37	**11.54**	44.5%		
	S	14.51	**11.4**	44.0%		
	W	14.32	**11.58**	44.7%		
			11.4775	**44.3%**		
B		26.79	**14.48**	45.9%		10011
C1 & C2	N	15.49	**14.5**	48.3%		4057
	E	15.84	**14.16**	47.2%		
	S	15.64	**14.35**	47.9%		
	W	15.75	**14.24**	47.5%		
			14.3125	**47.7%**		
D		35.83	**20.07**	44.0%		2083
E1, E2 & E	N	13.11	**11.79**	47.3%		7941
	E	13.48	**11.43**	45.9%		
	S	13.04	**11.86**	47.6%		
	W	13.56	**11.34**	45.5%		
			11.605	**46.6%**		
F		23.35	**13.19**	48.0%		9043
G		26.82	**14.26**	46.8%		6632
H		23.31	**12.06**	48.2%		15825
I		25.77	**14.97**	41.9%		9978

Tassafaronga Housing, Oakland, CA Job# 20517

Predicted Energy Use Summary Date: 1/20/2015

LEED ID	NAME	Type (RECS)	Address	No. Units	Gross Square Footage	Occupied Square footage (bldg code)	% Area Heated (t24)	% Area Cooled (t24)	Laundry Hookups (Units)	design EUI, Title24 (kbtu/sf-yr)	common area lighting and plug (kWh-yr) see "kWh calcs"	common area lighting and plug (kbtu/sf-yr)	Total EUI*	PV (kbtu/yr)	PV per sf	net EUI*	% below T24-2005	National Median (RECS)	Title 24 equivlant reduction (30%)^	Estimated Equivalent Reduction^	2030 50% Target (Western US)	2030 60% Target (Western US)
PHASE 1																						
5528	Apartment Bldg	5+ unit	930 84th Avenue	60	103,893	98946	59,895	4,041	12.0	13.24	234,570	7.70	20.94	492,829	4.74	16.20	48%	50.0	35.00	18.38	20	16
5523	TH A1	5+ unit	901 84th Avenue	6	9,855	9,386	9,297		6.0	11.48						11.48	44%	50.0	35.00	19.50	20	16
5525	TH A2	5+ unit	925 84th Avenue	6	9,816	9,349	9,297		6.0	11.48						11.48	44%	50.0	35.00	19.50	20	16
5524	TH B	5+ unit	916 83rd Avenue	7	10,582	10,078	10,011		7.0	14.48						14.48	46%	50.0	35.00	18.94	20	16
5530	TH C1	2-4 uni	935 85th Avenue	3	4,296	4,091	4,057		3.0	14.31						14.31	48%	58.0	40.60	21.23	23	19
5526	TH C2	2-4 uni	926 83rd Avenue	3	4,301	4,096	4,057		3.0	14.31						14.31	48%	58.0	40.60	21.23	23	19
5536	TH D	2-4 uni	8310 F Street	2	2,187	2,083	2,083		2.0	20.07						20.07	44%	58.0	40.60	22.74	23	19
5529	TH E1	5+ unit	933 85th Avenue	6	8,370	7,971	7,941		6.0	11.61						11.61	47%	50.0	35.00	18.69	20	16
5527	TH E3	5+ unit	929 85th Avenue	6	8,568	8,160	7,941		6.0	11.61						11.61	47%	50.0	35.00	18.69	20	16
5531	TH E2	5+ unit	946 83rd Avenue	6	8,568	8,160	7,941		6.0	11.61						11.61	47%	50.0	35.00	18.69	20	16
5532	TH F	5+ unit	966 83rd Avenue	7	9,596	9,139	9,043		7.0	13.19						13.19	48%	50.0	35.00	18.20	20	16
PHASE 2																						
5537	Pasta Factory	5+ unit	1001 83rd Avenue	20	24,010	22,867	16,254		3.0	19.17	800,386	7.56	26.73	185,972	7.75	18.98	30%	50.0	35.00	24.47	20	16
5534	TH G	5+ unit	996 82nd Avenue	5	6,993	6,660	6,632		5.0	14.26						14.26	47%	50.0	35.00	18.62	20	16
5533	TH H	5+ unit	975 83rd Avenue	12	16,567	15,930	15,825		12.0	12.06						12.06	48%	50.0	35.00	18.13	20	16
5535	TH I	5+ unit	997 82nd Avenue	8	10,517	10,016	9,978		8.0	14.97						14.97	42%	50.0	35.00	20.34	20	16
			total areas		238,119	226,932	######															
			new		10%																	
			renovation		90%																	
			total GSF w/o garage		81,908																	
			Common area		21,107	20%																

Totals/Averages	Total occupied area	views**	within 15 ft of window**	ability to turn lights off***	design EUI, Title24 (kbtu/sf-yr)	weighting factor	Total EUI*	net EUI	% below T24-2005	% below National Median^
apartment	98946	78%	62%	78%	13.24	0.44	20.94	16.20	48%	63.60
pasta factory	22,867	81%	65%	81%	19.17	0.10	26.73	18.98	30%	51.0%
townhouse average	105,119	70%	70%	70%	13.49	0.46	13.49	13.49	46%	62.2%
total weighted by area	226932	**74%**	**67%**	**74%**			**18.1**	**15.23**	**45%**	**62%**

* excludes residential electric loads

** areas approximated using take-offs from plans

*** no daylight autonomy modeling was done. Numbers reflect areas within 25 ft of a window.

^COTE Top Ten equivalency Title 24-2005 = 30% better than national median

light power density		**apartment**	**pasta**	**total area**		
	watts/sf	area (sf)	area (sf)	area (sf)	weighting factor	
office	1.2	962	1961	2923	0.12	
	1.1	399		399	0.02	
	1	1987	2318	4305	0.17	
service/storage	0.7	2003	928	2931	0.12	
corridor	0.6	13199	1330	14529	0.58	
		18550		25087	**0.75**	wt. avg. lpd

Tassafaronga Housing, Oakland, CA Job# 20-07546

Kilowatt Hour Calculation Date: 3/26/2009

Apartment Building House Loads - Estimated Energy Usage

"1H" House Estimated Energy Usage

Item	Power	Use adjustment	Hours used/day	Energy/Day (KWh)	
TRASH COMPACTOR	3.062	1	1	3.062	KWh
IRRIGATION CONTROLLER	1	1	1	1	KWh
GENERAL OUTLETS	9	0.5	1	4.5	KWh
OFFICE COPIES	1.5	1	1	1.5	KWh
OFFICE OUTLETS	3	1	8	24	KWh
OFFICE LIGHTING	1.6	1	8	12.8	KWh
ACCESS PANEL	1	0.1	24	2.4	KWh
FIRE ALARM PANEL	1	0.1	24	2.4	KWh
RESCUE COMM PANEL	1	0.1	24	2.4	KWh
SECURITY PANEL	1	0.1	24	2.4	KWh
CCTV	1	1	6	6	KWh
DOOR ENTRY CONTROLLER	1	0.1	24	2.4	KWh
ELECTRIC RANGE	8.5	1	1	8.5	KWh
HOOD EXHAUST	0.5	1	1	0.5	KWh
REFRIGERATOR	1	1	6	6	KWh
KITCHEN OUTLET	0.54	0.5	1	0.27	KWh
KITCHEN APPLIANCE	2	1	1	2	KWh
EXTERIOR LIGHTING	6	1	8	48	KWh
GARAGE LIGHTING	8	0.875	24	168	KWh
CORRIDOR LIGHTING	2.3	0.875	24	48.3	KWh
AUTOMATIC DOOR	1	1	4	4	KWh
			TOTAL/DAY	**350.43**	**KWh**

"2H" House Estimated Energy Usage

Item	Power	Use adjustment	Hours used/day	Energy/Day (KWh)	
WASHER & DRYER	15	1	2	30	KWh
IRRIGATION CONTROLLER	1	1	1	1	KWh
GENERAL OUTLETS	5.5	0.5	1	2.75	KWh
GENERAL LIGHTING	2.5	0.875	24	52.5	KWh
SF-3.4 & 5	1	1	24	24	KWh
FC-9 & 10	4	1	8	32	KWh
			TOTAL/DAY	**142.25**	KWh

"3H" House Estimated Energy Usage

Item	Power	Use adjustment	Hours used/day	Energy/Day (KWh)	
WASHER & DRYER	15	1	2	30	KWh
GENERAL OUTLETS	4.5	0.5	1	2.25	KWh
GENERAL LIGHTING	2.5	0.875	24	52.5	KWh
SF-7, 8 & 9	1	1	24	24	KWh
EF-21 & 22	0.5	1	24	12	KWh
			TOTAL/DAY	120.75	KWh

"MH" House Estimated Energy Usage

Item	Power	Use adjustment	Hours used/day	Energy/Day (KWh)	
EF-1 & 2	12	1	8	96	KWh
FC-1 THRU 9	3	1	8	24	KWh
HP-1 THRU 5	10	1	8	80	KWh
BOILERS	7	1	8	56	KWh
SF-1 & 2	0.6	1	24	14.4	KWh
SOLAR CONTROL PANEL	1	0.1	24	2.4	KWh
CA-1 & 2	0.5	1	8	4	KWh
P-1 THRU P-3	9	1	8	72	KWh
			TOTAL/DAY	**348.8**	KWh

Estimated Elevator Energy Usage

Item	Power	Use adjustment	Hours used/day	Energy/Day (KWh)	
ELEVATOR (25HP)	18.675	1	2	37.35	KWh
			TOTAL/DAY	**37.35**	KWh

TOTAL/DAY	999.58	KWh	
TOTAL/MO	29987.46	KWh	
ANNUAL:	359849.5	KWh	
TOTAL/DAY	651.58	KWh	without T24 loads
TOTAL/MO	19547.46	KWh	
ANNUAL:	234569.5	KWh	

Tassafaronga Housing, Oakland, CA Job# 20-07546

Kilowatt Hour Calculation Date: ########

Pasta Factory House Loads - Estimated Energy Usage

"WH" House Estimated Energy Usage

Item	Power	Use adjustment	Hours used/day	Energy/Day (KWh)		
IRRIGATION CONTROLLER	1	1	1	1	KWh	
GENERAL OUTLETS	7	0.5	1	3.5	KWh	
WORKROOM LIGHTING	1.8	1	8	14.4	KWh	
WORKROOM OUTLETS	2	1	8	16	KWh	
CORRIDOR LIGHTING	2.3	0.875	24	48.3	KWh	
ACCESS PANEL	1	0.1	24	2.4	KWh	
FIRE ALARM PANEL	1	0.1	24	2.4	KWh	
CCTV	1	1	5	5	KWh	
SECURITY PANEL	1	0.1	24	2.4	KWh	
WASHER & DRYER	7.5	1	2	15	KWh	
PUMPS	3	1	8	24	KWh	overlap with T24
BOILERS	3	1	8	24	KWh	overlap with T24
			TOTAL/DAY	**158.40**	**KWh**	

Estimated Elevator Energy Usage

Item	Power	Use adjustment	Hours used/day	Energy/Day (KWh)	
ELEVATOR (25HP)	18.675	1	2	37.35	KWh
			TOTAL/DAY	**37.35**	KWh

TOTAL/DA	**195.75**	KWh	
TOTAL/M(	**5872.5**	KWh	
ANNUAL:	**70470**	KWh	
TOTAL/DA	147.75	KWh	without T24 loads
TOTAL/M(	**4432.5**	KWh	
ANNUAL:	**53190**	KWh	

TASSAFARONGA, OAKLAND, CA
20517

LEED FOR HOMES EA CREDIT 10 - Renewable Energy in California

title 24 standard design:

	APT	A1 & A2	B	C1 & C2	D	E1, E2, E3	F	G	H	I	PASTA	
space heating	8.02	8.26	9.21	9.63	10.49	7.39	7.21	8.2	6.73	7.36	6.36	kbtu/sf-yr
space cooling	3.61	3.39	3.45	3.51	3.35	2.85	3.5	3.16	3.08	3.274	4.41	kbtu/sf-yr
DHW	12.47	12.62	12.49	14.31	18.02	13.06	13.02	13.61	12.27	13.62	14.84	kbtu/sf-yr
									GRAND TOTAL		276.774	kbtu/sf-yr
conditioned f.a.	59895	9297	10011	4057	2083	7,941	9043	6632	15825	9978	16254	
									GRAND TOTAL		**151016**	**sf**

276.774 kbtu/sf-yr	*	151016 sf	41,797,302 kbtu/yr	
41797302.38 kbtu/yr	*1000 btu/kbtu	*1kwh/3413btu	12,246,499 kwh/yr	space heating, cooling & DHW

lighting & appliances

		3,940					
5.273	151,016	796,307					
-568.7	100%	-569					
-151,016	100%	-151,016					
		648,663	*	0.519	=	336,656 kwh/yr	lighting & appliances

ANNUAL ELECTRIC CONSUMPTION IN TITLE 24 STANDARD DESIGN HOME	**12,583,155**	**kwh/yr**

ANNUAL ELECTRICITY SUPPLIED BY PV SYSTEM - Apartment	144,434	kwh/yr	42318.78
ANNUAL ELECTRICITY SUPPLIED BY PV SYSTEM - pasta factory	54,503	kwh/yr	15969.24
TOTAL ANNUAL ELECTRICITY SUPPLIED BY PV	**198,937**	**kwh/yr**	

PERCENT ANNUAL ELECTRIC LOAD SUPPLIED BY PV SYSTEM	2%	
LEED POINTS, UNDER EA 1	**2% %/5**	**0 points**

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga A1 & A2
Project Title

4/16/2009
Date

Oakland
Project Address

Building Permit #

Energy Calc Co. (415)457-0990
Documentation Author **Telephone**

Plan Check/Date

EnergyPro CA Climate Zone 03
Compliance Method **Climate Zone**

Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Facing North	Margin	Facing East	Margin	Facing South	Margin	Facing West	Margin
Space Heating	8.26	3.91	4.36	3.96	4.30	3.97	4.30	3.93	4.33
Space Cooling	3.39	0.84	2.55	0.66	2.73	0.78	2.61	0.65	2.73
Fans	0.98	0.15	0.84	0.12	0.87	0.14	0.85	0.11	0.87
Domestic Hot Water	12.62	8.98	3.64	8.98	3.64	8.98	3.64	8.98	3.64
Pumps	0.65	0.65	0.00	0.65	0.00	0.65	0.00	0.65	0.00
Totals	25.90	14.51	11.39	14.37	11.54	14.51	11.40	14.32	11.58
Percent better than Standard:			44.0%		44.5%		44.0%		44.7%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: All Four Orientations

Fuel Type: Natural Gas

Fenestration:

Area: 1,966 ft² **Avg. U:** 0.40

Ratio: 21.1% **Avg. SHGC:** 0.39

Total Conditioned Floor Area: 9,297 ft²

Existing Floor Area: n/a ft²

Raised Floor Area: 30 ft²

Slab on Grade Area: 3,678 ft²

Average Ceiling Height: 8.0 ft

Number of Dwelling Units: 6.00

Number of Stories: 3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	9,297	74,376	6.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Act. Tilt	Gains Y	Gains N		JA IV Reference	Location / Comments
Roof	Wood	3,708	0.032	R-30	R-0.0	0	0	X		New	01-A7	Building
Wall	Wood	1,529	0.074	R-19	R-0.0	0	90	X		New	09-A5	Building
Wall	Wood	1,523	0.074	R-19	R-0.0	90	90	X		New	09-A5	Building
Wall	Wood	1,493	0.074	R-19	R-0.0	180	90	X		New	09-A5	Building
Wall	Wood	1,521	0.074	R-19	R-0.0	270	90	X		New	09-A5	Building
Floor	Wood	30	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga A1 & A2 — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(N)	287.0	0.390	NFRC	0.37	NFRC	0	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(N)	72.0	0.580	116-A	0.65	116-B	0	90	New	Double Non Metal Clear	Building
3	Window	Left	(E)	605.0	0.390	NFRC	0.37	NFRC	90	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Rear	(S)	323.0	0.390	NFRC	0.37	NFRC	180	90	New	Milgard Classic Low-E Vinyl	Building
5	Window	Rear	(S)	72.0	0.580	116-A	0.65	116-B	180	90	New	Double Non Metal Clear	Building
6	Window	Right	(W)	607.0	0.390	NFRC	0.37	NFRC	270	90	New	Milgard Classic Low-E Vinyl	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	348	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga A1 & A2 — **Project Title**

4/16/2009 — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(3) 199K Boilers w/375 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(3) 199K Boilers w/375 Gal S.T.	Large Gas	Central System	1	597,000	375	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
Address: 461 Second St., Loft 127
San Francisco, CA 94107
Telephone: (415) 896-6700 Lic. #:

(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Run Initiation Time: 04/16/09 08:36:37 **Run Code: 1239896197**

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga A1 & A2 — **Project Title**

4/16/2009 — **Date**

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Compliance using the Four Cardinal Orientation approach has been used. Project can be built in any Orientation.		
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(3) 199K Boilers w/375 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(3) 199K Boilers w/375 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 3652 and 11929 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 3652 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga A1 & A2	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	125	1	36	37	0	16	88	1	19
Feb	92	11	28	33	0	15	59	11	13
Mar	80	7	26	37	0	16	43	7	10
Apr	133	13	37	59	9	21	74	4	16
May	318	17	78	143	12	39	175	5	39
Jun	202	19	52	86	11	27	116	8	26
Jul	105	12	31	47	7	18	57	4	13
Aug	68	10	23	37	0	16	31	10	7
Sep	389	21	94	101	10	30	289	11	64
Oct	337	19	82	100	11	30	237	9	52
Nov	121	12	35	38	2	16	83	10	18
Dec	118	1	34	37	0	16	81	1	18
Year	**2,088**	**21**	**$ 555**	**754**	**12**	**$ 262**	**1,334**	**9**	**$ 294**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	332	269	270	192	172	156	140	97	114
Feb	220	222	178	128	148	104	91	74	74
Mar	187	198	152	111	138	90	76	60	62
Apr	138	162	112	85	98	69	53	63	43
May	131	194	106	82	129	67	49	64	40
Jun	108	177	88	73	128	59	35	49	28
Jul	101	30	82	71	17	58	30	13	24
Aug	100	29	81	70	17	57	29	13	24
Sep	96	29	78	67	17	55	28	12	23
Oct	113	147	92	75	101	61	38	46	31
Nov	182	217	148	107	147	87	75	70	61
Dec	313	240	255	186	158	151	128	82	104
Year	**2,019**	**269**	**$ 1,642**	**1,247**	**172**	**$ 1,014**	**772**	**97**	**$ 628**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	754 kWh	12 kW	$ 262	$ 0.03/sqft	$ 0.35/kWh
Natural Gas	1,247 therms	172 kBtu/hr	$ 1,014	$ 0.11/sqft	$ 0.81/therm
		Total	$ 1,276	$ 0.14/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga Apartments
Project Title

4/16/2009
Date

Oakland
Project Address

Building Permit #

Energy Calc Co. (415)457-0990
Documentation Author **Telephone**

Plan Check/Date

EnergyPro CA Climate Zone 03
Compliance Method **Climate Zone**

Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	8.02	6.45	1.57
Space Cooling	3.61	0.54	3.07
Fans	0.95	0.10	0.85
Domestic Hot Water	12.47	5.98	6.49
Pumps	0.17	0.17	0.00
Totals	25.22	13.24	11.98
Percent better than Standard:			47.5%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (NW) 327 deg

Fuel Type: Natural Gas

Fenestration:

Area: 10,003 ft² **Avg. U:** 0.46

Ratio: 16.7% **Avg. SHGC:** 0.43

Total Conditioned Floor Area: 59,895 ft²

Existing Floor Area: n/a ft²

Raised Floor Area: 13,111 ft²

Slab on Grade Area: 13,718 ft²

Average Ceiling Height: 9.7 ft

Number of Dwelling Units: 60.00

Number of Stories: 3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
HP1	1,454	31,988	1.46	Conditioned	Setback	8	n/a
HP2	1,438	31,636	1.44	Conditioned	Setback	8	n/a
HP3	669	7,359	0.67	Conditioned	Setback	8	n/a
HP4	480	5,280	0.48	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Act. Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	1,176	0.036	R-30	R-0.0	0	0	X		New	02-A9	139 Community Room
Wall	None	365	0.820	None	R-0.0	0	90	X		New	13-D5	139 Community Room
Wall	Wood	351	0.074	R-19	R-0.0	0	90	X		New	09-A5	139 Community Room
Wall	Wood	467	0.074	R-19	R-0.0	330	90	X		New	09-A5	139 Community Room
Wall	Wood	299	0.074	R-19	R-0.0	270	90	X		New	09-A5	139 Community Room
Roof	Wood	1,184	0.036	R-30	R-0.0	0	0	X		New	02-A9	136/37 Rcptn/Lobby
Wall	Wood	216	0.102	R-13	R-0.0	0	90	X		New	09-A3	136/37 Rcptn/Lobby
Wall	None	800	0.820	None	R-0.0	0	90	X		New	13-D5	136/37 Rcptn/Lobby
Wall	Wood	1,096	0.074	R-19	R-0.0	330	90	X		New	09-A5	136/37 Rcptn/Lobby
Wall	Wood	95	0.074	R-19	R-0.0	240	90	X		New	09-A5	136/37 Rcptn/Lobby
Roof	Wood	480	0.036	R-30	R-0.0	0	0	X		New	02-A9	Conf Rm/AsstMgr/Mgr
Wall	Wood	110	0.074	R-19	R-0.0	320	90	X		New	09-A5	Conf Rm/AsstMgr/Mgr
Wall	Wood	208	0.074	R-19	R-0.0	330	90	X		New	09-A5	Conf Rm/AsstMgr/Mgr
Wall	Wood	56	0.074	R-19	R-0.0	60	90	X		New	09-A5	Conf Rm/AsstMgr/Mgr
Wall	Wood	48	0.074	R-19	R-0.0	240	90	X		New	09-A5	Conf Rm/AsstMgr/Mgr
Roof	Wood	552	0.036	R-30	R-0.0	0	0	X		New	02-A9	Lounge
Wall	Wood	420	0.102	R-13	R-0.0	0	90	X		New	09-A3	Lounge
Wall	Wood	167	0.074	R-19	R-0.0	330	90	X		New	09-A5	Lounge
Wall	Wood	50	0.074	R-19	R-0.0	60	90	X		New	09-A5	Lounge
Wall	Wood	205	0.074	R-19	R-0.0	240	90	X		New	09-A5	Lounge
Wall	Wood	3,202	0.102	R-13	R-0.0	0	90	X		New	09-A3	1st Floor Res. Units
Door	None	200	1.450	None	R-0.0	0	90	X		New	28-A1	1st Floor Res. Units
Wall	Wood	754	0.074	R-19	R-0.0	327	90	X		New	09-A5	1st Floor Res. Units
Wall	Wood	1,365	0.074	R-19	R-0.0	57	90	X		New	09-A5	1st Floor Res. Units
Wall	Wood	1,267	0.074	R-19	R-0.0	147	90	X		New	09-A5	1st Floor Res. Units

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga Apartments **Project Title**	4/16/2009 **Date**
Oakland **Project Address**	**Building Permit #**
Energy Calc Co. **Documentation Author**	(415)457-0990 **Telephone**
EnergyPro **Compliance Method**	CA Climate Zone 03 **Climate Zone**
	Plan Check/Date
	Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	8.02	6.45	1.57
Space Cooling	3.61	0.54	3.07
Fans	0.95	0.10	0.85
Domestic Hot Water	12.47	5.98	6.49
Pumps	0.17	0.17	0.00
Totals	25.22	13.24	11.98
Percent better than Standard:			47.5%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (NW) 327 deg

Fuel Type: Natural Gas

Fenestration:

Area: 10,003 ft² **Avg. U:** 0.46

Ratio: 16.7% **Avg. SHGC:** 0.43

Total Conditioned Floor Area:	59,895 ft²
Existing Floor Area:	n/a ft²
Raised Floor Area:	13,111 ft²
Slab on Grade Area:	13,718 ft²
Average Ceiling Height:	9.7 ft
Number of Dwelling Units:	60.00
Number of Stories:	3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
HP5	552	5,520	0.55	Conditioned	Setback	8	n/a
Hydronic Baseboard	55,302	497,718	55.40	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Wall	Wood	321	0.074	R-19	R-0.0	237	90	X		New	09-A5	1st Floor Res. Units
Wall	Wood	6,430	0.102	R-13	R-0.0	0	90	X		New	09-A3	2nd Floor Res. Units
Door	None	500	1.450	None	R-0.0	0	90	X		New	28-A1	2nd Floor Res. Units
Wall	Wood	1,937	0.074	R-19	R-0.0	327	90	X		New	09-A5	2nd Floor Res. Units
Wall	Wood	2,237	0.074	R-19	R-0.0	57	90	X		New	09-A5	2nd Floor Res. Units
Wall	Wood	2,019	0.074	R-19	R-0.0	147	90	X		New	09-A5	2nd Floor Res. Units
Wall	Wood	2,132	0.074	R-19	R-0.0	237	90	X		New	09-A5	2nd Floor Res. Units
Floor	None	13,111	0.315	None	R-0.0	0	180		X	New	25-A1	2nd Floor Res. Units
Roof	Wood	22,837	0.032	R-30	R-0.0	327	0	X		New	01-A7	3rd Floor Res. Units
Wall	Wood	6,430	0.102	R-13	R-0.0	0	90	X		New	09-A3	3rd Floor Res. Units
Door	None	500	1.450	None	R-0.0	0	90	X		New	28-A1	3rd Floor Res. Units
Wall	Wood	1,923	0.074	R-19	R-0.0	327	90	X		New	09-A5	3rd Floor Res. Units
Wall	Wood	2,210	0.074	R-19	R-0.0	57	90	X		New	09-A5	3rd Floor Res. Units
Wall	Wood	2,030	0.074	R-19	R-0.0	147	90	X		New	09-A5	3rd Floor Res. Units
Wall	Wood	2,165	0.074	R-19	R-0.0	237	90	X		New	09-A5	3rd Floor Res. Units

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga Apartments — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(N)	120.0	1.280	116-A	0.80	116-B	0	90	New	Single Metal Clear	139 Community Room
2	Window	Front	(N)	49.0	0.390	NFRC	0.37	NFRC	0	90	New	Milgard Classic Low-E Vinyl	139 Community Room
3	Window	Front	(NW)	60.0	0.390	NFRC	0.37	NFRC	330	90	New	Milgard Classic Low-E Vinyl	139 Community Room
4	Window	Front	(NW)	128.0	1.280	116-A	0.80	116-B	330	90	New	Single Metal Clear	139 Community Room
5	Window	Right	(W)	61.0	0.390	NFRC	0.37	NFRC	270	90	New	Milgard Classic Low-E Vinyl	139 Community Room
6	Window	Front	(NW)	104.0	0.390	NFRC	0.37	NFRC	330	90	New	Milgard Classic Low-E Vinyl	136/37 Rcptn/Lobby
7	Window	Right	(SW)	85.0	1.250	116-A	0.80	116-B	240	90	New	Single Metal	136/37 Rcptn/Lobby
8	Window	Front	(NW)	102.0	1.280	116-A	0.80	116-B	320	90	New	Single Metal Clear	Conf Rm/AsstMgr/Mgr
9	Window	Front	(NW)	68.0	0.390	NFRC	0.37	NFRC	330	90	New	Milgard Classic Low-E Vinyl	Conf Rm/AsstMgr/Mgr
10	Window	Left	(NE)	4.0	0.390	NFRC	0.37	NFRC	60	90	New	Milgard Classic Low-E Vinyl	Conf Rm/AsstMgr/Mgr
11	Window	Front	(NW)	63.0	0.390	NFRC	0.37	NFRC	330	90	New	Milgard Classic Low-E Vinyl	Lounge
12	Window	Right	(SW)	35.0	0.390	NFRC	0.37	NFRC	240	90	New	Milgard Classic Low-E Vinyl	Lounge
13	Window	Front	(NW)	194.0	0.390	NFRC	0.37	NFRC	327	90	New	Milgard Classic Low-E Vinyl	1st Floor Res. Units
14	Window	Front	(NW)	24.0	0.580	116-A	0.65	116-B	327	90	New	Double Non Metal Clear	1st Floor Res. Units
15	Window	Left	(NE)	579.0	0.390	NFRC	0.37	NFRC	57	90	New	Milgard Classic Low-E Vinyl	1st Floor Res. Units
16	Window	Left	(NE)	72.0	0.580	116-A	0.65	116-B	57	90	New	Double Non Metal Clear	1st Floor Res. Units
17	Window	Rear	(SE)	689.0	0.390	NFRC	0.37	NFRC	147	90	New	Milgard Classic Low-E Vinyl	1st Floor Res. Units
18	Window	Rear	(SE)	96.0	0.580	116-A	0.65	116-B	147	90	New	Double Non Metal Clear	1st Floor Res. Units
19	Window	Right	(SW)	99.0	0.390	NFRC	0.37	NFRC	237	90	New	Milgard Classic Low-E Vinyl	1st Floor Res. Units

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												
7	Bug Screen	0.76	0.0	0.0					0.0	0.0	0	0.0	0.0	0
8	Bug Screen	0.76												
9	Bug Screen	0.76												
10	Bug Screen	0.76												
11	Bug Screen	0.76												
12	Bug Screen	0.76												
13	Bug Screen	0.76												
14	Bug Screen	0.76												
15	Bug Screen	0.76												
16	Bug Screen	0.76												
17	Bug Screen	0.76												
18	Bug Screen	0.76												
19	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments
Concrete, Heavyweight	13,111	6.00	28	0.98	2	25-A1	New	2nd Floor Res. Units / Exterior Mass

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	75	None	No Insulation	26-A1	New	139 Community Room
Slab Perimeter	92	None	No Insulation	26-A1	New	136/37 Rcptn/Lobby
Slab Perimeter	1	None	No Insulation	26-A1	New	Off133/SC/RR's
Slab Perimeter	42	None	No Insulation	26-A1	New	Conf Rm/AsstMgr/Mgr
Slab Perimeter	612	None	No Insulation	26-A1	New	1st Floor Res. Units

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga Apartments — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
20	Window	Right	(SW)	48.0	0.580	116-A	0.65	116-B	237	90	New	Double Non Metal Clear	1st Floor Res. Units
21	Window	Front	(NW)	571.0	0.390	NFRC	0.37	NFRC	327	90	New	Milgard Classic Low-E Vinyl	2nd Floor Res. Units
22	Window	Front	(NW)	192.0	0.580	116-A	0.65	116-B	327	90	New	Double Non Metal Clear	2nd Floor Res. Units
23	Window	Left	(NE)	775.0	0.390	NFRC	0.37	NFRC	57	90	New	Milgard Classic Low-E Vinyl	2nd Floor Res. Units
24	Window	Left	(NE)	120.0	0.580	116-A	0.65	116-B	57	90	New	Double Non Metal Clear	2nd Floor Res. Units
25	Window	Rear	(SE)	795.0	0.390	NFRC	0.37	NFRC	147	90	New	Milgard Classic Low-E Vinyl	2nd Floor Res. Units
26	Window	Rear	(SE)	192.0	0.580	116-A	0.65	116-B	147	90	New	Double Non Metal Clear	2nd Floor Res. Units
27	Window	Right	(SW)	922.0	0.390	NFRC	0.37	NFRC	237	90	New	Milgard Classic Low-E Vinyl	2nd Floor Res. Units
28	Window	Right	(SW)	96.0	0.580	116-A	0.65	116-B	237	90	New	Double Non Metal Clear	2nd Floor Res. Units
29	Window	Front	(NW)	657.0	0.390	NFRC	0.37	NFRC	327	90	New	Milgard Classic Low-E Vinyl	3rd Floor Res. Units
30	Window	Front	(NW)	120.0	0.580	116-A	0.65	116-B	327	90	New	Double Non Metal Clear	3rd Floor Res. Units
31	Window	Left	(NE)	850.0	0.390	NFRC	0.37	NFRC	57	90	New	Milgard Classic Low-E Vinyl	3rd Floor Res. Units
32	Window	Left	(NE)	72.0	0.580	116-A	0.65	116-B	57	90	New	Double Non Metal Clear	3rd Floor Res. Units
33	Window	Rear	(SE)	832.0	0.390	NFRC	0.37	NFRC	147	90	New	Milgard Classic Low-E Vinyl	3rd Floor Res. Units
34	Window	Rear	(SE)	144.0	0.580	116-A	0.65	116-B	147	90	New	Double Non Metal Clear	3rd Floor Res. Units
35	Window	Right	(SW)	721.0	0.390	NFRC	0.37	NFRC	237	90	New	Milgard Classic Low-E Vinyl	3rd Floor Res. Units
36	Window	Right	(SW)	264.0	0.580	116-A	0.65	116-B	237	90	New	Double Non Metal Clear	3rd Floor Res. Units

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
20	Bug Screen	0.76												
21	Bug Screen	0.76												
22	Bug Screen	0.76												
23	Bug Screen	0.76												
24	Bug Screen	0.76												
25	Bug Screen	0.76												
26	Bug Screen	0.76												
27	Bug Screen	0.76												
28	Bug Screen	0.76												
29	Bug Screen	0.76												
30	Bug Screen	0.76												
31	Bug Screen	0.76												
32	Bug Screen	0.76												
33	Bug Screen	0.76												
34	Bug Screen	0.76												
35	Bug Screen	0.76												
36	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga Apartments — 4/16/2009
Project Title — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
HP1	Split Heat Pump	8.80 HSPF	Split Heat Pump	14.0 SEER	New	Setback
HP2	Split Heat Pump	6.70 HSPF	Split Heat Pump	13.0 SEER	New	Setback
HP3	Split Heat Pump	6.70 HSPF	Split Heat Pump	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
HP1	Ducted	Ducted	Attic	4.2	New	Yes
HP2	Ducted	Ducted	Attic	4.2	New	Yes
HP3	Ducted	Ducted	Attic	4.2	New	Yes

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(2) 3200K Boilers w/440 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(2) 3200K Boilers w/440 Gal S.T.	Large Gas	Central System	1	3,200,000	440	New	0.90	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.1	Standard	0	50	0	No

REMARKS

Non residential areas total square footage is less than 10% of the building total. By code this makes the non residential area a minority occupancy which may be modeled
with the majority occupancy (multi family lowrise residential).

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
Address: 461 Second St., Loft 127
San Francisco, CA 94107
Telephone: (415) 896-6700 Lic. #:

(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga Apartments — 4/16/2009
Project Title — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
HP4	Split Heat Pump	6.70 HSPF	Split Heat Pump	13.0 SEER	New	Setback
HP5	Combined Hydronic	see below	Split Heat Pump	13.0 SEER	New	Setback
Hydronic Baseboard	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
HP4	Ducted	Ducted	Attic	4.2	New	Yes
HP5	Ducted	Ducted	Attic	4.2	New	Yes
Hydronic Baseboard	Baseboard	Ducted	Attic	6.0	New	Yes

Hydronic Piping System Name	Pipe Length	Pipe Diameter	Insul. Thick.

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.

Multi-Family Central Water Heating Details

Control	Hot Water Pump #	Hot Water Pump HP	Hot Water Pump Type	Hot Water Piping Length (ft) In Plenum	Hot Water Piping Length (ft) Outside	Hot Water Piping Length (ft) Buried	Add 1/2" Insulation

REMARKS

Non residential areas total square footage is less than 10% of the building total. By code this makes the non residential area a minority occupancy which may be modeled
with the majority occupancy (multi family lowrise residential).

COMPLIANCE STATEMENT

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Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
Address: 461 Second St., Loft 127
San Francisco, CA 94107
Telephone: (415) 896-6700 Lic. #:

(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Run Initiation Time: 04/16/09 10:41:35 **Run Code: 1239903695**

Tassafaronga Apartments — 4/16/2009

Project Title — **Date**

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(2) 3200K Boilers w/440 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(2) 3200K Boilers w/440 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
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operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		
The HVAC System "HP5" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
The HVAC System "HP1" incorporates HERS verified Duct Leakage. Target leakage is calculated and documented on the CF-4R.		
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 571 and 1866 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 571 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		
The HVAC System "HP2" incorporates HERS verified Duct Leakage. Target leakage is calculated and documented on the CF-4R.		
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 565 and 1845 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 565 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		
The HVAC System "HP3" incorporates HERS verified Duct Leakage. Target leakage is calculated and documented on the CF-4R.		
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 263 and 858 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 263 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		
The HVAC System "HP4" incorporates HERS verified Duct Leakage. Target leakage is calculated and documented on the CF-4R.		
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga Apartments — 4/16/2009
Project Title — **Date**

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		
The HVAC System "Hydronic Baseboard" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has tight construction with reduced infiltration and a target blower door test range between 189 and 616 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 189 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		
The HVAC System "HP5" incorporates HERS verified Duct Leakage. Target leakage is calculated and documented on the CF-4R.		
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 217 and 708 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 217 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		
The HVAC System "Hydronic Baseboard" incorporates HERS verified Duct Leakage. Target leakage is calculated and documented on the CF-4R.		
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 21721 and 70956 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 21721 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga Apartments	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	2,211	19	495	3,558	16	791	-1,347	3	-296
Feb	1,397	66	316	2,492	14	556	-1,095	52	-241
Mar	1,048	42	239	2,228	11	498	-1,180	31	-260
Apr	1,098	78	250	1,786	34	401	-688	44	-151
May	2,194	104	491	1,683	59	378	511	44	112
Jun	1,393	119	315	596	65	139	796	54	175
Jul	578	74	135	89	4	28	489	70	108
Aug	415	65	99	83	1	26	333	64	73
Sep	2,398	134	536	359	54	87	2,039	80	449
Oct	2,089	115	468	875	63	201	1,214	51	267
Nov	1,311	68	297	2,104	14	471	-792	54	-174
Dec	2,137	21	478	3,700	41	822	-1,563	-19	-344
Year	**18,270**	**134**	**$ 4,117**	**19,553**	**65**	**$ 4,399**	**-1,283**	**68**	**$ -282**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	1,859	1,560	1,511	952	1,049	774	907	512	737
Feb	1,246	1,312	1,013	585	910	476	662	402	538
Mar	1,112	1,205	904	491	864	399	621	341	505
Apr	844	1,007	686	362	359	295	482	648	392
May	811	1,185	659	345	739	281	465	446	378
Jun	680	1,054	553	321	807	261	359	246	292
Jul	645	212	524	309	97	251	336	114	273
Aug	636	209	517	305	96	248	331	113	269
Sep	614	208	499	294	96	239	320	113	260
Oct	701	834	570	320	409	260	382	424	310
Nov	1,059	1,301	861	462	911	376	597	390	485
Dec	1,782	1,434	1,449	920	984	748	861	450	700
Year	**11,990**	**1,560**	**$ 9,746**	**5,666**	**1,049**	**$ 4,606**	**6,324**	**512**	**$ 5,140**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	19,553 kWh	65 kW	$ 4,399	$ 0.07/sqft	$ 0.22/kWh
Natural Gas	5,666 therms	1,049 kBtu/hr	$ 4,606	$ 0.08/sqft	$ 0.81/therm
		Total	$ 9,005	$ 0.15/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga B **Project Title**	4/16/2009 **Date**
Oakland **Project Address**	**Building Permit #**
Energy Calc Co. **Documentation Author**	(415)457-0990 **Telephone**
	Plan Check/Date
EnergyPro **Compliance Method**	CA Climate Zone 03 **Climate Zone**
	Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	9.21	4.21	5.00
Space Cooling	3.45	0.77	2.68
Fans	1.04	0.14	0.90
Domestic Hot Water	12.49	8.77	3.73
Pumps	0.60	0.60	0.00
Totals	26.79	14.48	12.30
Percent better than Standard:			45.9%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (SE) 147 deg

Fuel Type: Natural Gas

Fenestration:

Area: 2,069 ft² **Avg. U:** 0.41

Ratio: 20.7% **Avg. SHGC:** 0.40

Total Conditioned Floor Area:	10,011 ft²
Existing Floor Area:	n/a ft²
Raised Floor Area:	126 ft²
Slab on Grade Area:	3,825 ft²
Average Ceiling Height:	8.0 ft
Number of Dwelling Units:	7.00
Number of Stories:	3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	10,011	80,088	7.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	3,951	0.032	R-30	R-0.0	147	0	X		New	01-A7	Building
Wall	Wood	1,801	0.074	R-19	R-0.0	147	90	X		New	09-A5	Building
Wall	Wood	1,921	0.074	R-19	R-0.0	237	90	X		New	09-A5	Building
Wall	Wood	1,848	0.074	R-19	R-0.0	327	90	X		New	09-A5	Building
Wall	Wood	2,009	0.074	R-19	R-0.0	57	90	X		New	09-A5	Building
Floor	Wood	126	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga B — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(SE)	615.0	0.390	NFRC	0.37	NFRC	147	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(SE)	48.0	0.580	116-A	0.65	116-B	147	90	New	Double Non Metal Clear	Building
3	Window	Left	(SW)	391.0	0.390	NFRC	0.37	NFRC	237	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Left	(SW)	48.0	0.580	116-A	0.65	116-B	237	90	New	Double Non Metal Clear	Building
5	Window	Rear	(NW)	568.0	0.390	NFRC	0.37	NFRC	327	90	New	Milgard Classic Low-E Vinyl	Building
6	Window	Rear	(NW)	48.0	0.580	116-A	0.65	116-B	327	90	New	Double Non Metal Clear	Building
7	Window	Right	(NE)	303.0	0.390	NFRC	0.37	NFRC	57	90	New	Milgard Classic Low-E Vinyl	Building
8	Window	Right	(NE)	48.0	0.580	116-A	0.65	116-B	57	90	New	Double Non Metal Clear	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												
7	Bug Screen	0.76												
8	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	428	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga B — 4/16/2009
Project Title — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(3) 140K Boilers w/375 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(3) 140K Boilers w/375 Gal S.T.	Large Gas	Central System	1	420,000	375	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
Address: 461 Second St., Loft 127
San Francisco, CA 94107
Telephone: (415) 896-6700 Lic. #:

(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga B
Project Title

4/16/2009
Date

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(3) 140K Boilers w/375 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(3) 140K Boilers w/375 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 3932 and 12845 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 3932 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga B	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	140	1	39	37	0	16	103	1	23
Feb	102	12	30	33	0	15	69	12	15
Mar	89	8	28	37	0	16	52	8	11
Apr	145	14	40	52	7	20	92	7	20
May	347	18	84	140	12	39	207	7	46
Jun	213	21	55	86	13	27	127	8	28
Jul	112	13	33	48	9	18	64	4	14
Aug	71	11	24	37	0	16	34	11	8
Sep	425	24	101	98	10	30	327	13	72
Oct	366	22	89	104	14	31	262	8	58
Nov	139	12	39	40	5	17	99	7	22
Dec	132	1	37	37	0	16	95	1	21
Year	**2,282**	**24**	**$ 598**	**750**	**14**	**$ 261**	**1,532**	**10**	**$ 337**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	376	294	306	211	186	172	165	108	134
Feb	249	243	203	142	161	115	108	82	87
Mar	213	216	173	124	150	101	89	67	72
Apr	157	193	128	93	130	76	64	63	52
May	147	212	119	89	140	73	57	71	47
Jun	117	193	95	78	138	63	39	55	32
Jul	108	32	87	75	18	61	33	14	27
Aug	106	32	86	74	18	60	32	14	26
Sep	102	32	83	71	18	58	31	14	25
Oct	123	164	100	79	119	64	44	45	36
Nov	206	236	167	115	159	94	91	78	74
Dec	355	263	289	202	172	164	154	91	125
Year	**2,259**	**294**	**$ 1,836**	**1,353**	**186**	**$ 1,100**	**906**	**108**	**$ 736**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	750 kWh	14 kW	$ 261	$ 0.03/sqft	$ 0.35/kWh
Natural Gas	1,353 therms	186 kBtu/hr	$ 1,100	$ 0.11/sqft	$ 0.81/therm
		Total	$ 1,361	$ 0.14/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga C1 & C2
Project Title

4/16/2009
Date

Oakland
Project Address

Building Permit #

Energy Calc Co. (415)457-0990
Documentation Author **Telephone**

Plan Check/Date

EnergyPro CA Climate Zone 03
Compliance Method **Climate Zone**

Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Facing North	Margin	Facing East	Margin	Facing South	Margin	Facing West	Margin
Space Heating	9.63	4.44	5.19	4.33	5.29	4.61	5.02	4.68	4.95
Space Cooling	3.51	1.01	2.50	1.39	2.12	0.99	2.52	1.03	2.48
Fans	1.07	0.18	0.89	0.25	0.82	0.17	0.89	0.18	0.89
Domestic Hot Water	14.31	8.39	5.92	8.39	5.92	8.39	5.92	8.39	5.92
Pumps	1.48	1.48	0.00	1.48	0.00	1.48	0.00	1.48	0.00
Totals	29.99	15.49	14.50	15.84	14.16	15.64	14.35	15.75	14.24
Percent better than Standard:			48.3%		47.2%		47.9%		47.5%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: All Four Orientations

Fuel Type: Natural Gas

Fenestration:

Area: 930 ft²

Avg. U: 0.41

Ratio: 22.9%

Avg. SHGC: 0.40

Total Conditioned Floor Area: 4,057 ft²

Existing Floor Area: n/a ft²

Raised Floor Area: 48 ft²

Slab on Grade Area: 1,632 ft²

Average Ceiling Height: 8.0 ft

Number of Dwelling Units: 3.00

Number of Stories: 3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	4,057	32,456	3.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Act. Tilt	Gains Y	Gains N		JA IV Reference	Location / Comments
Roof	Wood	1,680	0.032	R-30	R-0.0	0	0	X		New	01-A7	Building
Wall	Wood	769	0.074	R-19	R-0.0	0	90	X		New	09-A5	Building
Wall	Wood	816	0.074	R-19	R-0.0	90	90	X		New	09-A5	Building
Wall	Wood	770	0.074	R-19	R-0.0	180	90	X		New	09-A5	Building
Wall	Wood	907	0.074	R-19	R-0.0	270	90	X		New	09-A5	Building
Floor	Wood	48	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga C1 & C2 — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(N)	263.0	0.390	NFRC	0.37	NFRC	0	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(N)	24.0	0.580	116-A	0.65	116-B	0	90	New	Double Non Metal Clear	Building
3	Window	Left	(E)	200.0	0.390	NFRC	0.37	NFRC	90	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Left	(E)	24.0	0.580	116-A	0.65	116-B	90	90	New	Double Non Metal Clear	Building
5	Window	Rear	(S)	262.0	0.390	NFRC	0.37	NFRC	180	90	New	Milgard Classic Low-E Vinyl	Building
6	Window	Rear	(S)	24.0	0.580	116-A	0.65	116-B	180	90	New	Double Non Metal Clear	Building
7	Window	Right	(W)	109.0	0.390	NFRC	0.37	NFRC	270	90	New	Milgard Classic Low-E Vinyl	Building
8	Window	Right	(W)	24.0	0.580	116-A	0.65	116-B	270	90	New	Double Non Metal Clear	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												
7	Bug Screen	0.76												
8	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	168	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga C1 & C2 — **Project Title**

4/16/2009 — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(2) 140K Boilers w/120 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(2) 140K Boilers w/120 Gal S.T.	Large Gas	Central System	1	280,000	120	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
Address: 461 Second St., Loft 127
San Francisco, CA 94107
Telephone: (415) 896-6700 Lic. #:

(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Run Initiation Time: 04/16/09 10:30:58 **Run Code: 1239903058**

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga C1 & C2 — **Project Title**

4/16/2009 — **Date**

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Compliance using the Four Cardinal Orientation approach has been used. Project can be built in any Orientation.		
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(2) 140K Boilers w/120 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(2) 140K Boilers w/120 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 1593 and 5205 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 1593 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga C1 & C2	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	80	0	26	37	0	16	43	0	10
Feb	62	5	22	33	0	15	29	5	6
Mar	59	3	21	37	0	16	22	3	5
Apr	82	6	26	51	4	19	30	1	7
May	166	8	44	103	6	31	63	2	14
Jun	109	9	32	67	7	23	42	2	9
Jul	68	5	23	44	4	18	24	1	5
Aug	51	5	19	37	0	16	14	5	3
Sep	196	10	51	85	8	27	112	2	25
Oct	173	9	46	88	6	27	84	4	19
Nov	79	5	25	39	3	17	40	2	9
Dec	77	0	25	37	0	16	40	0	9
Year	**1,203**	**10**	**$ 360**	**659**	**8**	**$ 241**	**544**	**2**	**$ 120**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	163	122	133	86	77	70	77	45	63
Feb	110	100	89	57	66	46	53	35	43
Mar	95	90	77	48	61	39	47	29	38
Apr	72	80	58	36	52	29	36	28	29
May	67	87	55	35	57	28	33	31	26
Jun	54	80	43	30	56	25	23	24	19
Jul	50	14	40	29	7	24	21	7	17
Aug	49	14	40	29	7	23	20	7	17
Sep	47	14	38	28	7	22	20	7	16
Oct	57	69	46	31	48	25	26	22	21
Nov	92	98	75	46	65	37	46	33	37
Dec	155	109	126	83	70	67	72	38	59
Year	**1,010**	**122**	**$ 821**	**537**	**77**	**$ 436**	**474**	**45**	**$ 385**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	659 kWh	8 kW	$ 241	$ 0.06 /sqft	$ 0.37 /kWh
Natural Gas	537 therms	77 kBtu/hr	$ 436	$ 0.11 /sqft	$ 0.81 /therm
		Total	$ 677	$ 0.17 /sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga D **Project Title**	4/16/2009 **Date**
Oakland **Project Address**	**Building Permit #**
Energy Calc Co. **Documentation Author**	(415)457-0990 **Telephone**
EnergyPro **Compliance Method**	CA Climate Zone 03 **Climate Zone**
	Plan Check/Date
	Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	10.49	4.79	5.70
Space Cooling	3.35	1.59	1.76
Fans	1.08	0.28	0.80
Domestic Hot Water	18.02	10.53	7.49
Pumps	2.88	2.88	0.00
Totals	35.83	20.07	15.76
Percent better than Standard:			44.0%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (SW) 237 deg

Fuel Type: Natural Gas

Fenestration:

Area: 487 ft²

Ratio: 23.4%

Avg. U: 0.43

Avg. SHGC: 0.43

Total Conditioned Floor Area:	2,083 ft²
Existing Floor Area:	n/a ft²
Raised Floor Area:	107 ft²
Slab on Grade Area:	988 ft²
Average Ceiling Height:	8.0 ft
Number of Dwelling Units:	2.00
Number of Stories:	2

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	2,083	16,664	2.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	1,095	0.032	R-30	R-0.0	237	0	X		New	01-A7	Building
Wall	Wood	368	0.074	R-19	R-0.0	237	90	X		New	09-A5	Building
Wall	Wood	547	0.074	R-19	R-0.0	327	90	X		New	09-A5	Building
Wall	Wood	387	0.074	R-19	R-0.0	57	90	X		New	09-A5	Building
Wall	Wood	547	0.074	R-19	R-0.0	147	90	X		New	09-A5	Building
Floor	Wood	107	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga D
Project Title

4/16/2009
Date

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(SW)	144.0	0.390	NFRC	0.37	NFRC	237	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(SW)	48.0	0.580	116-A	0.65	116-B	237	90	New	Double Non Metal Clear	Building
3	Window	Left	(NW)	61.0	0.390	NFRC	0.37	NFRC	327	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Rear	(NE)	125.0	0.390	NFRC	0.37	NFRC	57	90	New	Milgard Classic Low-E Vinyl	Building
5	Window	Rear	(NE)	48.0	0.580	116-A	0.65	116-B	57	90	New	Double Non Metal Clear	Building
6	Window	Right	(SE)	61.0	0.390	NFRC	0.37	NFRC	147	90	New	Milgard Classic Low-E Vinyl	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	140	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga D — 4/16/2009
Project Title — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(2) 80K Boilers w/80 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(2) 80K Boilers w/80 Gal S.T.	Large Gas	Central System	1	160,000	80	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

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(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Run Initiation Time: 04/16/09 10:31:55 **Run Code: 1239903115**

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga D
Project Title

4/16/2009
Date

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(2) 80K Boilers w/80 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(2) 80K Boilers w/80 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 818 and 2673 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 818 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga D	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	61	0	21	37	0	16	24	0	5
Feb	49	2	19	33	0	15	16	2	4
Mar	48	1	18	37	0	16	11	1	2
Apr	58	3	21	46	3	18	12	0	3
May	101	4	30	80	4	26	21	0	5
Jun	72	4	24	58	4	21	14	0	3
Jul	52	3	19	44	2	18	8	0	2
Aug	44	2	18	37	0	16	7	2	1
Sep	115	5	33	64	4	22	51	1	11
Oct	104	5	31	60	3	21	44	1	10
Nov	57	3	20	37	1	16	20	1	4
Dec	59	0	21	37	0	16	22	0	5
Year	**819**	**5**	**$ 276**	**570**	**4**	**$ 221**	**249**	**1**	**$ 55**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	95	66	77	51	42	41	45	24	36
Feb	66	54	54	35	35	29	31	19	25
Mar	59	48	48	30	32	25	29	16	23
Apr	46	42	37	23	27	18	23	15	19
May	43	49	35	22	29	18	21	20	17
Jun	34	43	28	19	30	16	15	13	12
Jul	32	9	26	19	4	15	13	4	11
Aug	32	9	26	19	4	15	13	4	11
Sep	31	9	25	18	4	14	13	4	10
Oct	36	39	29	20	25	16	16	15	13
Nov	55	52	45	28	34	23	26	18	21
Dec	90	58	73	49	37	40	40	21	33
Year	**619**	**66**	**$ 503**	**332**	**42**	**$ 270**	**287**	**24**	**$ 233**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	570 kWh	4 kW	$ 221	$ 0.11/sqft	$ 0.39/kWh
Natural Gas	332 therms	42 kBtu/hr	$ 270	$ 0.13/sqft	$ 0.81/therm
		Total	$ 492	$ 0.24/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga E1, E2 & E3
Project Title

4/16/2009
Date

Oakland
Project Address

Building Permit #

Energy Calc Co. (415)457-0990
Documentation Author **Telephone**

Plan Check/Date

EnergyPro CA Climate Zone 03
Compliance Method **Climate Zone**

Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Facing North	Margin	Facing East	Margin	Facing South	Margin	Facing West	Margin
Space Heating	7.39	3.75	3.64	3.48	3.91	3.34	4.05	3.49	3.90
Space Cooling	2.85	0.37	2.48	0.91	1.95	0.66	2.19	0.97	1.88
Fans	0.85	0.06	0.79	0.16	0.69	0.12	0.73	0.17	0.68
Domestic Hot Water	13.06	8.17	4.89	8.17	4.89	8.17	4.89	8.17	4.89
Pumps	0.76	0.76	0.00	0.76	0.00	0.76	0.00	0.76	0.00
Totals	24.91	13.11	11.79	13.48	11.43	13.04	11.86	13.56	11.34
Percent better than Standard:			47.3%		45.9%		47.6%		45.5%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: All Four Orientations

Fuel Type: Natural Gas

Fenestration:

Area: 1,442 ft^2 **Avg. U:** 0.42

Ratio: 18.2% **Avg. SHGC:** 0.42

Total Conditioned Floor Area: 7,941 ft^2

Existing Floor Area: n/a ft^2

Raised Floor Area: 56 ft^2

Slab on Grade Area: 3,407 ft^2

Average Ceiling Height: 8.0 ft

Number of Dwelling Units: 6.00

Number of Stories: 3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	7,941	63,528	6.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Act. Tilt	Gains Y	Gains N		JA IV Reference	Location / Comments
Roof	Wood	3,463	0.032	R-30	R-0.0	0	0	X		New	01-A7	Building
Wall	Wood	1,295	0.074	R-19	R-0.0	0	90	X		New	09-A5	Building
Wall	Wood	1,201	0.074	R-19	R-0.0	90	90	X		New	09-A5	Building
Wall	Wood	1,441	0.074	R-19	R-0.0	180	90	X		New	09-A5	Building
Wall	Wood	1,149	0.074	R-19	R-0.0	270	90	X		New	09-A5	Building
Floor	Wood	56	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga E1, E2 & E3 — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(N)	545.0	0.390	NFRC	0.37	NFRC	0	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(N)	144.0	0.580	116-A	0.65	116-B	0	90	New	Double Non Metal Clear	Building
3	Window	Left	(E)	79.0	0.390	NFRC	0.37	NFRC	90	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Rear	(S)	447.0	0.390	NFRC	0.37	NFRC	180	90	New	Milgard Classic Low-E Vinyl	Building
5	Window	Rear	(S)	96.0	0.580	116-A	0.65	116-B	180	90	New	Double Non Metal Clear	Building
6	Window	Right	(W)	131.0	0.390	NFRC	0.37	NFRC	270	90	New	Milgard Classic Low-E Vinyl	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	292	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga E1, E2 & E3 — 4/16/2009
Project Title — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(3) 140K Boilers w/240 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(3) 140K Boilers w/240 Gal S.T.	Large Gas	Central System	1	420,000	240	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
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Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Run Initiation Time: 04/16/09 10:32:43 **Run Code: 1239903163**

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga E1, E2 & E3 — 4/16/2009

Project Title — **Date**

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Compliance using the Four Cardinal Orientation approach has been used. Project can be built in any Orientation.		
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(3) 140K Boilers w/240 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(3) 140K Boilers w/240 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 3119 and 10189 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 3119 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga E1, E2 & E3	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	106	1	31	37	0	16	69	1	15
Feb	78	8	25	33	0	15	44	8	10
Mar	60	1	21	37	0	16	23	1	5
Apr	105	10	31	64	8	22	41	2	9
May	242	13	61	168	12	45	73	1	16
Jun	157	15	43	107	14	32	50	1	11
Jul	83	10	26	51	8	19	32	2	7
Aug	52	8	19	37	0	16	15	8	3
Sep	291	17	72	88	10	27	203	7	45
Oct	258	15	65	79	8	25	179	6	39
Nov	91	9	28	36	0	16	55	9	12
Dec	101	1	30	37	0	16	64	1	14
Year	**1,623**	**17**	**$ 453**	**775**	**14**	**$ 266**	**848**	**3**	**$ 187**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	271	226	221	151	143	123	120	83	98
Feb	180	188	146	98	124	80	82	64	67
Mar	155	169	126	83	116	68	72	53	58
Apr	115	140	94	62	60	51	53	79	43
May	110	164	90	61	109	50	49	55	40
Jun	94	150	76	56	107	46	38	44	31
Jul	89	27	72	55	14	45	34	13	27
Aug	88	26	72	55	14	45	33	12	27
Sep	85	26	69	53	14	43	32	12	26
Oct	97	125	79	57	57	47	40	68	32
Nov	148	183	120	82	123	67	66	60	53
Dec	257	203	209	148	133	121	108	70	88
Year	**1,690**	**226**	**$ 1,374**	**963**	**143**	**$ 783**	**726**	**83**	**$ 590**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	775 kWh	14 kW	$ 266	$ 0.03/sqft	$ 0.34/kWh
Natural Gas	963 therms	143 kBtu/hr	$ 783	$ 0.10/sqft	$ 0.81/therm
		Total	$ 1,049	$ 0.13/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga F **Project Title**	4/16/2009 **Date**
Oakland **Project Address**	**Building Permit #**
Energy Calc Co. **Documentation Author**	(415)457-0990 **Telephone**
	Plan Check/Date
EnergyPro **Compliance Method**	CA Climate Zone 03 **Climate Zone**
	Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	7.21	3.58	3.63
Space Cooling	3.50	1.01	2.49
Fans	0.96	0.18	0.78
Domestic Hot Water	13.02	7.76	5.26
Pumps	0.66	0.66	0.00
Totals	25.35	13.19	12.16
Percent better than Standard:			48.0%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (NE) 57 deg

Fuel Type: Natural Gas

Fenestration:

Area: 1,840 ft²

Ratio: 20.3%

Avg. U: 0.42

Avg. SHGC: 0.41

Total Conditioned Floor Area:	9,043 ft²
Existing Floor Area:	n/a ft²
Raised Floor Area:	78 ft²
Slab on Grade Area:	3,722 ft²
Average Ceiling Height:	8.0 ft
Number of Dwelling Units:	7.00
Number of Stories:	3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	9,043	72,344	7.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	3,800	0.032	R-30	R-0.0	57	0	X		New	01-A7	Building
Wall	Wood	1,536	0.074	R-19	R-0.0	57	90	X		New	09-A5	Building
Wall	Wood	1,145	0.074	R-19	R-0.0	147	90	X		New	09-A5	Building
Wall	Wood	1,630	0.074	R-19	R-0.0	237	90	X		New	09-A5	Building
Wall	Wood	994	0.074	R-19	R-0.0	327	90	X		New	09-A5	Building
Floor	Wood	78	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga F
Project Title

4/16/2009
Date

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(NE)	645.0	0.390	NFRC	0.37	NFRC	57	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(NE)	144.0	0.580	116-A	0.65	116-B	57	90	New	Double Non Metal Clear	Building
3	Window	Left	(SE)	103.0	0.390	NFRC	0.37	NFRC	147	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Rear	(SW)	574.0	0.390	NFRC	0.37	NFRC	237	90	New	Milgard Classic Low-E Vinyl	Building
5	Window	Rear	(SW)	120.0	0.580	116-A	0.65	116-B	237	90	New	Double Non Metal Clear	Building
6	Window	Right	(NW)	230.0	0.390	NFRC	0.37	NFRC	327	90	New	Milgard Classic Low-E Vinyl	Building
7	Window	Right	(NW)	24.0	0.580	116-A	0.65	116-B	327	90	New	Double Non Metal Clear	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												
7	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	302	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga F — 4/16/2009
Project Title — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(3) 199K Boilers w/240 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(3) 199K Boilers w/240 Gal S.T.	Large Gas	Central System	1	597,000	240	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

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Documentation Author

Name: Chuck Clemons
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Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga F
Project Title

4/16/2009
Date

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(3) 199K Boilers w/240 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(3) 199K Boilers w/240 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 3552 and 11603 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 3552 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga F	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	115	1	33	37	0	16	78	1	17
Feb	84	11	27	33	0	15	51	11	11
Mar	75	7	25	37	0	16	38	7	8
Apr	136	12	38	69	9	23	67	3	15
May	315	16	77	195	13	51	119	3	26
Jun	211	19	54	117	15	34	94	3	21
Jul	104	11	31	52	8	19	52	3	12
Aug	68	10	23	37	0	16	31	10	7
Sep	387	21	93	95	11	29	291	10	64
Oct	335	19	82	88	12	27	247	8	54
Nov	120	11	34	36	0	16	84	11	18
Dec	108	1	32	37	0	16	71	1	16
Year	**2,059**	**21**	**$ 549**	**835**	**15**	**$ 279**	**1,224**	**6**	**$ 269**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	306	258	248	168	163	136	138	96	112
Feb	201	214	164	110	140	89	92	73	74
Mar	173	190	141	92	130	74	82	60	66
Apr	129	155	105	68	69	55	62	86	50
May	125	186	101	66	122	54	58	64	47
Jun	107	170	87	61	120	50	46	50	37
Jul	101	30	82	60	16	49	41	15	34
Aug	100	30	81	59	15	48	41	15	33
Sep	96	30	78	57	15	46	39	15	32
Oct	110	140	89	62	64	51	47	76	39
Nov	168	208	136	94	139	76	74	69	60
Dec	288	231	234	169	150	137	119	80	96
Year	**1,904**	**258**	**$ 1,548**	**1,065**	**163**	**$ 866**	**839**	**96**	**$ 682**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	835 kWh	15 kW	$ 279	$ 0.03/sqft	$ 0.33/kWh
Natural Gas	1,065 therms	163 kBtu/hr	$ 866	$ 0.10/sqft	$ 0.81/therm
		Total	$ 1,145	$ 0.13/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga G **Project Title**	4/16/2009 **Date**
Oakland **Project Address**	**Building Permit #**
Energy Calc Co. **Documentation Author**	(415)457-0990 **Telephone**
	Plan Check/Date
EnergyPro **Compliance Method**	CA Climate Zone 03 **Climate Zone**
	Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	8.20	3.92	4.29
Space Cooling	3.16	0.45	2.72
Fans	0.94	0.08	0.86
Domestic Hot Water	13.61	8.91	4.70
Pumps	0.90	0.90	0.00
Totals	26.82	14.26	12.56
Percent better than Standard:			46.8%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (NW) 328 deg

Fuel Type: Natural Gas

Fenestration:

Area: 1,282 ft² **Avg. U:** 0.42

Ratio: 19.3% **Avg. SHGC:** 0.41

Total Conditioned Floor Area:	6,632 ft²
Existing Floor Area:	n/a ft²
Raised Floor Area:	42 ft²
Slab on Grade Area:	2,950 ft²
Average Ceiling Height:	8.0 ft
Number of Dwelling Units:	5.00
Number of Stories:	3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	6,632	53,056	5.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	2,992	0.032	R-30	R-0.0	328	0	X		New	01-A7	Building
Wall	Wood	1,099	0.074	R-19	R-0.0	328	90	X		New	09-A5	Building
Wall	Wood	1,114	0.074	R-19	R-0.0	58	90	X		New	09-A5	Building
Wall	Wood	1,249	0.074	R-19	R-0.0	148	90	X		New	09-A5	Building
Wall	Wood	1,112	0.074	R-19	R-0.0	238	90	X		New	09-A5	Building
Floor	Wood	42	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga G — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(NW)	493.0	0.390	NFRC	0.37	NFRC	328	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(NW)	120.0	0.580	116-A	0.65	116-B	328	90	New	Double Non Metal Clear	Building
3	Window	Left	(NE)	102.0	0.390	NFRC	0.37	NFRC	58	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Rear	(SE)	391.0	0.390	NFRC	0.37	NFRC	148	90	New	Milgard Classic Low-E Vinyl	Building
5	Window	Rear	(SE)	72.0	0.580	116-A	0.65	116-B	148	90	New	Double Non Metal Clear	Building
6	Window	Right	(SW)	104.0	0.390	NFRC	0.37	NFRC	238	90	New	Milgard Classic Low-E Vinyl	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	272	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga G — **Project Title**

4/16/2009 — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(2) 199K Boilers w/240 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(2) 199K Boilers w/240 Gal S.T.	Large Gas	Central System	1	398,000	240	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
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(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Run Initiation Time: 04/16/09 10:42:26 **Run Code: 1239903746**

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga G
Project Title

4/16/2009
Date

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(2) 199K Boilers w/240 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(2) 199K Boilers w/240 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 2605 and 8509 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 2605 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga G	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	100	1	30	37	0	16	63	1	14
Feb	75	7	24	33	0	15	41	7	9
Mar	66	4	23	37	0	16	29	4	6
Apr	99	9	30	41	3	17	58	6	13
May	229	12	58	75	6	24	154	6	34
Jun	145	13	40	61	8	21	85	5	19
Jul	82	8	26	37	0	16	45	8	10
Aug	53	7	20	37	0	16	16	7	3
Sep	270	15	67	58	6	21	212	9	47
Oct	239	13	61	69	8	23	170	5	38
Nov	87	8	27	37	1	16	50	7	11
Dec	95	1	29	37	0	16	58	1	13
Year	**1,541**	**15**	**$ 435**	**559**	**8**	**$ 219**	**981**	**6**	**$ 216**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	243	193	197	136	122	110	107	71	87
Feb	162	160	132	92	105	75	70	55	57
Mar	139	143	113	82	99	66	58	45	47
Apr	104	117	84	63	84	51	41	33	33
May	99	139	80	60	93	49	38	47	31
Jun	82	128	67	52	91	42	30	36	25
Jul	77	23	63	50	12	41	27	10	22
Aug	77	22	62	50	12	41	27	10	22
Sep	74	22	60	48	12	39	26	10	21
Oct	86	105	70	53	64	43	33	42	27
Nov	134	156	109	73	104	60	60	52	49
Dec	230	173	187	128	113	104	102	60	83
Year	**1,506**	**193**	**$ 1,224**	**887**	**122**	**$ 721**	**618**	**71**	**$ 503**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	559 kWh	8 kW	$ 219	$ 0.03/sqft	$ 0.39/kWh
Natural Gas	887 therms	122 kBtu/hr	$ 721	$ 0.11/sqft	$ 0.81/therm
		Total	$ 940	$ 0.14/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga H **Project Title**	4/16/2009 **Date**
Oakland **Project Address**	**Building Permit #**
Energy Calc Co. **Documentation Author**	(415)457-0990 **Telephone**
	Plan Check/Date
EnergyPro **Compliance Method**	CA Climate Zone 03 **Climate Zone**
	Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	6.73	2.77	3.95
Space Cooling	3.08	0.65	2.42
Fans	0.86	0.11	0.74
Domestic Hot Water	12.27	8.14	4.13
Pumps	0.38	0.38	0.00
Totals	23.31	12.06	11.24
Percent better than Standard:			48.2%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (SE) 148 deg

Fuel Type: Natural Gas

Fenestration:

Area: 2,972 ft² **Avg. U:** 0.42

Ratio: 18.8% **Avg. SHGC:** 0.41

Total Conditioned Floor Area:	15,825 ft²
Existing Floor Area:	n/a ft²
Raised Floor Area:	102 ft²
Slab on Grade Area:	6,678 ft²
Average Ceiling Height:	8.0 ft
Number of Dwelling Units:	12.00
Number of Stories:	3

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	15,825	126,600	12.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	6,780	0.032	R-30	R-0.0	148	0	X		New	01-A7	Building
Wall	Wood	2,542	0.074	R-19	R-0.0	148	90	X		New	09-A5	Building
Wall	Wood	1,815	0.074	R-19	R-0.0	238	90	X		New	09-A5	Building
Wall	Wood	2,820	0.074	R-19	R-0.0	328	90	X		New	09-A5	Building
Wall	Wood	1,723	0.074	R-19	R-0.0	58	90	X		New	09-A5	Building
Floor	Wood	102	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga H — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(SE)	1,170.0	0.390	NFRC	0.37	NFRC	148	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(SE)	240.0	0.580	116-A	0.65	116-B	148	90	New	Double Non Metal Clear	Building
3	Window	Left	(SW)	169.0	0.390	NFRC	0.37	NFRC	238	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Rear	(NW)	964.0	0.390	NFRC	0.37	NFRC	328	90	New	Milgard Classic Low-E Vinyl	Building
5	Window	Rear	(NW)	168.0	0.580	116-A	0.65	116-B	328	90	New	Double Non Metal Clear	Building
6	Window	Right	(NE)	237.0	0.390	NFRC	0.37	NFRC	58	90	New	Milgard Classic Low-E Vinyl	Building
7	Window	Right	(NE)	24.0	0.580	116-A	0.65	116-B	58	90	New	Double Non Metal Clear	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												
7	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	514	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga H — 4/16/2009
Project Title — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(2) 399K Boilers w/500 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(2) 399K Boilers w/500 Gal S.T.	Large Gas	Central System	1	798,000	500	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
Address: 461 Second St., Loft 127
San Francisco, CA 94107
Telephone: (415) 896-6700 Lic. #:

(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Run Initiation Time: 04/16/09 10:34:46 **Run Code: 1239903286**

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga H
Project Title

4/16/2009
Date

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(2) 399K Boilers w/500 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(2) 399K Boilers w/500 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 6216 and 20304 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 6216 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga H	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	166	2	44	37	0	16	129	2	28
Feb	117	17	34	33	0	15	84	17	18
Mar	94	11	29	37	0	16	57	11	13
Apr	181	20	48	59	7	21	122	14	27
May	478	27	113	154	13	42	324	14	71
Jun	298	31	74	86	18	27	212	13	47
Jul	141	19	39	37	0	16	104	19	23
Aug	70	18	23	37	0	16	33	18	7
Sep	575	35	135	114	16	33	461	19	101
Oct	505	29	119	176	24	47	329	6	72
Nov	144	18	40	49	7	19	95	11	21
Dec	155	1	42	37	0	16	118	1	26
Year	**2,924**	**35**	**$ 739**	**856**	**24**	**$ 284**	**2,069**	**11**	**$ 455**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	506	444	411	272	282	221	234	162	190
Feb	332	369	270	179	244	145	153	125	125
Mar	283	330	230	159	227	129	124	102	101
Apr	210	271	170	127	126	103	83	145	67
May	203	318	165	125	215	101	78	104	64
Jun	176	295	143	113	211	92	63	83	51
Jul	167	51	136	110	28	89	57	24	47
Aug	165	51	134	109	28	88	56	23	46
Sep	159	51	129	104	28	85	55	23	44
Oct	180	244	146	113	93	92	67	151	55
Nov	272	360	221	145	241	118	127	119	103
Dec	475	398	386	248	259	201	228	139	185
Year	**3,127**	**444**	**$ 2,542**	**1,802**	**282**	**$ 1,465**	**1,325**	**162**	**$ 1,077**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	856 kWh	24 kW	$ 284	$ 0.02/sqft	$ 0.33/kWh
Natural Gas	1,802 therms	282 kBtu/hr	$ 1,465	$ 0.09/sqft	$ 0.81/therm
		Total	$ 1,749	$ 0.11/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga I
Project Title

4/16/2009
Date

Oakland
Project Address

Building Permit #

Energy Calc Co.
Documentation Author

(415)457-0990
Telephone

Plan Check/Date

EnergyPro
Compliance Method

CA Climate Zone 03
Climate Zone

Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	7.36	2.99	4.37
Space Cooling	3.27	0.78	2.49
Fans	0.92	0.14	0.79
Domestic Hot Water	13.62	10.47	3.16
Pumps	0.60	0.60	0.00
Totals	25.77	14.97	10.80
Percent better than Standard:			41.9%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (SE) 148 deg

Fuel Type: Natural Gas

Fenestration:

Area: 1,926 ft²

Ratio: 19.3%

Avg. U: 0.42

Avg. SHGC: 0.42

Total Conditioned Floor Area:	**9,978** ft²
Existing Floor Area:	**n/a** ft²
Raised Floor Area:	**65** ft²
Slab on Grade Area:	**4,197** ft²
Average Ceiling Height:	**8.0** ft
Number of Dwelling Units:	**8.00**
Number of Stories:	**3**

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	9,978	79,824	8.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	4,262	0.032	R-30	R-0.0	148	0	X		New	01-A7	Building
Wall	Wood	1,708	0.074	R-19	R-0.0	148	90	X		New	09-A5	Building
Wall	Wood	1,304	0.074	R-19	R-0.0	238	90	X		New	09-A5	Building
Wall	Wood	1,861	0.074	R-19	R-0.0	328	90	X		New	09-A5	Building
Wall	Wood	1,361	0.074	R-19	R-0.0	58	90	X		New	09-A5	Building
Floor	Wood	65	0.048	R-19	R-0.0	0	180		X	New	21-A4	Building

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga I — **Project Title**

4/16/2009 — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(SE)	748.0	0.390	NFRC	0.37	NFRC	148	90	New	Milgard Classic Low-E Vinyl	Building
2	Window	Front	(SE)	168.0	0.580	116-A	0.65	116-B	148	90	New	Double Non Metal Clear	Building
3	Window	Left	(SW)	128.0	0.390	NFRC	0.37	NFRC	238	90	New	Milgard Classic Low-E Vinyl	Building
4	Window	Left	(SW)	24.0	0.580	116-A	0.65	116-B	238	90	New	Double Non Metal Clear	Building
5	Window	Rear	(NW)	643.0	0.390	NFRC	0.37	NFRC	328	90	New	Milgard Classic Low-E Vinyl	Building
6	Window	Rear	(NW)	120.0	0.580	116-A	0.65	116-B	328	90	New	Double Non Metal Clear	Building
7	Window	Right	(NE)	95.0	0.390	NFRC	0.37	NFRC	58	90	New	Milgard Classic Low-E Vinyl	Building

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												
5	Bug Screen	0.76												
6	Bug Screen	0.76												
7	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	364	None	No Insulation	26-A1	New	Building

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga I — 4/16/2009
Project Title — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(3) 199K Boilers w/375 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(3) 199K Boilers w/375 Gal S.T.	Large Gas	Central System	1	597,000	500	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.0	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
Address: 461 Second St., Loft 127
San Francisco, CA 94107
Telephone: (415) 896-6700 Lic. #:

(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Run Initiation Time: 04/16/09 10:35:32 **Run Code: 1239903332**

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga I — 4/16/2009

Project Title — **Date**

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(3) 199K Boilers w/375 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(3) 199K Boilers w/375 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 3919 and 12802 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 3919 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga I	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	124	1	35	37	0	16	87	1	19
Feb	90	11	28	33	0	15	57	11	13
Mar	78	7	25	37	0	16	41	7	9
Apr	135	13	38	51	5	19	84	8	18
May	329	18	80	114	9	33	215	9	47
Jun	209	20	54	77	12	25	132	8	29
Jul	106	12	31	42	6	17	64	7	14
Aug	68	11	23	37	0	16	31	11	7
Sep	401	22	96	93	12	28	308	11	68
Oct	349	20	85	145	16	40	204	4	45
Nov	116	12	33	45	6	18	70	6	15
Dec	117	1	34	37	0	16	80	1	18
Year	**2,121**	**22**	**$ 563**	**749**	**16**	**$ 261**	**1,372**	**7**	**$ 302**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	346	286	281	199	183	162	147	103	119
Feb	230	237	187	136	158	111	94	79	77
Mar	199	212	162	125	147	101	74	65	60
Apr	150	174	122	102	96	83	47	78	38
May	144	207	117	100	139	82	43	68	35
Jun	123	189	100	90	137	74	32	52	26
Jul	117	35	95	89	21	72	28	14	23
Aug	115	34	94	88	20	72	27	14	22
Sep	111	34	90	84	20	68	27	14	22
Oct	127	156	103	91	72	74	35	84	29
Nov	191	231	155	114	156	93	77	75	63
Dec	326	256	265	184	168	149	143	88	116
Year	**2,179**	**286**	**$ 1,771**	**1,403**	**183**	**$ 1,140**	**776**	**103**	**$ 631**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	749 kWh	16 kW	$ 261	$ 0.03/sqft	$ 0.35/kWh
Natural Gas	1,403 therms	183 kBtu/hr	$ 1,140	$ 0.11/sqft	$ 0.81/therm
		Total	$ 1,401	$ 0.14/sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.

Certificate Of Compliance : Residential (Part 1 of 4) CF-1R

Tassafaronga Pasta Factory Res. Units
Project Title

4/16/2009
Date

Oakland
Project Address

Building Permit #

Energy Calc Co. (415)457-0990
Documentation Author **Telephone**

Plan Check/Date

EnergyPro CA Climate Zone 03
Compliance Method **Climate Zone**

Field Check/Date

TDV (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	6.36	9.15	-2.79
Space Cooling	4.41	1.76	2.65
Fans	1.08	0.31	0.76
Domestic Hot Water	14.84	7.21	7.63
Pumps	0.74	0.74	0.00
Totals	27.43	19.17	8.26
Percent better than Standard:			30.1%

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

Building Type: ☐ Single Family ☐ Addition ☒ Multi Family ☐ Existing + Add/Alt

Building Front Orientation: (SE) 148 deg

Fuel Type: Natural Gas

Fenestration:

Area: 3,627 ft² **Avg. U:** 0.65

Ratio: 22.3% **Avg. SHGC:** 0.40

Total Conditioned Floor Area: 16,254 ft²

Existing Floor Area: n/a ft²

Raised Floor Area: 1,200 ft²

Slab on Grade Area: 6,447 ft²

Average Ceiling Height: 9.5 ft

Number of Dwelling Units: 20.00

Number of Stories: 2

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Res HVAC	16,254	154,413	20.00	Conditioned	Setback	8	n/a

OPAQUE SURFACES

Type	Frame	Area	U-Fac.	Insulation Cav.	Insulation Cont.	Act. Azm.	Tilt	Gains Y	Gains N	Condition Status	JA IV Reference	Location / Comments
Roof	Wood	10,297	0.036	R-30	R-0.0	148	0	X		New	02-A9	Living Units
Wall	Metal	5,204	0.217	R-13	R-0.0	0	90	X		New	11-A3	Living Units
Door	None	400	0.500	Insul	R-0.0	0	90	X		New	28-A3	Living Units
Wall	None	324	0.169	None	R-13.0	148	90	X		New	13-D5	Living Units
Wall	None	1,625	0.169	None	R-13.0	238	90	X		New	13-D5	Living Units
Wall	None	632	0.169	None	R-13.0	328	90	X		New	13-D5	Living Units
Wall	None	1,791	0.169	None	R-13.0	58	90	X		New	13-D5	Living Units
Floor	Wood	1,200	0.048	R-19	R-0.0	0	180		X	New	21-A4	Living Units

Certificate Of Compliance : Residential (Part 2 of 4) CF-1R

Tassafaronga Pasta Factory Res. Units — 4/16/2009
Project Title — **Date**

FENESTRATION SURFACES

#	Type			Area	U-Factor[1]		SHGC[2]		True Azm.	Tilt	Cond. Stat.	Glazing Type	Location/ Comments
1	Window	Front	(SE)	246.0	0.650	NFRC	0.40	NFRC	148	90	New	Dbl/Mtl Therm Brk Low-E	Living Units
2	Window	Left	(SW)	1,415.0	0.650	NFRC	0.40	NFRC	238	90	New	Dbl/Mtl Therm Brk Low-E	Living Units
3	Window	Rear	(NW)	508.0	0.650	NFRC	0.40	NFRC	328	90	New	Dbl/Mtl Therm Brk Low-E	Living Units
4	Window	Right	(NE)	1,458.0	0.650	NFRC	0.40	NFRC	58	90	New	Dbl/Mtl Therm Brk Low-E	Living Units

1. Indicate source either from NFRC or Table 116A. 2. Indicate source either from NFRC or Table 116B.

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76												
4	Bug Screen	0.76												

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Inside R-Val.	JA IV Reference	Condition Status	Location/ Comments

PERIMETER LOSSES

Type	Length	R-Val.	Insulation Location	JA IV Reference	Condition Status	Location/ Comments
Slab Perimeter	326	None	No Insulation	26-A1	New	Living Units

Certificate Of Compliance : Residential (Part 3 of 4) CF-1R

Tassafaronga Pasta Factory Res. Units — **Project Title**

4/16/2009 — **Date**

HVAC SYSTEMS

Location	Heating Type	Minimum Eff	Cooling Type	Minimum Eff	Condition Status	Thermostat Type
Res HVAC	Combined Hydronic	see below	No Cooling	13.0 SEER	New	Setback

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Condition Status	Ducts Tested?
Res HVAC	Baseboard	Ducted	Attic	6.0	New	No

Hydronic Piping

System Name	Pipe Length	Pipe Diameter	Insul. Thick.
(3) 399K Boilers w/200 Gal S.T.	50	0.50	0.50

WATER HEATING SYSTEMS

System Name	Water Heater Type	Distribution	# in Syst.	Rated Input (Btu/hr)	Tank Cap. (gal)	Condition Status	Energy Factor or RE	Standby Loss (%)	Tank Insul. R-Value Ext.
(3) 399K Boilers w/200 Gal S.T.	Large Gas	Central System	1	1,197,000	200	New	0.92	2.10%	0.0

Multi-Family Central Water Heating Details

	Hot Water Pump			Hot Water Piping Length (ft)			
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation
Temperature	1	0.1	Standard	0	50	0	No

REMARKS

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business & Professions Code)

Name:
Title/Firm: David Baker + Partners
Address: 461 Second St., Loft 127
San Francisco, CA 94107
Telephone: (415) 896-6700 Lic. #:

(signature) (date)

Documentation Author

Name: Chuck Clemons
Title/Firm: Energy Calc Co.
Address: 45 Mitchell Blvd. Suite 16
San Rafael, CA 94903
Telephone: (415)457-0990

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

(signature) (date)

Certificate Of Compliance : Residential (Part 4 of 4) CF-1R

Tassafaronga Pasta Factory Res. Units — 4/16/2009
Project Title — **Date**

Special Features and Modeling Assumptions

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

	Plan	Field
Multiple Dwelling Units are served by a common water heater. Verify DHW details on Part 3 of this report.		
The DHW System "(3) 399K Boilers w/200 Gal S.T." is a Large Gas water heater with Pilot Loss = 0 btuh.		
The DHW System "(3) 399K Boilers w/200 Gal S.T." includes a Solar System with a 50.0% Solar Fraction (see CF-SR).		
The HVAC System "Res HVAC" is a Combined Hydronic System that uses a Boiler for DHW and Space Heating.		
This house has reduced infiltration and/or mechanical ventilation. The homeowner's manual provided by the builder must include		
operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation.		

HERS Required Verification

Items in this section require field testing and/or verification by a certified home energy rater under the supervision of a HERS provider using approved testing and/or verification methods.

	Plan	Field
This building has credit for Insulation Quality Installation. A certified HERS rater must visually verify the installation of all Insulation.		
This building has tight construction with reduced infiltration and a target blower door test range between 6384 and 20855 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this building tests below 6384 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		

ENERGY USE AND COST SUMMARY — ECON-1

PROJECT NAME	DATE
Tassafaronga Pasta Factory Res. Units	4/16/2009

Rate: PG&E A-1 — **Fuel Type: Electricity**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	201	2	52	74	0	24	127	2	28
Feb	152	22	42	67	0	23	86	22	19
Mar	142	14	39	74	0	24	68	14	15
Apr	288	24	71	143	21	39	146	3	32
May	686	32	159	455	31	108	232	1	51
Jun	507	36	120	292	33	72	215	3	47
Jul	232	22	59	150	19	41	83	3	18
Aug	191	20	50	74	0	24	117	20	26
Sep	853	40	196	322	36	79	531	5	117
Oct	701	40	162	249	26	63	452	14	99
Nov	257	21	65	79	7	25	178	13	39
Dec	188	2	49	74	0	24	114	1	25
Year	**4,398**	**40**	**$ 1,064**	**2,051**	**36**	**$ 547**	**2,347**	**5**	**$ 517**

Rate: PG&E G-NR1 — **Fuel Type: Natural Gas**

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	543	476	442	490	349	398	53	126	43
Feb	364	384	296	324	284	263	41	99	33
Mar	326	339	265	275	265	223	51	74	41
Apr	252	280	205	195	241	159	57	40	47
May	249	351	202	168	265	137	80	86	65
Jun	217	305	176	117	240	95	100	65	81
Jul	208	66	169	101	30	82	107	36	87
Aug	205	65	167	99	30	81	106	35	86
Sep	198	65	161	96	30	78	102	35	83
Oct	219	238	178	128	211	104	91	27	74
Nov	305	372	248	271	283	220	34	89	28
Dec	507	413	412	492	312	400	14	101	12
Year	**3,593**	**476**	**$ 2,921**	**2,757**	**349**	**$ 2,241**	**837**	**126**	**$ 680**

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	2,051 kWh	36 kW	$ 547	$ 0.03 /sqft	$ 0.27 /kWh
Natural Gas	2,757 therms	349 kBtu/hr	$ 2,241	$ 0.14 /sqft	$ 0.81 /therm
		Total	$ 2,788	$ 0.17 /sqft	

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Residential ACM manual.