

Energy Upgrade **COMPLETED** 03/01/2014



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GOALS Energy Efficiency, Water Efficiency
SOLUTIONS Air Seal, Insulation, Ventilation,



135 Van Ness, Santa Cruz, CA 95060



House front PRE



House rear, Solar

Zero E How close? Within **15%**
Green Cert PHI

1574 ft² CFA
YR Built 1922
SFR detached
Walkscore 85

PHOTOS <https://app.ajohp.org/l/5jlei> **VIDEO** <https://app.ajohp.org/l/smt3a>

Author AjO: Kawahara Role: Owner

★ The existence of a feature does not guarantee optimum performance. Design, install, operations; each are essential.

See details of this project and others @ [AjO.earth](https://www.ajoearth.com)
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PRE

POST

21,939 kWh

2,869 kWh

87% SAVINGS

\$1,498

\$492

110K Gal WATER

29K Gal WATER



ENERGY COSTS
Annual



RENEWABLE ENERGY



ENCLOSURE

Air Changes/Hour @50 24.37
Air Tightness Improved

Air Seal

Attic Yes
Walls Yes
Floors Yes

Insulation

Attic Flr R Val 0 80
Attic Flr Type Cellulose loose
Floor R Val 28
Floor Type EPS
Walls R Val 0 14
Walls Type Cellulose loose

Insulation Exterior

Walls R Val 0 13
REL 10 yrs 150 yrs

Enclosure Cladding

New Yes
Rain Screen Yes

Roof

New Yes

Vapor Barrier

Installed Crawl Yes
Sealed Yes

Bulk Water

Drain, site strategies Yes

Windows

% New 100 %
Frame Fiberglass
glass layers Wood Triple-pane
Single-pane

Doors

New 4
R Val 4



HVAC

Heating

Primary heat system Furnace
Fuel Natural Gas
No Combustion

Distribution

New Yes
Duct Leakage Visual Inspect Sealed w/ Mastic
Duct insul R 80
Location Conditioned space
Condition Sealed w/ Mastic

Ventilation

Type None
Whole Bldg vent Yes
Natural Cross Vent Yes
REL Ventilation 0 yrs 30 yrs

HVAC Test-Out

Max Temp rm/rm < 3° F
Thermostat: Programmable Yes



WATER EFFICIENCY

Water Pipes Insulation

Fuel Nat Gas
Type Tank
Year Installed 2012

Efficient Fixtures

% total hot 0 % 100 %
Kitch faucet ≤ 1.5 GPM
Dishwasher ≤ 5.5 GPC
Showers ≤ 1.5 GPM
Toilets ≤ 1.10 GPF

Exterior

Climate approp. Indscpg Yes
Irrigation: low-water Yes
Turf < 25% Yes
Rain water reuse Yes



INDOOR AIR QUALITY

Sealed combustion

Solar Thermal

0.59
98 %

Yes
Yes
Yes

80
Cellulose loose
28
EPS
14
Cellulose loose

13
150 yrs

Yes
Yes

Yes

Yes
Yes

Yes

100 %
Fiberglass
Triple-pane

4
4

Hydronic Air Handler
Electric
Yes

Yes
Sealed w/ Mastic
R 80
Conditioned space
Sealed w/ Mastic

HRV
Yes
Yes
30 yrs

< 3° F
Yes

Electricity
Boiler-Tankless
2012

100 %
≤ 1.5 GPM
≤ 5.5 GPC
≤ 1.5 GPM
≤ 1.10 GPF

Yes
Yes
Yes
Yes

DHW, Furnace
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Garage separated: living area
Interior Air: Filtered
Moisture Control
Vapor Retarder installed
Materials
Low/No VOC paints/finishes
Low/No VOC Sealants
No Carpet



LIGHTING

≥ 90% Energy Efficient

Detached
HRV

Yes

Yes

Yes

Yes

Yes

PRE



House front Pre

POST



House front Post



Exterior walls moisture damage



Exterior walls, sealed & insulated



Attic: knob & tube, no insulation



Attic: R 80