Energy Upgrade Recommendations — ECON-2

Project Name	*Winters 1 1-BD*	Documentation Author	*Redwood Energy*
Project Address	*110 Baker Street* *Winters, CA*	Author Address	,

Recommended Improvements	Description	Annual Savings	Est. Cost to Install	Savings Site	Savings TDV
Roof Insulation	*Type = Cool Coating R-19 Roof Attic Cavity Insulation = 19.0 R-Value Interior Insulation = 0.0 R-Value Exterior Insulation = 0.0 R-Value*	*$0*	*$0*	*1.4 %*	*13.9 %*
HVAC System	*Name = 2014 Upgrade - Carrier Type = Packaged DX Heating = Packaged Heat Pump Efficiency = 8.50 HSPF Cooling = Packaged Heat Pump SEER = 14.00*	*$0*	*$0*	*28.9 %*	*24.0 %*
HVAC Duct Leakage	*Leakage = 6 % Leakage Rate at 25 Pascals = 0 cfm*	*$0*	*$0*	*10.9 %*	*13.7 %*
HVAC Duct Insulation	*Duct Insulation = 8.0 R-Value*	*$0*	*$0*	*4.9 %*	*5.6 %*
Refrigerant Charge	*Air Conditioner Refrigerant Charge = Properly Charged*	*$0*	*$0*	*1.0 %*	*3.4 %*
System Airflow Verification	*Air Handler Airflow = 350 cfm/ton*	*$0*	*$0*	*0.1 %*	*1.6 %*
System Fan Wattage	*Air Handler Fan Wattage = 0.58 w/cfm*	*$0*	*$0*	*0.7 %*	*3.0 %*
Domestic Hot Water Heater	*Name = Sears 449.330411 Type = Gas Fired Volume = 40.0 gal Efficiency = 0.700 EF*	*$0*	*$0*	*14.5 %*	*8.1 %*
All Improvements		*$0*	*$0*	*52.7 %*	*53.6 %*

Annual Results	Energy Cost			Electricity (kWh)			Fossil Fuel (therms)		
End Use	Existing	Improved	Savings	Existing	Improved	Savings	Existing	Improved	Savings
Space Heating	$0	$0	$0	3,309	27,056	-23,746	2,903	0	2,903
Space Cooling	$0	$0	$0	31,262	8,055	23,206	0	0	0
Fans	$0	$0	$0	9,392	2,623	6,769	0	0	0
Pumps	$0	$0	$0	0	0	0	0	0	0
Domestic Hot Water	$0	$0	$0	0	0	0	3,758	2,571	1,187
Indoor Lighting	$0	$0	$0	0	0	0	0	0	0
Outdoor Lighting	$0	$0	$0	0	0	0	0	0	0
Appliances/Plug Loads	$0	$0	$0	0	0	0	0	0	0
Ancillary	$0	$0	$0	0	0	0	0	0	0
Renewables	$0	$0	$0	0	0	0	0	0	0
TOTAL	**$0**	**$0**	**$0**	**43,963**	**37,734**	**6,229**	**6,661**	**2,571**	**4,090**

CO_2 (lbs/year)	Existing	Improved	Savings
Electricity	0	0	0
Fossil Fuel	0	0	0
TOTAL	**0**	**0**	**0**
Average Demand (kW)	67.79	20.43	47.36
TDV Energy (kBtu/ft^2-yr)	159.12	73.83	85.29

Climate Zone:	12
Electric Rate:	
Gas Rate:	
Floor Area:	13,644
Type:	Multi-Family

Improvements above shown with singular savings benefit for individual measures

The estimated operating costs shown in this report are dependent upon many factors. The construction and conservation features of the project clearly are important. Equally important is the thermostat setting. How the thermostat is used, appliance use, and occupant interaction all influence the annual operating cost. The estimates provided in this report are based on typical conditions; your actual usage will vary.

Energy Upgrade Recommendations — ECON-2

Project Name	*Winters 1 2-BD*	Documentation Author	*Redwood Energy*
Project Address	*110 Baker Street* *Winters, CA 95694*	Author Address	,

Recommended Improvements	Description	Annual Savings	Est. Cost to Install	Savings Site	Savings TDV
Roof Insulation	*Type = Cool Coating R-19 Roof Attic Cavity Insulation = 19.0 R-Value Interior Insulation = 0.0 R-Value Exterior Insulation = 0.0 R-Value*	*$0*	*$0*	*2.0 %*	*14.4 %*
HVAC System	*Name = 2014 Upgrade - Carrier Type = Packaged DX Heating = Packaged Heat Pump Efficiency = 8.50 HSPF Cooling = Packaged Heat Pump SEER = 14.00*	*$0*	*$0*	*28.1 %*	*23.4 %*
HVAC Duct Leakage	*Leakage = 6 % Leakage Rate at 25 Pascals = 0 cfm*	*$0*	*$0*	*11.0 %*	*14.3 %*
HVAC Duct Insulation	*Duct Insulation = 8.0 R-Value*	*$0*	*$0*	*5.2 %*	*6.4 %*
Refrigerant Charge	*Air Conditioner Refrigerant Charge = Properly Charged*	*$0*	*$0*	*1.0 %*	*3.3 %*
System Airflow Verification	*Air Handler Airflow = 350 cfm/ton*	*$0*	*$0*	*0.0 %*	*1.6 %*
System Fan Wattage	*Air Handler Fan Wattage = 0.58 w/cfm*	*$0*	*$0*	*0.7 %*	*3.0 %*
Domestic Hot Water Heater	*Name = Sears 449.330411 Type = Gas Fired Volume = 40.0 gal Efficiency = 0.700 EF*	*$0*	*$0*	*14.6 %*	*8.3 %*
All Improvements		*$0*	*$0*	*51.8 %*	*53.7 %*

Annual Results	Energy Cost			Electricity (kWh)			Fossil Fuel (therms)		
End Use	Existing	Improved	Savings	Existing	Improved	Savings	Existing	Improved	Savings
Space Heating	$0	$0	$0	0	27,629	-27,629	3,193	0	3,193
Space Cooling	$0	$0	$0	32,809	7,872	24,937	0	0	0
Fans	$0	$0	$0	10,477	3,085	7,392	0	0	0
Pumps	$0	$0	$0	0	0	0	0	0	0
Domestic Hot Water	$0	$0	$0	0	0	0	4,362	3,039	1,323
Indoor Lighting	$0	$0	$0	0	0	0	0	0	0
Outdoor Lighting	$0	$0	$0	0	0	0	0	0	0
Appliances/Plug Loads	$0	$0	$0	0	0	0	0	0	0
Ancillary	$0	$0	$0	0	0	0	0	0	0
Renewables	$0	$0	$0	0	0	0	0	0	0
TOTAL	**$0**	**$0**	**$0**	**43,286**	**38,586**	**4,700**	**7,555**	**3,039**	**4,516**

CO_2 (lbs/year)	Existing	Improved	Savings
Electricity	0	0	0
Fossil Fuel	0	0	0
TOTAL	**0**	**0**	**0**
Average Demand (kW)	73.39	20.40	52.99
TDV Energy (kBtu/ft^2-yr)	127.39	59.02	68.37

Climate Zone:	12
Electric Rate:	
Gas Rate:	
Floor Area:	18,540
Type:	Multi-Family

Improvements above shown with singular savings benefit for individual measures

The estimated operating costs shown in this report are dependent upon many factors. The construction and conservation features of the project clearly are important. Equally important is the thermostat setting. How the thermostat is used, appliance use, and occupant interaction all influence the annual operating cost. The estimates provided in this report are based on typical conditions; your actual usage will vary.

Energy Upgrade Recommendations

ECON-2

Project Name	*Winters 1 3-BD*	Documentation Author	*Redwood Energy*
Project Address	*110 Baker Street* *Winters, CA 95694*	Author Address	,

Recommended Improvements	Description	Annual Savings	Est. Cost to Install	Savings	
				Site	TDV
Roof Insulation	*Type = Cool Coating R-19 Roof Attic Cavity Insulation = 19.0 R-Value Interior Insulation = 0.0 R-Value Exterior Insulation = 0.0 R-Value*	*$0*	*$0*	*2.3 %*	*12.8 %*
HVAC System	*Name = 2014 Upgrade - Carrier Type = Packaged DX Heating = Packaged Heat Pump Efficiency = 8.50 HSPF Cooling = Packaged Heat Pump SEER = 14.00*	*$0*	*$0*	*29.8 %*	*24.3 %*
HVAC Duct Leakage	*Leakage = 6 % Leakage Rate at 25 Pascals = 0 cfm*	*$0*	*$0*	*8.7 %*	*11.2 %*
HVAC Duct Insulation	*Duct Insulation = 8.0 R-Value*	*$0*	*$0*	*7.8 %*	*8.5 %*
Refrigerant Charge	*Air Conditioner Refrigerant Charge = Properly Charged*	*$0*	*$0*	*0.9 %*	*3.3 %*
System Airflow Verification	*Air Handler Airflow = 350 cfm/ton*	*$0*	*$0*	*1.0 %*	*2.5 %*
System Fan Wattage	*Air Handler Fan Wattage = 0.58 w/cfm*	*$0*	*$0*	*0.7 %*	*3.0 %*
Domestic Hot Water Heater	*Name = Sears 449.330411 Type = Gas Fired Volume = 40.0 gal Efficiency = 0.700 EF*	*$0*	*$0*	*13.6 %*	*7.7 %*
All Improvements		*$0*	*$0*	*52.1 %*	*52.9 %*

Annual Results	Energy Cost			Electricity (kWh)			Fossil Fuel (therms)		
End Use	Existing	Improved	Savings	Existing	Improved	Savings	Existing	Improved	Savings
Space Heating	*$0*	*$0*	*$0*	*0*	*8,865*	*-8,865*	*1,095*	*0*	*1,095*
Space Cooling	*$0*	*$0*	*$0*	*10,260*	*2,788*	*7,473*	*0*	*0*	*0*
Fans	*$0*	*$0*	*$0*	*3,508*	*1,145*	*2,363*	*0*	*0*	*0*
Pumps	*$0*	*$0*	*$0*	*0*	*0*	*0*	*0*	*0*	*0*
Domestic Hot Water	*$0*	*$0*	*$0*	*0*	*0*	*0*	*1,365*	*965*	*400*
Indoor Lighting	*$0*	*$0*	*$0*	*0*	*0*	*0*	*0*	*0*	*0*
Outdoor Lighting	*$0*	*$0*	*$0*	*0*	*0*	*0*	*0*	*0*	*0*
Appliances/Plug Loads	*$0*	*$0*	*$0*	*0*	*0*	*0*	*0*	*0*	*0*
Ancillary	*$0*	*$0*	*$0*	*0*	*0*	*0*	*0*	*0*	*0*
Renewables	*$0*	*$0*	*$0*	*0*	*0*	*0*	*0*	*0*	*0*
TOTAL	***$0***	***$0***	***$0***	***13,768***	***12,798***	***970***	***2,459***	***965***	***1,494***

CO_2 (lbs/year)	Existing	Improved	Savings
Electricity	*0*	*0*	*0*
Fossil Fuel	*0*	*0*	*0*
TOTAL	***0***	***0***	***0***
Average Demand (kW)	*23.88*	*7.14*	*16.73*
TDV Energy (kBtu/ft^2-yr)	*117.92*	*55.49*	*62.43*

Climate Zone:	*12*
Electric Rate:	
Gas Rate:	
Floor Area:	*6,540*
Type:	*Multi-Family*

Improvements above shown with singular savings benefit for individual measures

The estimated operating costs shown in this report are dependent upon many factors. The construction and conservation features of the project clearly are important. Equally important is the thermostat setting. How the thermostat is used, appliance use, and occupant interaction all influence the annual operating cost. The estimates provided in this report are based on typical conditions; your actual usage will vary.