Energy Assessment

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Prepared for:
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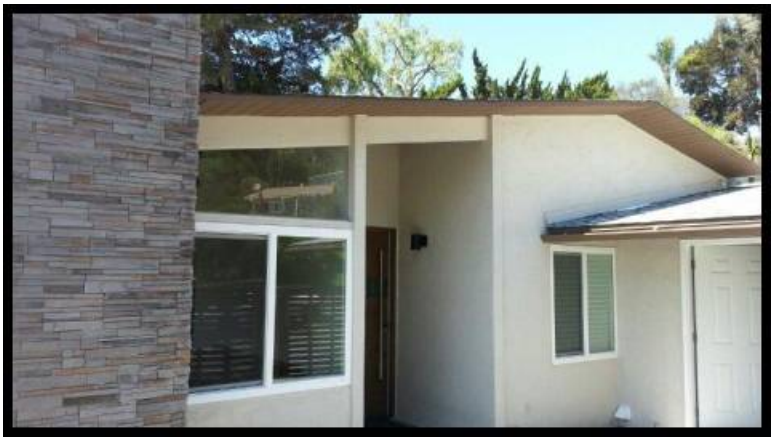

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HOME ENERGY AUDIT

BPI

ENERGY ASSESSMENT

This provides fundamental information that determines this dwellings energy efficiency. Energy Efficiency impacts utility costs, comfort and health & safety issues. Inefficient dwellings will lead to higher utility costs and comfort issues.

The assessment will include conditions and recommendations. There are incentives available for energy efficiency improvements from local, state and federal programs.

This energy assessment covers diagnostic testing, inventory of energy appliances and evaluation of the envelope.

It is recommended to request history of energy utility costs. A 12 month history will help identify seasonal fluctuations in utility costs.

GENERAL INFORMATION

EE Impact

Climate location, orientation and age will affect energy use to maintain comfort.

Location

In San Diego County, dwelling located in a cooler climate area will have some demand on heating and minimal on cooling. This would result in lower energy costs.

Orientation

It's important to understand the impact of the dwelling' s orientation of the home and the affect of specific rooms:
- **North** facing walls will have no sun heat radiation. These areas may be prone to moisture issue with lack adequate drying from sun radiation.
- **East** facing walls may experience sun comfort issues during the morning period.
- **South** & **West** facing walls may experience prolong comfort issues from sun radiation well into the evening.

Dwelling street orientation faces **North, East,** Based on orientation, the following room(s) may experience comfort issues**: Living rooms and master bedroom.**

Age

1960-1978 - Dwellings built prior to this period lack energy codes minimums. Insulation in attic, walls and crawlspace were not required.

ENVELOPE

Envelope defines the outer shell of the dwelling that provides thermal and moisture protection. This includes exterior siding, windows, insulation, air tightness, foundation, roof & attic. Attic ventilation is included in this section. Insulation and its condition plays a vital role in energy efficiency & comfort. Attic and crawlspace insulation conditions are evaluated.

AIR SEALING

EE Impact

Older dwellings lack air tightness. This creates drafty air infiltration of outside air and pollutants to permeate inside. Heating and cooling is lost and wasted. Moderate leakage can be noted with older single pane windows. All exterior doors should be properly weather-stripped.

Newer buildings require air tightness that will require fresh air to enter mechanically.

Exterior Doors/Hatches

Front Door, Damaged, deteriorated or no weather-stripping. **Exterior Door** - Noted weather-stripping. Appears serviceable, **Attic hatch,** Attic hatch should be insulated. Recommend to make air-tight to reduce air leakage.

Noted air gap

Recessed Canned Lights

Noted recessed canned lighting. Some of the lighting fixture appears new. These models minimize air leakage and allows direct contact with insulation improving energy efficiency. .

Assessment

Recommend to weatherstrip all doors/hatches that access exterior, attics or unconditioned areas like garage. This will minimize air leakage, improve indoor air quality and minimize CO potential.

EE UPGRADE

INSULATION

EE Impact

Insulation provides major benefits towards energy efficiency. Insulation effectiveness comes from multitude of air pockets that is a poor transfer of heat. To be effective, insulation must be fully fluffed with no compressions. It must also be continous with no exposure to the inner wall or ceiling.

Insulation when properly installed, provides an effective thermal boundary for the living areas when installed in the attic, outer walls and crawlspaces. This will lower energy costs and comfort.

Homes built before 1978 may not have insulation inside exterior walls. Insulation in attic may suffer from settling, displacement and bypass reducing it's effectiveness.

Attic

Type - No insulation noted. Proper installation of insulation to increase the energy efficiency of the house is recommended.

Assessment

Recommend to install and maximize the amount of insulation to improve the energy efficiency and comfort to the dwelling.

Wall - Outer

Due to the large area of insulation in the outer walls, the condition of insulation places a major role in energy efficiency. These conditions cannot be determined in the home inspection. The following is general information based on the time of construction. These conditions can change in repairs or remodeling over time.

- Pre 1978: No insulation required
- 1979 - 93: R11
- 1994 - 2014: R13
- 2014 + : R15+

Time of construction did not require insulation installation. Lack of insulation inside walls will have moderate comfort issues and poor energy efficiency.

Type

No insulation noted. Checked a minimum of two locations. Proper installation of insulation to increase the energy efficiency of the house is recommended.

Walls were scanned with thermal imaging camera. Noted high levels of heat/cooling response indicating a lack on insulation.

Assessment

Sample walls were scanned with thermal imaging camera. Noted high levels of heat response indicating a lack on insulation.

Foundation

Slab.

WINDOWS

EE Impact

Windows have a negative impact on a dwelling's energy efficiency. Orientation and shading significantly impacts overall energy efficiency performance. To meet stringent EE guidelines, they must be dual panel, Low U-factor and high solar heat gain.

Type

Noted some single pane.

Assessment

Recommend to upgrade to Low E dual pane windows.

ATTIC VENTILATION

Vents

None.

Blower Door Assessment

Blower door tests for home air leakage between outdoor & indoor conditioned area. Leaky (drafty) dwelling creates multiple problems. High leakage will loose conditioned air (heat/cooling) leading to higher energy costs. It also can draw in outside air that may contain outside pollutants creating an enviromental hazard.

House Blower Door Pressure Test

Test

Target is based on minimum airflow requirements determined by cubic capacity of conditioned area.

Dwelling tested at 153 cubic feet/min at 50pa (pressure), Target is 2,765 Cubic feet/min. Leak Ratio. Ratio percentage is -83 % over target.

Assessment

Tight - Test indicates house is air tight and should have mechanical means of ventilation.

EE UPGRADE

Dwelling is considered by standards, lacks sufficient air for habitability. Hazards could exist when combustion appliances are present or adjacent to living areas. **It is recommended to install mechanical ventilation system.**

Hzd

HEATING, AC, DUCTING

Central heating and cooling systems provide primary comfort to your dwelling. These systems are also a major portion of energy costs. Avg. 46% of energy costs. These systems have constant improvements in energy efficiency that increases their cost effectiveness. Rising utility costs, comfort and sustainability are driving demand for high energy efficient systems.

HEATING

Fuel

Natural Gas or propane.

Type

Central - Draft Assist unit has an fan to optimize air through the heat exchange.

Assessment

Appears serviceable.

AIR CONDITIONING

EE Impact

Air conditioning systems will seasonally increase utility costs during high temperature months. Energy efficiency is measured by Seasonal Energy Efficiency Rating (SEER). A SEER rating of 13 is 30% more efficient vs. SEER 10. The following are minimum standards of SEER ratings at the time of installation.
1993 - min. SEER 10
2005 - min. SEER 13
2015 - min. SEER 14

The refrigerant system needs to be calibrated and monitored to assure optimum energy efficiency.

Type

Condenser.

Assessment

SEER rating is estimated to be 13 based on label or age of unit.

Unit can be further optimized for efficiency. **Recommend** further evaluation to measure airflow, wattage/CFM and refrigerant charge.

EE UPGRADE

DUCTING

EE Impact

The duct system can lead to excessive loss of energy efficency through leakage of conditioned air into unconditioned areas (attic, crawlspace). CEC advises an average of 30% leakage. New standards require 6% or less leakage and highly insulated.

Type - Supply

Mix of flex and rigid ducting. Also noted un-insulated ducting.

Uninsulated ducting

Assessment

Noted paper-backed ducting assembly that may contain asbestos. We are prohibited from pressure testing ducting system as a health precaution. These portions of ducting will need to be properly remediated.

Type - Return

Original design uses building cavity usually below the furnace. The return path may also use a chase between floors or wall cavities.

Assessment

Recommend replacement ducting supply and return system. New flex ducting systems have high insulation (R6) and must reduce leakage to 6% or below.

EE UPGRADE

Ducting Assessment

Duct testing evaluates the air tightness of the ducting system between the supply and return registers. High leakage looses costly conditioned air (heating/cooling) into unconditioned area like attic or crawlspace. Calif state averages 30% leakage in older designs.

DUCT PRESSURE TEST

Results

Noted asbestos on ducting boots. Per EUC program testing is prohibited due to hazard potential. Use default of 28% over target.

Assessment

Very Leaky - Ducting is leaky that results in loss of conditioning that should be corrected.

Water heaters are shared appliances that are always on-demand mode. Avg. 14% of energy costs. Efficiency is based on demand, standby loss and distribution contribute to energy consumption. Water heaters use an Energy Factor(EF) rating to measure efficiency. Estimate life is 10-15 years. Recommend to replace unit with EnergyStar, condensing or on-demand (tankless) water heaters when they near or beyond estimated life.

WATER HEATER

Fuel

Natural Gas or propane.

Location

Outside - Unit is located outside the dwelling eliminating any potential backdraft/CO hazard.

Type

On Demand (tankless) - Offers lower energy costs with on-demand heating. High EF of .92. Units must be flushed annually.

Assessment

Appears serviceable.

Recommend to insulate all accessible piping to reduce distribution energy loss.

APPLIANCES, LIGHTING

Old appliances have little energy efficiency. Avg. 25% of energy costs. New EnergyStar refrigerators can be 5x more efficient saving several hundred dollars a year. EnergyStar Clothes washers & dishwashers are also more efficient at conserving water.

Incandescent lights are phasing out, poor efficiency, short life and emit heat. LED lighting uses a 75% less energy, lasts 25x longer and emits negligible heat. Sensor (light/occupancy) controllers improves efficiency. Older recessed canned lighting shared with attic may have moderate levels of air leakage.

APPLIANCES

EE Impact

Refrigerator ten years or older lack energy efficiency. New Energystar refrigerators can be 5x more efficient saving several hundred dollars a year. Dishwashers and clothes washers - Older models may lack energy efficiency and waste water. Estar rated clothes washer improve energy efficiency by a minimum of 20% and water conservation by 35%

Kitchen

Refrigerators - Appears to be a newer model.

Clothes W/D

Clothes Washer - Appears to be a newer model. Noted Energy Star rated appliances. **Clothes Dryer** - Energy Fuel - Natural Gas or propane.

Assessment

Refrigerator - Newer model and/or Energy Star rated,
Clothes Washer - Newer model and/or Energy Star rated.

LIGHTING

EE Impact

When compared to incandescent, LED lighting uses a 75% less energy, lasts 25x longer of power, and emits negligible heat. Sensor (light/occupancy) controllers manage energy efficiency further.

Type

Noted incandescent, CFL and LED lighting.

Assessment

Recommend to replace with LED lighting to improve energy efficiency.

CAZ/Combustion Safety

COMBUSTION APPLIANCE ZONE

Tests

Combustion Appliance Zone is a diagnostic test to evaluate potential of backdrafting of combustion gases into the conditioned area of the dwelling. Combustion gases are unhealthy and potentially hazardous containing carbon Monoxide. Combustion appliances are identified by location of inside, adjacent or outside of the dwelling. Then all internal fans are operated to create as much negative pressure inside dwelling that could cause these appliances to backdraft. These measure must also consider before and after any EE improvements specifically air sealing that would affect depressurization. The following are fan systems that are pulling air from inside dwelling exhausting to the outside causing negative pressure.

COMBUSTION SAFETY TEST

Results

Stove/range.

Gas line Leaks

Accessible gas lines, including flexible and valves are checked for gas leaks. There may be gas lines that are not accessible to check for gas leaks.

UTILITY BILL ANALYSIS

History

New homeowner. No history is available under client occupancy.

POOL

EE Impact

Noted single speed pool pump. As this operates between 4 to 8 hours everyday can be a major source electrical usage.