

Staff Report City of Manhattan Beach

то:	Honorable Mayor Ward and Members of the City Council
THROUGH:	Richard Thompson, Interim City Manager
FROM:	Laurie Jester, Acting Director of Community Development Carol Jacobson, Building Official Sona Kalapura, Environmental Programs Manager
DATE:	March 16, 2010
SUBJECT:	Consideration of Recommendations by the Environmental Task Force to Amend the Municipal Code for Comprehensive Sustainable Building Measures.

#### **RECOMMENDATION:**

Staff recommends that the City Council **DISCUSS AND PROVIDE DIRECTION** for staff to prepare amendments to the Manhattan Beach Municipal Code, Title 5 Sanitation and Health, Title 9 Building Regulations, and Title 10 Planning and Zoning, to incorporate a comprehensive set of Sustainable Building Measures as recommended by the Sustainable "Green" Building Subcommittee and the Environmental Task Force.

#### **FISCAL IMPLICATION:**

Based on a review of several industry reports, case studies and governmental studies, the cost of the majority of the recommended measures would be zero or an insignificant cost. The residential energy efficiency measures have the most potential for cost variation. The energy efficiency program is extremely flexible, which allows an abundance of choices for the owner. Depending on the options chosen, initial costs may vary between 0% and 5% of total construction cost. On the other hand, a project could choose to incorporate "high end", innovative, state-of-the-art, or experimental designs and features; and costs could increase significantly. Because the market for sustainable products is changing to accommodate these choices, the construction costs could actually decrease.

Some measures represent considerable energy savings with direct payback potential within 1 to 5 years. Incentives from utilities and programs, such as the New Solar Homes Program can provide significant rebates to homes exceeding California Title 24 energy efficiency, which could offset any incremental costs. Recent and impending State laws, such as the California Green Building Standards effective January 1, 2011, will require incorporating sustainable practices, which could also reduce costs as the supply and demand for such goods increase.

There will be some nominal costs associated with staff training, website updates, and public meetings to educate staff, residents, and the construction community, which are included in the

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proposed 2010-2011 budget. The Building Official has obtained accreditation for the level of Green Associate for knowledge of green building practices to understand the Leadership in Energy and Environmental Design (LEED<sup>®</sup>) Green Building Rating System<sup>TM</sup> and the Principal Building Inspector has earned the designation as a Build It Green Certified Green Building Professional. Other department staff, such as Planners and Plan Check Engineers are expected to complete similar training with the goal of obtaining similar designations. The upcoming fee study will also consider and incorporate costs into permits and applications, if approved by the City Council. Preparation of the required reports to the California Energy Commission has been budgeted in the Community Development Department current budget.

#### **BACKGROUND:**

#### Environmental Task Force

In June, 2008 City Council decided to form a resident-based Environmental Task Force (Task Force) to study environmental issues of priority to the community. Staff solicited applications and on September 2, 2008 Council reviewed these applications and selected 14 residents to serve on the Task Force. Council then appointed two representatives to the Task Force, Mayor Mitch Ward, and Council Member Portia Cohen. The remaining positions were appointed by the Manhattan Beach Unified School District, including Amy Howorth School Board Member, and two student representatives.

The 19-member Task Force had its first meeting on October 15, 2008, and divided into four subcommittees to tackle priority environmental issues identified by City Council: the development of a Climate Action Plan; Water Conservation and Storm Water Management Issues; Waste Reduction and Recycling; and Sustainable ("Green") Building. Since this first meeting of the Task Force the subcommittees have made significant progress on the goals and tasks identified.

Each subcommittee has presented status reports and recommendations to the entire Task Force, and has gained approval on several proposed solutions to the City's environmental challenges. Once the Task Force has approved a set of recommendations, they are presented to City Council for review and direction, and then Staff carries out the recommendations.

#### Sustainable ("Green") Building Subcommittee

The Green Building subcommittee is comprised of three residents: Casey Beyer, Ben Burkhalter, and Chris Conaway, each bringing unique insight and expertise in the sustainable design, architecture, and energy efficiency areas (see Exhibit A). City Staff provide support to the Subcommittee as well, including Acting Community Development Director, Laurie Jester; Carol Jacobson, Building Official; Sona Kalapura, Environmental Programs Manager; and Esteban Danna, Assistant Planner.

To achieve the goals in the group's mission statement (See Exhibit A) the Sustainable Building Subcommittee developed a four-pronged approach to sustainable development for the City of Manhattan Beach. The first two areas, dealing with public buildings and large non-residential construction, were considered and Ordinance No. 2124 was passed on June 17, 2009. The next two parts include recommendations primarily for new residential construction (energy efficiency standards) as well as sustainable practices and requirements for all construction that are attainable and reasonable for Manhattan Beach. These additional regulations include concerns

regarding stormwater retention and landscaping, which are part of the City Council's 2009-2010 Work Plan.

The Green Building Subcommittee has developed recommendations that are best suited for the environment in Manhattan Beach's largely residential makeup and are intended to augment and supplement the previously adopted ordinances requiring Leadership in Energy and Environmental Design (LEED<sup>®</sup>) Gold Certification for Public Projects and LEED Silver equivalency for larger Private Sector Projects. LEED is the predominant national non-residential third-party green building rating system, developed by the United States Green Building Council. The rating system provides measurable environmentally sound building design, construction, operations and maintenance solutions. The subcommittee placed specific emphasis on energy efficiency, water conservation, runoff reduction, solid waste reduction and diversion, and air quality and emissions reductions.

If the City Council approves the recommendations, staff would prepare ordinances detailing these recommendations that would amend the Municipal Code Title 5 Sanitation and Health, Title 9 Building Regulations, and Title 10 Planning and Zoning. The draft ordinance would be presented to the Planning Commission, for the Zoning Code amendments, and then to the City Council for their review and consideration.

#### **DISCUSSION:**

#### Green Building Subcommittee Recommendations

The Sustainable Building Subcommittee's recommendations for comprehensive sustainable measures as reviewed and supported through the Environmental Task Force comprise the following five different areas that are typically used in both green regulations and green rating systems (Exhibit B):

#### 1. Site Sustainability

- a. Stormwater Retention Design- Low Impact Development & Best Management Practices
- b. Green roofs

#### 2. Water Efficiency/ Water Use Reduction

- a. Landscaping and Irrigation
- b. Plumbing Fixtures
- 3. Energy
  - a. Energy Efficiency
  - b. Renewable Energy
- 4. Materials and Resources Waste Management and Material Reuse

#### 5. Air Quality - Indoor and Outdoor

These recommendations for mandatory measures included reviews of current and impending regulations. The measures would apply generally to residential, non-residential, commercial, and municipal construction. Many of these recommendations are required now or in the near future by the City's Water Conservation Ordinance, California Model Water Efficient Landscape Ordinance, California Energy Efficiency Regulations, and/or the California Green Building Standards (to be effective January 1, 2011). Other reviews included Los Angeles County and Santa Monica Low Impact Development requirements and research of other jurisdictions with

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cutting edge sustainable policies, such as Santa Monica, Palo Alto, Los Angeles County and City, San Francisco County and City, Santa Barbara, San Jose, Chula Vista, and Berkeley. City Council has indicated that one of the goals of Manhattan Beach is to be a leader in our sustainable policies. As discussed in the fiscal implications section above, the majority of these measures have insignificant to no net impacts.

#### **1. Site Sustainability Recommendations**

LOW IMPACT DEVELOPMENT & BEST MANAGEMENT PRACTICES			
Application         All New Construction & Major Renovations			
1a. Measures	<ul> <li>Retain 100% of runoff water on site to pre- development standards</li> <li>Small lots of 7,500 sq ft or less may use prescriptive method that allows no more than 20% of the required yard, setback, parkways, &amp; encroachment area to be non-permeable <i>or</i> may use the option of engineered design</li> <li>Lots over 7,500 sq ft must use engineered design</li> </ul>		
Benefit	Reduce runoff and discharge of pollutants Meet or exceed municipal discharge permit		

# STORMWATER RETENTION DESIGN

The subcommittee vetted the stormwater retention design, low impact development, Best Management Practices, landscaping and irrigation, and water efficiency recommendations with the Water Subcommittee of the Environmental Task Force. Additionally, Kathleen McGowan (City's consultant for the Municipal Stormwater Permit) reviewed the recommendations for consistency with the current and the impending revised Los Angeles County municipalities Stormwater Permit. Part of the Permit's objectives is to minimize impacts from stormwater and urban runoff as well as maximize the percentage of pervious surfaces to allow percolation of stormwater into the ground. Stormwater retention and encouragement of softscape is part of the 2009-2010 Work Plan.

	GREEN ROOFS			
1b.	Application	All New Construction & Major Renovations & Roof/Deck/Balcony Remodels		
	Measures	<ul> <li>Treated as other decks and balconies for height &amp; setbacks</li> <li>Director may approve green roofs on top of roof level if not useable as a deck, and if fire-life-safety, maintenance, slope, and access are mitigated.</li> </ul>		
	Benefit	<ul> <li>Reduce stormwater runoff in public system</li> <li>Filters pollution</li> <li>Increases thermal &amp; acoustical insulation</li> </ul>		

A green roof is a roof surface that supports the growth of vegetation over a portion of its area generally for the purpose of water or energy conservation. The roof usually consists of a waterproof, root-safe membrane that is covered by a drainage system, lightweight growing medium, and plants. Green roofs provide a means to decrease stormwater runoff into the public system as well as provide building insulation. To encourage this while balancing height, views, and safety concerns; the recommendation to amend Title 10 Planning and Zoning would provide administrative flexibility for green roofs, which is consistent with the 2009-2010 City Council Work Plan.

#### 2. Water Efficiency/Water Use Reduction Recommendations

LANDSCAPING AND IRRIGATION		
Application	All New Construction & Major Renovations	
2a. Measures	<ul> <li>Maximum of 20% of the landscaped area (private property, public parkways, &amp; encroachment areas) may be high water use, such as grass</li> <li>Small lots of 7,500 sq ft or less may use a basic worksheet <i>or</i> may provide an engineered design to allow flexibility</li> <li>Lots over 7,500 sq. ft. must use a landscape architect for plans &amp; engineered calculations</li> <li>Director may allow administrative exemptions for hardship or special circumstances</li> </ul>	
Benefit	Estimated 20% reduction water usage and runoff discharge.	

#### LANDSCAPING AND IRRIGATION

These recommendations were also discussed with the Water Subcommittee at a joint meeting. The landscaping and irrigation measures exceed the California Model Water Efficient Landscape Ordinance. The California landscape ordinance mandates all cities to require plans for water efficient landscape design, installation, and maintenance for larger landscaped developments. The primary goal is to reduce the water needed to irrigate landscapes. This is accomplished through both the type and sizing of the irrigation system used and the types of plants in the landscaped areas. If a site uses non-potable water use (i.e., graywater, reclaimed water), it is exempt from the water efficiency measures.

PLUMBING FIXTURES			
Application	New Construction, Major Renovations, Plumbing Remodels and Additions, Retrofits upon sale and/or transfer of property		
2b. Measures	<ul> <li>Residential Remodel and New Construction applicants may have the alternative of providing a Water Use Budget to reduce water use by 20% or install plumbing fixtures that use 20% less water, such as: <ul> <li>toilets, faucets,</li> <li>showerheads,</li> <li>weather/sensor based irrigation controls</li> <li>clothes washers &amp; dishwashers</li> </ul> </li> <li>Residential Water Use Budget or prescriptive plumbing fixture options are same requirements as in 2011 Calif Green Building Standards</li> <li>Residential to retrofit with WaterSense toilets upon sale of property with exemptions, such as foreclosures or transfers within family</li> <li>Residential and Non-residential fountains, ponds max 25 sq ft footprint with water recirculation system unless using non-potable water; no fountain overspray</li> </ul>		
Benefit	<ul> <li>Estimated 20% reduction water usage</li> <li>Meet or exceed City Water Conservation Ordinance and Calif Green Building Standards</li> </ul>		

On January 1, 2011, the California Green Building Standards will require a 20% reduction in potable water use when installing plumbing water fixtures for all new residential construction as well as weather-based and or sensor-based irrigation controls. The subcommittee recommends adopting these measures as leaders of the community in advance of this mandate.

An additional measure would be implemented through the Residential Building Record Reports for sales of property, which require only toilets to be retrofit. Subcommittee members discussed this with a representative of South Bay Association of Realtors as well as other local real estate brokers and agents. These representatives noted that retrofit requirements for property sales or transfer are a common practice. The WaterSense program by the Environmental Protection Agency lists several hundred selections of high efficiency low water-use toilets from major suppliers as well as smaller manufacturers. The local West Basin Municipal Water District often provides toilet rebate incentives for high efficiency toilets and other plumbing fixtures.

#### 3. Energy Recommendations

ENERGY EFFICIENCY			
Application New Construction & Major Renovations; Ad			
<b>3a.</b> Measures	<ul> <li>Exceed Title 24 Calif Residential Energy Efficiency Standards by 20% - residential only</li> <li>Individual Water Heater efficiency based on size &amp; type – residential and some non-residential</li> <li>Provide Energy Star light fixtures - non-residential &amp; residential</li> <li>Major appliances, fixtures, and equipment to be Energy Star efficient - non-residential &amp; residential</li> <li>New Swim pools and spas to provide 60% of heating from solar energy system - non-residential &amp; residential</li> <li>Fireplace energy and venting efficiency - non- residential &amp; residential</li> </ul>		
Benefit	Estimated 20% to 70% reduction of energy demand		

#### ENERGY EFFICIENCY

Residential construction is the primary target of the Title 24 energy efficiency recommendation. By improving the energy efficiency of all new construction and major renovations, the City potentially reduces energy demand by 20% to 70%. The subcommittee enlisted the services of a local energy design consultant, who provided energy efficiency "baselines" for five different typical homes built in town (See Exhibit C). These homes meet the current "baseline" requirements for energy efficiency established by the California Title 24 requirements. Next, both 15% and 20% efficiency above the baseline were reviewed. The subcommittee concluded that requirements to meet 20% energy efficiency above the California Title 24 requirements were feasible and reasonable. If the City of Manhattan Beach were to require 20% efficiency above Title 24, this would place Manhattan Beach in a leadership role as many of the jurisdictions have only chosen to require 15% over Title 24.

There is an extremely large toolkit for the designer and owner to choose from in order to reach the 20% above Title 24 energy efficiency goal. There is also a wide variation in potential cost impacts. It is possible to achieve compliance with no net increase to the total construction cost. The probable increase ranges from 0% to 5% of the total construction cost. One example from the toolkit is verification of caulking, insulation, and the heating/air conditioning systems. The verification would be performed by a certified rater from the California Home Energy Rating System (HERS) program. The subcommittee noted that this verification has the potential to substantially increase the energy efficiency and thus reduce the overall operation costs for a minimal expenditure. Some options available include:

- Increasing insulation added thickness or increased efficiency
- Verifying that caulking around windows, doors, and other opening is not leaking heated or cooled air
- Verifying heating and air conditioning duct leakage is mitigated

- Orientation of glass and shading devices
- Increasing the effectiveness of heaters from 80% to 90% efficiency
- Increasing efficiency of window and glass
- Adding insulation to basement retaining walls and concrete slab edges

Other energy efficiency measures beyond the Title 24 requirements have minimal to no fiscal impacts. These are the "low hanging fruit" that can provide high efficiency for lower costs over the lifetime of the appliances, fixtures, and equipment. In most instances, these measures apply to both residential and non-residential construction. Examples of these requirements include light fixtures, heaters, individual water heaters, and fireplaces, which would need to meet strict energy efficiency requirements. Energy Star is a listing required on some of the fixtures and appliances. Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy that lists products with superior energy efficiency ratings. The heating and insulation of new swimming pools and spas are also addressed to discourage inefficient and fossil-fuel heating that emit greenhouse gas.

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Application	Modification to Title 10 Planning and Zoning		
<b>3b.</b> Measures	<ul> <li><u>Solar energy systems</u> – continue to waive fees; allow 12" over height if needed to meet Solar Rights Act; Director may exempt height restrictions where fire-life safety, and access issues are mitigated.</li> <li><u>Wind turbines</u> – allowed within building footprint; public hearing for other locations</li> </ul>		
Benefit	Encourage or Facilitate renewable energy		

### RENEWABLE ENERGY

The renewable energy recommendations would revise Title 10 of the Manhattan Beach Municipal Code to document the City's support of the California Solar Rights Act. It would allow administrative approval of a maximum 12" over the height limit for solar energy systems that meet the Solar Rights Act. The Director would have the flexibility to allow exemptions to the height limit where fire-life safety and access issues are mitigated. Several solar energy system companies have met with staff and plan check guidelines have been refined to meet their concerns while balancing safety and access issues for the Fire and Building regulations. The City continues to waive plan check and permit fees. These actions have resulted in triple the number of permits compared to other cities in the South Bay.

This recommendation also discusses wind energy systems. Small-scale units had been demonstrated to the Environmental Task Force; however, this type of technology is not yet in production. Because there are many concerns regarding the viability of current technology as well as height, view, location, and noise concerns; the subcommittee recommends that wind turbines outside the building footprint area be considered through the public hearing process.

<i>4</i> .	Material	and	Resources	<b>Recommendations</b>	

	WASTE MANAGEMENT and MATERIAL REUSE			
	Application	New Construction & Major Renovations		
4.	Measures	<ul> <li><u>Waste management</u> - Require 65% waste diversion of construction and demolition debris</li> <li><u>Fly ash reuse</u> – Require minimum 20% fly ash in concrete pour in-place cement</li> </ul>		
	Benefit	<ul> <li>Additional 15% reduction in construction-related waste</li> <li>Fly ash use diverts waste product &amp; reduces use of Portland cement, which is energy intensive to produce</li> </ul>		

Improved waste diversion from the landfill and material reuse are the main objectives of these recommendations. The current requirement is to recycle 50% of construction and demolition debris. This proposal would increase the requirement by 15% for a total of a 65% diversion rate. The recent Wells Fargo project diverted more than 80% of their debris from landfills.

Fly ash is a by-product of coal, which is typically burned to produce electricity. Fly ash can be used as a mixture additive to cement, which reduces the amount of Portland cement used. Portland cement is energy intensive to produce. The subcommittee researched the feasibility and viability of combining fly ash in poured in-place concrete and determined it to be practical, inexpensive and locally available. The quality of the concrete works well with 20% fly ash. Fly ash, which is potentially detrimental to the atmosphere, is instead captured and reused for cement.

#### 5. Air Quality Recommendations

	INDOOR AND OUTDOOR			
	New Construction and Major Renovations			
5.	Measures	<ul> <li><u>Indoor</u> - Finishes, Caulks, Sealants, Adhesives – low or no Volatile Organic Compounds (VOC).</li> <li><u>Outdoor</u> - Best Management Practices –         <ul> <li>Discourage or prohibit material deliveries to construction sites on trash pick up days</li> <li>Educate and enforce limits on idling of gas or diesel fueled construction vehicles</li> </ul> </li> </ul>		
	Benefit	<ul><li>Improve indoor air quality</li><li>Reduce construction-related traffic and fuel waste</li></ul>		

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This recommendation expands the current requirements of Low Volatile Organic Compounds (VOC) in caulking. VOC's are harmful vapors that are regulated by a variety of air quality Agenda Item #:\_

governmental agencies. The measure brings the City's regulations in line with that of the California Green Building Standards, which will be effective January 1, 2011. The market for low and no VOC finishes, caulks, sealants, and adhesives is growing rapidly; so a wide selection of these items is easily attainable for reasonable costs.

The outdoor air quality recommendations are Best Management Practices that the Residential Construction Officer will implement and enforce.

#### <u>Next Steps</u>

Staff will develop the appropriate ordinance to implement measures as directed by City Council. Also, the California Public Resources Code (PRC) requires that the City make a determination, as part of the ordinance, that proposed energy efficiency portions of the measures are cost effective. The PRC requires that the energy efficiency information be submitted to the California Energy Commission, who will review the application/ordinance to assure that the proposed standards exceed the current Standards, and by how much (20% per the subcommittee's recommendations).

In order to educate the public and construction community, staff would be trained on the new regulations. Subsequently, staff will conduct public outreach through construction community meetings and newsletter, City cable television public service announcements, and the City's website. It is anticipated that code enforcement of the sustainable measures after final inspections would be minimal; similar to the water conservation measures, which had a strong public outreach - without pro-active enforcement - and the City has reduced water usage by 20%.

#### CONCLUSION:

Staff recommends that City Council approve the recommendations of the Environmental Task Force, and direct staff to prepare amendments to the Manhattan Beach Municipal Code, Title 5 Sanitation and Health, Title 9 Building Regulations, and Title 10 Planning and Zoning. Draft ordinances to incorporate the mandatory measures would then be presented to the Planning Commission, for the Zoning Code amendments, and then to the City Council for their review and consideration.

#### Exhibits:

- A. Green Building Subcommittee Member Background and Subcommittee Goals
- B. Detailed Sustainable Measures Recommendations Tables 1-5
- C. Five examples of Title 24 Reports with 20% Improved Energy Efficiency

#### Exhibit A. Green Building Subcommittee Member Background and Subcommittee Goals

#### Member Background

The subcommittee on Sustainable Design (Green Building) is comprised of three residents: Casey Beyer, Ben Burkhalter, and Chris Conaway, each bringing unique insight and expertise in the sustainable design, architecture, and energy efficiency areas. City Staff provide support to the subcommittee including the Acting Community Development Director, Laurie Jester; Carol Jacobson, Building Official; and Esteban Danna, City Planner.

The subcommittee is chaired by Chris Conaway, a LEED AP architect with the international design firm NBBJ in Los Angeles. Chris has been involved with the sustainable design movement since the early 1990s and has just completed his 6<sup>th</sup> LEED certified building project.

Casey Beyer is an independent consultant in the energy and environmental policy sector. Ben Burkhalter is an architect with offices located in Manhattan Beach, with a specific focus on energy-efficient design. Ben is currently working on a case study project for a LEED Gold rated single-family residence.

#### Green Building Subcommittee Mission Statement

The Green Building Subcommittee developed a working mission statement:

- To identify environmentally responsible, sustainable and energy efficient policies for constructing, renovating and occupying the built environment;
- To develop and make recommendations to City Council that will lead towards a healthy and sustainable city; and
- To educate and promote programs that increase awareness and incentivize sustainable building practices.

### **1 a. SITE SUSTAINABILITY** STORMWATER RETENTION DESIGN LOW IMPACT DEVELOPMENT & BEST MANAGEMENT PRACTICES

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 9 Building Regulations All new construction Major renovations (over 50%) Single & Multi- Residential Non- residential Municipal	<ul> <li>Design runoff mitigation measures to achieve zero discharge for ¾" rainfall in 24 hr period &amp; retain 100% pre-development runoff capacity</li> <li>Parcels 7,500 sf or less</li> <li>Two Methods: <ul> <li>Prescriptive –</li> <li>Non-permeable surface max 20% required yard &amp;/or setback, parkway, &amp; encroachment areas</li> <li>Run-off from non-permeable surfaces (e.g., roofs, parking)direct to non-permeable areas &amp;/or approved *Retention Features.</li> <li>Performance –</li> <li>Licensed Civil Engineer or Landscape Architect design per Calif Stormwater Quality Assn Best Management Practices Handbook &amp; US Environ.Protection Agency NPDES</li> </ul> </li> <li>Parcels greater than 7,500 sf may only use Performance method above</li> </ul>	Reduce runoff & discharge of pollutants Meet or exceed compliance with Municipal discharge Permit * Retention Features – may include Gray water, captured rain storage, and other systems – Administrative approval to allow some flexibility for placement	Moderate to no net impacts	Santa Barbara; Santa Monica; Palo Alto

#### 1 b. SITE SUSTAINABILITY GREEN ROOFS

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 10 Planning & Zoning All new construction Major renovations (over 50%) Single & Multi- Residential Non-residential Roof/Deck/ Balcony remodels	<ul> <li>Green Roofs allowed :</li> <li>Where decks &amp; balconies allowed</li> <li>Director exemptions: <ul> <li>Administrative approval where usability at roof level prohibited if fire-life safety, maintenance, slope, &amp; access issues are mitigated</li> </ul> </li> </ul>	Filters pollution Decreases stormwater runoff into public system Increases thermal & acoustical insulation Lowers need for air conditioning & energy consumption	Very moderate to no net impacts	Los Angeles City; Monterey

# 2 a. WATER EFFICIENCY

WATER USE REDUCTION

LANDSCAPING AND IRRIGATION

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 9 Building Regulations Sites using potable water • All new construction • Major renovations (over 50%) • Single & Multi- Residential • Non-residential • Municipal	<ul> <li>Design irrigation to meet requirements for Region 3 per <u>Water Use Classification of</u> <u>L</u>andscape <u>Species</u> (WUCOLS)</li> <li>Plants of high water use – max. 20% total landscaped area on private property, parkways, &amp; encroachment areas per WUCOLS</li> <li>Parcels 7,500 sq ft or less</li> <li>Two Methods: Prescriptive – Standardized Water Budget Worksheet per WUCOLS</li> <li>Performance – Licensed Landscape Architect design &amp; calculations</li> <li>Parcels greater than 7,500 sq ft may only use Performance method above</li> <li>Exemptions:</li> <li>Sites irrigated w/ non-potable water</li> <li>Dept Director administrative for hardship or special circumstances</li> </ul>	Estimated 20% reduction of water usage Estimated 20% reduction of runoff discharge Meet or exceed compliance with California Model Water Efficient Landscape Ordinance	Very moderate to no net impacts	Santa Barbara; Santa Monica; Palo Alto

### **2 b. WATER EFFICIENCY** WATER USE REDUCTION PLUMBING FIXTURES

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
<ul> <li>Title 9 Building Regulations</li> <li>All new construction</li> <li>Additions/ renovations with new plumbing</li> <li>Single &amp; Multi- Residential</li> <li>Non-residential</li> <li>Retrofit toilets upon residential sale/transfer</li> </ul>	<ul> <li>New Construction, Additions, Renovations with new/replaced plumbing fixtures, such as: <ul> <li>Lavatory faucets, kitchen faucets, toilets, clothes and dishwashers to reduce water use by 20% - residential</li> <li>Weather &amp;/or sensor-based irrigation controls</li> <li>Fountains -unless non-potable water, excluding swim pools/spas, max 25 sq ft foot print with water recirculation system; No Overspray.</li> </ul> </li> <li>Two Methods: Prescriptive – Specific plumbing fixtures meeting high efficiency standards Performance – Water Use Budget per the Calif Green Building Standards</li> <li>Residential Sale/Transfer Retrofits <ul> <li>Toilets WaterSense rated or equivalent with exemptions (eg: foreclosures; transfer within family)</li> </ul> </li> </ul>	Estimated 20% reduction of water usage Estimated 20% reduction in effluent discharge Meet or exceed current Manhattan Beach Water Conservation Ordinance & California Green Building Standards effective 1/1/11	Very moderate to no net impacts	Berkeley; Santa Monica; San Francisco

#### **3 a. ENERGY** ENERGY EFFICIENCY

Application	Measures	Purpose/Benefit		Similar
			Impact	Policies
<ul> <li>Title 9 Building Regulations</li> <li>All new construction</li> <li>Additions/ renovations</li> <li>Single &amp; Multi- Residential</li> <li>Non- residential per MB LEED ordinance</li> <li>Municipal per MB LEED ordinance</li> </ul>	<ul> <li><u>Energy Efficiency</u>: Exceed 2008 Title 24 Calif Energy Efficiency Standards by 20% - Residential Only</li> <li><b>RESIDENTIAL &amp; NON-RESIDENTIAL:</b> Lighting Efficiency – Light fixtures – Energy Star rated</li> <li><u>Maior Appliances, Fixtures, Equipment</u> <u>Efficiency</u>: Energy Star rated - <ul> <li>Exhaust &amp; Ceiling fans</li> <li>Clothes &amp; Dish Washers</li> <li>Refrigerators &amp; Freezers</li> <li>Heating, Ventilating, Air Conditioning</li> <li>Wine coolers</li> </ul> </li> <li><u>Water heaters</u> – min efficiency req'ts based on size &amp; type <u>Pipe insulation</u> (currently required)</li> <li><u>Heat traps for non-circulating water heaters &amp;</u> tanks</li> <li><u>Gas Fireplaces</u> – sealed, direct vent – min 65% efficiency</li> <li><u>Swim pools &amp; spas</u> - <ul> <li>Solar energy system for 60% minimum heating of new pools/spas</li> <li>Thermal covers/blankets – minimum R-15 rating</li> <li>Electric resistance heaters must be powered by renewable energy system</li> </ul> </li> </ul>	Estimated minimum 20% to 70% reduction of energy demand Meet or exceed LEED requirements, current California Energy Efficiency regulations & California Green Building Standards effective 1/1/11	Moderate to no net impacts Direct operational & Life cycle cost savings	San Jose; Chula Vista; San Francisco

Solar Energy Systems:       Encourage and/or       Not applicable;       Hermosa Beach;         & Zoning       Administrative approval - Max 12" over height if       Encourage and/or       Not applicable;       Hermosa Beach;         • Director exemptions where fire-life       safety, access issues are mitigated       Encourage and/or       Not applicable;       Hermosa Beach;         • Wind Turbines:       Allowed within building footprint; public hearing for other locations:       • Small scale units technology not yet viable       * Prevailing wind velocities may make this inefficient       • Other concerns re: height, location, noise, view, bird capture need to be mitigated       • Other concerns re: height, location, noise, view, bird capture need to be       • Mind capture need to be       • Mind capture need to be	Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
	•	<ul> <li>Administrative approval - Max 12" over height if to meet State Solar Rights Act;</li> <li>Director exemptions where fire-life safety, access issues are mitigated</li> <li><u>Wind Turbines</u>: Allowed within building footprint; public hearing for other locations: <ul> <li>Small scale units technology not yet viable</li> <li>Prevailing wind velocities may make this inefficient</li> <li>Other concerns re: height, location, noise, view, bird capture need to be</li> </ul> </li> </ul>	facilitate renewable energy & resource	Not applicable;	

#### **3 b. ENERGY** RENEWABLE ENERGY

#### **4. MATERIALS & RESOURCES** WASTE MANAGEMENT & MATERIAL REUSE

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 5 Sanitation & Health and Title 9 Building Regulations • All new construction • Additions/ renovations • Single & Multi- Residential • Non-residential • Municipal	<u>Waste Diversion</u> : Require waste from Construction & Demolition to be recycled – Modify current requirement from 50% to 65%. <u>Fly ash or Similar Supplementary Cementitious</u> <u>Materials (SCM) Reuse</u> : Require use of minimum 20% fly ash in concrete poured in-place cement.	Additional 15% reduction in construction- related waste Use of fly ash diverts waste product and reduces use of Portland cement, which is energy intensive to produce. Meet or exceed LEED requirements and California Green Building Standards effective 1/1/11	Very Moderate to no net impacts	Santa Monica; Los Angeles County; San Francisco

5. AIR Q	UALITY
INDOOR &	OUTDOOR

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 9 Building Regulations & Best	Indoor - Finishes, Caulks, Sealants, Adhesives: Low Volatile Organic Compound (VOC) or No -VOC	Improve indoor air quality	Very Moderate to no net	Beverly Hills; San Francisco;
Management	Low volatile Organic Compound (VOC) of No -VOC	quanty	impacts	Palo Alto
<ul> <li>Practices</li> <li>All new</li> </ul>	<ul> <li><u>Outdoor - Best Management Practices</u>:</li> <li>Discourage or prohibit equipment and/or material deliveries to construction sites on</li> </ul>	Reduce construction- related traffic &		
<ul> <li>construction</li> <li>Additions/ renovations</li> <li>Single &amp; Multi-</li> </ul>	Refuse & Recycling Pickup days that block or interfere with traffic flow through Residential Construction Officer & Contractor Meetings	fuel waste Meet or exceed LEED		
Residential <ul> <li>Non-residential</li> <li>Municipal</li> </ul>	<ul> <li>Educate contractors &amp; enforce Calif Air Resources Board limits on idling of gas &amp;/or diesel fueled vehicles to maximum 5 minutes. Exceptions include concrete mixers</li> </ul>	requirements and California Green Building Standards effective 1/1/11		

# **BUILDING ENERGY ANALYSIS REPORT**

## **PROJECT:**

East Manhattan Existing + Addition SFR (20%)

Manhattan Beach, CA 90266

# **Project Designer:**

Manhattan Beach, CA 90266

# **Report Prepared by:**

**Rick Newton NEWTON ENERGY** 1401 19th Street Manhattan Beach, CA 90266 310 375-2699



#### **Job Number:**

8360P

Date:

1/13/2010

EXHIB 3/16/10 CC MA

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC - www.energysoft.com.

EnergyPro 5.0 by EnergySoft

User Number: 2100

RunCode: 2010-01-13T11:29:4 ID: 8360P

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Form CF-1R Certificate of Compliance	. 3
Form MF-1R Mandatory Measures Summary	10
HVAC System Heating and Cooling Loads Summary	13

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PERF	FORMA		RTIFICAT	E: 1	reside	ential		(Part	1 of 5)	CF-1
Project N				Bui	lding Type			Addition Alone		Date
		E+A SFR (	20%)	_			-	Existing+ Addit		1/13/20
Project A	ddress	Ma	nhattan Bead		lifornia Ene CA Clima			al Cond. Floor Area 2,742		
							e 00	2,742	n/a	2
			ENERGY							
Z Yes							-	ided per Par		his form.
☑ Yes	🗆 No	Special F	eatures I	f Yes,	see Pa	art 2 of	5 of this f	orm for deta	ils.	
INSUL	ATION					Area	Specia	nl		
Const	ruction	Туре		Ca	vity	(fť²)	Featur	es (see Parl	2 of 5)	Status
loof	Wood Fran	ned Rafter		R-19		306				New
Vall	Wood Fran	ned		R-13		607				New
oof	Wood Fran	ned Attic		R-30		1,654				Altered
/all	Wood Fran	ned		None		2,146				Existing
loor	Wood Fran	ned w/Crawl S	pace	None		1,975				Existing
oor	Opaque Do	oor		None		18				New
FENES	STRATIC	DN	U-					Exterior		
Drient	ation /	Area( <i>ft</i> <sup>2</sup> )	Factor S	HGC	Overh	nang	Sidefins	Shades		Status
kylight		4.0	0.710	0.73	none		none	None		New
ear (S)		108.7	0.550	0.67	none		none	Bug Screen		New
ont (NE)		20.0	0.550	0.67	none		none	Bug Screen		New
ight (NW	)	20.0	0.550	0.67	none		none	Bug Screen		New
ight (W)		7.0	0.550	0.67	none		none	Bug Screen		New
əft (E)	-	4.0	0.550	0.67	none		none	Bug Screen		New
ront (N)		13.3	0.550	0.67	none		none	Bug Screen		New
əft (E)		45.4	0.550	0.67	none		none	Bug Screen		Existing
ight (W)		64.0	0.550	0.67	none		none	Bug Screen		Existing
kylight		11.0	1.190	0.83	none		none	None		Existing
ear (SW)		7.6	0.550	0.67	none		none	Bug Screen		Existing
IVAC	SYSTEM	IS					1 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -			
Qty.∣	Heating		Min. Eff	Co	oling		Min. Ef	f The	ermostat	Status
1	Central Furna	сө	90% AFUE	No	Cooling		13.0 SEER	setbac	k	Altered
			1,801 × 8 × 1							
								a terresta		
IVAC	DISTRIE	UTION							Duct	
ocati	on	Hea	ating	Co	oling	Duc	Location	าไ	R-Value	Status
EW Exist	ing + Additior	n Sj Ducted		Duct	ed	Attic, C	eiling Ins, vent	ed	4.2	Altered
								·		
VATE	R HEATI	NG								
ty. 🛛	Гуре		Gallo	ons	Min. E	Eff I	Distributi	on		Status
			u							
								······································		

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PERFORM/	ANCE CE	RTIFIC	ATE: F	Reside			(Part 1	i of 5)		CF-1R
Project Name East Manhattan	E+A SFR (	(20%)		ding Type	🗆 Mul	ti Family	<ul> <li>Addition Alone</li> <li>Existing+ Additio</li> </ul>			/13/2010
Project Address	Ma	nhattan B		ifornia Ene A Clima			otal Cond. Floor Area 2,742	Addition <i>n/a</i>		# of Stories 2
FIELD INSP				CKLI	ST		· · · · · · · · · · · · · · · · · · ·			
☑ Yes □ No						st be prov	vided per Part	2 of 5 of t	his f	orm.
						•	form for detail			
INSULATION					Area	Speci	· · · · · · · · · · · · · · · · · · ·			
Construction			Cav	vity	(ft <sup>2</sup> )	-	res (see Part	2 of 5)	Sta	atus
		<b></b>								
· · · · · · · · · · · · · · · · · · ·										
		·								
						• ··				
FENESTRATI	<u>^</u>	U-		_			Exterior			_
Orientation	Area(ff)	Factor	SHGC	Overh	ang	Sidefins			Sta	atus
Left (SE)	7.6	0.550	0.67	none		none	Bug Screen			sting
Front (NE)	7.6	0.550	0.67	none		none	Bug Screen			sting
Right (NW)	27.6	0.550	0.67	none		none	Bug Screen Bug Screen		-	sting sting
Front (N) Rear (S)	24.0	0.550	0.67	none none		none none	Bug Screen			sting
(G)	104.0	0.000	0.07				Dug 00/00//			
HVAC SYSTE						N		un e etet	C+4	
Qty. Heating	g	Min. E		oling		Min. E		rmostat	ວເ	atus
·-··										
HVAC DISTR	IBUTION		··				C	Ouct		
Location		ating	Co	oling	Duc	t Locatio	on F	R-Value	Sta	atus
WATER HEA	TING	-	- 11	N#? 1	- 44				<b>C1</b>	
Qty. Type		G	allons	Min. I	=11	Distribu	tion		518	atus
EnergyPro 5.0 by En	ergySoft U	ser Number: 2	100	RunCod	e: 2010-0	1-13T11:29:4	4 ID: 8360P		Pa	age 4 of 13

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<b>PERFORMANCE CERTIFICATE:</b>	Residential	(Part 2 of 5)	CF-1
Project Name East Manhattan E+A SFR (20%)	Building Type 2 Single Family	<ul> <li>Addition Alone</li> <li>Existing+ Addition/Alteration</li> </ul>	Date 1/13/201
SPECIAL FEATURES INSPECTI			1/13/201
The enforcement agency should pay special attention justification and documentation, and special verification determines the adequacy of the justification, and may the special justification and documentation submitted The HVAC System Carrier Corp. N9MP1075B12** does not	on to be used with the performar reject a building or design that o	nce approach. The enforcement ac otherwise complies based on the a	aency
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			<u> </u>
	· · · · · · · · · · · · · · · · · · ·		
HERS REQUIRED VERIFICATION		S Potor The inequator must re	
Items in this section require field testing and/or v completed CF-4R form for each of the measures	rerification by a certified HERS is listed below for final to be give	ven.	
Items in this section require field testing and/or v	rerification by a certified HER is listed below for final to be given rates HERS verified Duct Leakage. F	ven.	
Items in this section require field testing and/or v completed CF-4R form for each of the measures The HVAC System NEW Existing + Addition System incorpor	rerification by a certified HER is listed below for final to be given rates HERS verified Duct Leakage. F	ven.	
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Items in this section require field testing and/or v completed CF-4R form for each of the measures The HVAC System NEW Existing + Addition System incorpor	rerification by a certified HER is listed below for final to be given rates HERS verified Duct Leakage. F	ven.	

PERFORMANCE		ICAL.	nesiden			(Part 3 of 5)		
Project Name			Building Type	Single Family		tion Alone		Date
East Manhattan E+A S	SFR (20%)			Multi Family		ting+ Addition/Alter	ation	1/13/201
NNUAL ENERGY USE	SUMMARY	,						
TOM	Standard P	roposed	Margin					
TDV (kBtu/ft <sup>2</sup> -yr)				· · · ///				
Space Heating	39.02	27.31	11.71					
Space Cooling	18.68	14.44	4.25					
Fans	7.27	5.90	1.38					
Domestic Hot Water	15.31	15.31	0.00					
Pumps	0.00	0.00	0.00					
Totals	80.29	62.95	17.34					
Percent Better Than St			21.6 %					
BUILDI	NG COM	<b>MPLIES</b>	6 - HERS	<b>VERIFIC</b>	ΑΤΙΟ	N REQUIR	RED	
								estration
Building Front Orientatio	n:		0 deg	Ext. Walls/R	loof	Wall Area	/	Area
Jumber of Dwelling Unit			.00	(N)		683		65
uel Available at Site:			ral Gas	(E)		855		57
Raised Floor Area:			975	(S)		807		281
Slab on Grade Area:			0	(W)		946		119
verage Ceiling Height:			3.1	Roof		1,975		15
•	U-Factor:		.55			TOTAL:		536
Average	SHGC:	0	.67	F	enestral	ion/CFA Ratio:		19.6 %
EMARKS								
5% CASE: . Replace Furnace with new § . Duct Leakage Testing (HER	S): 11.3% to 16	.0%.						
ASE CASE (6.3%): 5% CASE: Replace Furnace with new 9 Duct Leakage Testing (HER Insulate Existing Roof to R-3 STATEMENT OF CO This certificate of compli	25): 11.3% to 16 30; 16.0% to 21 <b>OMPLIAN</b> ance lists the	.0%. .6%. <b>CE</b> e building fe	eatures and sp	pecifications nee	ded			
5% CASE: Replace Furnace with new S Duct Leakage Testing (HER Insulate Existing Roof to R- STATEMENT OF C This certificate of compli comply with Title 24, F	25): 11.3% to 16 30; 16.0% to 21 OMPLIAN ance lists the Parts 1 the A	.0%. .6%. CE 9 building fe dministrativ	e Regulations	pecifications nee s and Part 6 the	ded			
5% CASE: Replace Furnace with new S Duct Leakage Testing (HER Insulate Existing Roof to R- STATEMENT OF C This certificate of compli o comply with Title 24, F Efficiency Standards of t	S): 11.3% to 16 30; 16.0% to 21 OMPLIAN ance lists the Parts 1 the A the California	CE building fe dministrativ Code of R	e Regulations egulations.	s and Part 6 the		mplete.		
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5% CASE: Replace Furnace with new S Duct Leakage Testing (HER Insulate Existing Roof to R- STATEMENT OF Co This certificate of compli- bic comply with Title 24, F Efficiency Standards of t The documentation auth Documentation Aut NEWTON ENE Iddress 1401 19th Stree ity/State/Zip Manhattan Bea	S): 11.3% to 16 30; 16.0% to 21 OMPLIAN ance lists the Parts 1 the A the California for hereby ce thor thor rRGY et ch, CA 90266	CE building fe dministrativ Code of R	re Regulations egulations. he document Name Rick Net Phone 310 375	s and Part 6 the ation is accurate wton 5-2699	and cor	Jew	Da	ate
5% CASE: Replace Furnace with new S Duct Leakage Testing (HER Insulate Existing Roof to R- STATEMENT OF CO This certificate of compli- be comply with Title 24, F Efficiency Standards of t The documentation auth Documentation Aut Sompany MEWTON ENE Company MEWTON ENE Company Memory Newton ENE Company Memory Company Memory Compan	2S): 11.3% to 16 30; 16.0% to 21 OMPLIAN ance lists the Parts 1 the A the California for hereby ce thor <i>RGY</i> at <i>ch, CA 90266</i> all design res ts is consistent of refrigeran	CE e building fe dministrativ Code of R rtifies that t ponsibility l ent with the with this port t charge, in	re Regulations egulations. he document Name Rick Ner Phone 310 375 nereby certifie other complia ermit application insta	s and Part 6 the ation is accurate wton 5-2699 es that the propos ance forms and v ion, and recogniz illation quality, ar	and cor Sig sed build workshe zes that nd buildi	ding design repre ets, with the spec	Da esented cificatio g duct c	<sup>ate</sup> I in this s ns, and design,
5% CASE: Replace Furnace with new S Duct Leakage Testing (HER Insulate Existing Roof to R-3 <b>STATEMENT OF CO</b> This certificate of compli o comply with Title 24, F Efficiency Standards of t The documentation auth <b>Documentation Au</b> Company NEWTON ENE Address 1401 19th Street Dity/State/Zip Manhattan Bea The individual with overa of construction documer with any other calculation duct sealing, verification installer testing and certi <b>Designer or Owner</b>	S): 11.3% to 16 30; 16.0% to 21 OMPLIAN ance lists the Parts 1 the A the California for hereby ce thor <i>RGY</i> et <i>ch, CA 90266</i> all design res nts is consisted of refrigeran fication and the (per Busin	CE building fe dministrativ Code of R rtifies that t ponsibility I ent with the with this po t charge, in field verifica	re Regulations egulations. the document Name <i>Rick Ner</i> Phone 310 375 nereby certifie other complia ermit application sulation insta ation by an ap	s and Part 6 the ation is accurate wton 5-2699 es that the propos ance forms and v ion, and recogniz ullation quality, ar oproved HERS ra	and cor Sig sed build workshe zes that nd buildi	ding design repre ets, with the spec	Da esented cificatio g duct c	<sup>ate</sup> I in this s ns, and design,
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	t Nam		n E+A	SER	(20%)		E	Building				Family amily		Idition A		/Alterat	Da	ite 13/201
			ACE														1/	13/201
Surfa		00/11				Insulatio	n					Т	<u> </u>	Joint Ap	nendix		•••••	
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Nali		60	0.102 0.102				_			180		New		1-A3			ion 2nd Fl	
Nall Nall		82 82	0.102		1					45 315		New New	_	<u>1-A3</u> 1-A3			ion 2nd Fl ion 2nd Fl	
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Vall		69	0.102							90		New		1-A3			ion 2nd Fl	
Vall		155	0.102							0		New	-	1-A3	10110		ion 2nd Fl	
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Vall		94	0.356		1					270		Remov	_			_	ng Secon	
Vall		59	0.356							0		Existing				Existi	ng Secon	d Floor
Vall Mall		184	0.356		+		_			180		Existing					ng Secon	
Vall Vall		208 110	0.356		-	-	+			90 270		Existing Existing					ng Secon ng Secon	
loor		1,975	0.097							0		Existing					ng First Fi	
Roof		310	0.079		1					30	24	Remov	ea 4.2.	1-A2			ng First F	
FEN	-	_	N SUR		DETAI													
ID	Ту		Area		actor <sup>1</sup>		GC <sup>2</sup>	Azr		tatus			azing				ion/Com	ments
	Skylig		4.0		Default		Defaul	_	25 Ne			uble Me					nd Floor	
2	Windo Windo		4.0 20.0		Default Default		Defaul Defaul		80 Nei 45 Nei			uble Nor uble Nor					nd Floor nd Floor	
4	Windo		20.0		Default		Defaul		15 Net		_	uble Nor					nd Floor	
5	Windo	w	7.0	0.550	Default	0.67	Defaul		70 Ne		Do	uble Nor	Meta	l Clear	Ad	dition 2i	nd Floor	·
6	Windo		4.0		Default	0.67	Default		90 Nei		_	uble Nor					nd Floor	
7 8	Windo Windo		13.3 36.7		Default Default		Defaul Defaul		0 Nei 80 Nei			uble Nor uble Nor					nd Floor acond Flo	
9	Windo		68.0		Default		Default		80 Nei			uble Nor					cond Flo	
10	Windo	w	110.1		Default		Defaul		80 Rei			uble Nor					econd Flo	
11	Windo		8.3		Default		Default		90 Exi	<u> </u>		uble Nor					econd Flo	
12 13	Windo Windo		4.0 14.0		Default Default		Default Default		70 Rei 70 Exi			uble Nor uble Nor					econd Flo	
	Skylig		11.0		Default		Default		30 Exi		_	gle Meta					rst Floor	<u></u>
15	Windo		7.6	0.550	Default		Default		25 Exis			uble Nor					rst Floor	
	Windo		7.6		Default		Default		35 Exi:			uble Nor	Metal	Clear	Ex	isting Fil	rst Floor	
		Factor 1 IGC Typ			= Default = Default													
	_		DING			14510 110	in otan	10100, 14	1110 -	Laber		100						
						Wind	ow		Ove	rhan	a			Left Fi	 1	<b>T</b>	Right F	in
ID	Ext	erior Sh	ade Ty	pe !	SHGC	Hgt	Wd	Len	Hgt	LE		RExt	Dist	Len	Hgt	Dist	Len	Hgt
	None				1.00													
	Bug S				0.76													<u> </u>
	Bug S Bug S				0.76													
	Bug S				0.76					+								
6	Bug S	creen			0.76													
	Bug S				0.76					<u> </u>								<u> </u>
	Bug S Bug S				0.76 0.76													<u> </u>
	Bug S				0.76													
11	Bug S	creen			0.76													
	Bug S				0.76													
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_	Bug Se	creen			0.76													<u> </u>
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	RTIF														of 5)		CF-1F	
	ct Name				/ .		Bu	ilding Typ			Family				(		ate	
Eas	t Manha	ttan E	+A -	SFR (	20%)					Aulti F	amily		sting+ A	Additio	n/Altera	tion   1/	13/20	
OP/	AQUE SI	JRFAC	E D	ETAIL	.S													
Sur	ace	ι	J-			Insulatio	n					J	loint Ap	pendix				
Ту	pe Ar	ea Fa	ctor	Cavity	Exterio	or Frame	Interio	Frame	Azm	Tilt	Status		4		Lo	cation/Co	ommen	
Roof	1,	197 0.	.032	R-30					30	24	Altered	4.2.	1-A8 (E=	4.2.1-A	2) Exis	ting First F	loor	
Vall				None					0		Existing					ting First F		
Door				None	ļ	_			0		New	4.5.				Existing First Floor		
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Vall				None					135	<u> </u>	Existing				Existing First Floor Existing First Floor			
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Vall				None			+	<u>.</u>	0		Existing					ting First F		
Vall				None					180		Existing					ting First F		
Vall			-	None					90		Existing					ting First F		
Vall				None	1			1	270		Existing					ting First F		
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EN	ESTRA	<u>rion s</u>	UR						-						<u> </u>			
ID	Туре	Area	a	U-Fa		<u>SH</u>	GC <sup>2</sup>	Azm	Statu		Gla	zing	Туре		Loca	tion/Com	ments	
17	Window		7.6		Default		Default		Existin		ouble Nor					irst Floor		
18	Window		0.0	0.550			Default		Existin		ouble Nor					irst Floor		
19	Window		7.6	0.550			Default		Existin		ouble Nor					irst Floor		
20	Window		4.0	0.550			Default		Existin		ouble Nor					irst Floor		
21	Window	136	5.0 8.5	0.550			Default Default	1	Existin	<u> </u>	ouble Nor ouble Nor					irst Floor irst Floor		
22 23	Window Window		7.1	0.550			Default		Existin Existin		ouble Non					irst Floor		
23	Window		0.0	0.550			Default		Existin		ouble Non					irst Floor		
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	(1) U-Fac (2) SHGC	tor Type				Table fro Table fro												
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_^ !			NG I		<u></u>	Wind			Overbo				Left Fi			Right I	lin	
חו	Extoric	or Shade	о Т <i>и</i> г		внас				Overha Igt L	Ext	RExt	Dist	Leit Fi	Hgt	Dist		Hg	
ID 17	Bug Scre		e iy		0.76	igi	<u> </u>	_en   ł	igi L			บเอเ	LGII	<u>nyt</u>				
17 18	Bug Scree				0.76					+							+	
19	Bug Scree				0.76													
20	Bug Scree				0.76		<del></del>									1	1	
21	Bug Scree			-	0.76											1	1	
22	Bug Scree				0.76													
23	Bug Scree				0.76						+					+		
24	Bug Scree				0.76													
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CERTIFICAT	E OI	F CC	OMF	PLIAN	CE	: R	lesi	der	ntia				(F	Part	5 of	5)	С	F-1R
Project Name		//	00/1			Build	ding Ty			ngle Far						the section	Da	
East Manhattan E			···· ··· · ·							ulti Fami	ly		XISting	)+ Aac	lition/#	Iteration	1/	13/2010
BUILDING ZUNE	NEOF		UN			T				Floor A	Irea	(ft <sup>2</sup> )						
System Name			Z	one Nam	e	<b> </b>	N	ew	E	xisting		ltere	d F	Remov	/ed	Volume	Y	ear Built
NEW Existing + Addition	n Syster			nd Floor				31	0							2,511	100	
· ···				cond Flo rst Floor	or				-		-	1	457 975			3,702 15,998		
			ang ra	017100/							$\vdash$						100	
											<b> </b>							
											<u> </u>							
		-							-									
		+											_					
		+							+		+							
							·		1									
					Тс	otals		31	0	0		2,	432		0			
HVAC SYSTEMS		<u></u>		Alar Tu		1 Min			Caali	- Tune		4.4iu		<del>-</del>	·	1-1 T. (0.0	T	01-110
System Name NEW Existing + Additior	n Svster	Qty.		ating Ty al Furnace			Eff. AFUE			ng Type			n. Eff. SEER			stat Type		Status Altered
pre-altered for above	. 0)010/			al Furnace			AFUE						SEER					
																	$\rightarrow$	
						<u> </u>											_	
HVAC DISTRIBUT	ION		[			L												
														Duc	ct	Ducts		
System Na				Heating			oling	•		Duct Loc				R-Va		Tested?		Status
NEW Existing + Additior pre-altered for above	n Syster	n		cted cted		Ducted Ducted		_		ling Ins, v ling Ins, v					4.2 2.1			Altered
				0.00		Buolo		7	0, 00,	g	onto	<u> </u>			2.1			
	01/07			<u> </u>								_						
WATER HEATING	SYSI	EMS									<u></u>					Ext.		
									R	ated	Tar	nk	Energ	y S	tandby			
Sustan Nama			Tun			Distrib	ution			nput	Ca		Facto or RE		oss or Pilot	Insul. F Value		Status
System Name Standard Gas 50 gal or i	Qty		Typ II Gas			en Pip			(C	8tuh) <i>40,000</i>	(ga 50		0.53		n/a	value		Status Existing
MULTI-FAMILY W	ATER	HEA	ring			Disis				HYDR		СН	EATI	NG S	YSTE		ì	
			F	Hot W		(ft)	) Leng	n	Ľ									
			niu			1.9			1∕2" latic									
Quarter	0		Eff. Premium						Add ½" Insulation	_					Pipe	Pipe		insul.
Control	Qty.	HP		Plenum		utside	BU	ried		5	yster	TI INA	ame		ength	Diamet	er	Thick.
					+-		1											
									무									
EnergyPro 5.0 by Energ	ySoft	Use	er Num	ber: 2100	)	F	RunCo	de: 20	010-01	1-13T11:	29:4	ID	: 8360	P			Pag	e 9 of 13

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MANDATORY MEASURES SUMMARY: Residential	(Page 1 of 3)	MF-1R
Project Name East Manhattan E+A SFR (20%)		Date 1/13/2010
<u>NOTE:</u> Low-rise residential buildings subject to the Standards must comply with all applicable the compliance approach used. More stringent energy measures listed on the Certificate of C 1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory N into the permit documents, and the applicable features shall be considered by all parties as m specifications whether they are shown elsewhere in the documents or in this summary. Subm Form with plans.	ompliance (CF-1R, CF-1R- Measures Summary shall be ninimum component perform	d, regardless of ADD, or CF- incorporated nance
Building Envelope Measures:		
\$116(a)1: Doors and windows between conditioned and unconditioned spaces are manufactu $$116(a)4$ : Fenestration products (except field-fabricated windows) have a label listing the cert Coefficient (SHGC), and infiltration that meets the requirements of $$10-111(a)$ .		ar Heat Gain
§117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulke	ed and sealed.	
§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type §118(i): The thermal emittance and solar reflectance values of the cool roofing material meets installation of a Cool Roof is specified on the CF-1R Form.		
*§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.		
§150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Val	ue.	
*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.		
*§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.		
§150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000	0) when specified on the CF	-1R Form.
§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16. §150(l): Water absorption rate for slab edge insulation material alone without facings is no greater is no greater than 2.0 perm/inch and shall be protected from physical damage and UV lig		r permeance
Fireplaces, Decorative Gas Appliances and Gas Log Measures:		
§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering th §150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combust §150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, outside of the building, are prohibited.	at least six square inches in tion-air control device.	area and is
Space Conditioning, Water Heating and Plumbing System Measures:		
§110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated ap Commission.		
§113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise resirvalve, backflow prevention, pump isolation valve, and recirculation loop connection requirement	ents of §113(c)5.	
§115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces (appliances with an electrical supply voltage connection with pilot lights that consume less that spa heaters.		
§150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA	or ACCA.	
§150(i): Heating systems are equipped with thermostats that meet the setback requirements of §150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal with insulation having an installed thermal resistance of R-12 or greater.		nally wrapped
§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-heatil tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R- tank.		
§150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating recirculating sections of hot water pipes are insulated per Standards Table 150-B.	g systems, and entire length	i of
§150(j)2: Cooling system piping (suction, chilled water, or brine lines), and piping insulated bet water tank shall be insulated to Table 150-B and Equation 150-A.	-	
§150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, me 123-A.	eets the requirements of Sta	andards Table
§150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, equip §150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor reta conditioned space.		
§150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating and C	Certification Corporation.	
Registration Number: Registration Date/Time:	HERS Provider:	
EnergyPro 5.0 by EnergySoft User Number: 2100 RunCode: 2010-01-13T11:29:43	ID: 8360P	Page 10 of 13

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	ASURES SUMMARY:	Residential	(Page 2 of 3)	MF-1R
Project Name	D (00%)			Date
East Manhattan E+A SF	K (20%)			1/13/2010
601, 602, 603, 604, 605 and 4.2 or enclosed entirely in con applicable requirements of UI used to seal openings greate	system ducts and plenums installed Standard 6-5; supply-air and return- nditioned space. Openings shall be _ 181, UL 181A, or UL 181B or aero r than 1/4 inch, the combination of n	air ducts and plenums are sealed with mastic, tape of sol sealant that meets the nastic and either mesh or	e insulated to a minimum insta or other duct-closure system th e requirements of UL 723. If m tape shall be used	lled level of R- nat meets the astic or tape is
sheet metal, duct board or fle contain ducts. Ducts installed of the ducts.	upport platforms for air handlers, ar xible duct shall not be used for conv in cavities and support platforms sh	reying conditioned air. Bu all not be compressed to	ilding cavities and support pla cause reductions in the cross	tforms may -sectional area
§150(m)2D: Joints and seam unless such tape is used in co	s of duct systems and their compone ombination with mastic and draw ba	ents shall not be sealed winds.	vith cloth back rubber adhesive	e duct tapes
§150(m)8: Gravity ventilating	ns have back draft or automatic dar systems serving conditioned space		readily accessible, manually o	perated
Cellular foam insulation shall radiation that can cause degra		hat due to sunlight, moistu th a coating that is water	ure, equipment maintenance, a retardant and provides shieldi	and wind. ng from solar
	all meet the requirements of ANSI/A al Buildings. Window operation is no			
Pool and Spa Heating Sy	stems and Equipment Measur	es:		
Regulations; an on-off switch shall not use electric resistant		rmanent weatherproof pla	ate or card with operating instr	uctions; and
	ating equipment shall be installed wi nnections for future solar heating.	th at least 36" of pipe bet	ween filter and heater, or dedi	cated suction
§114(b)3: Pools shall have di	bas that have a heat pump or gas he ectional inlets that adequately mix t g off-peak electric demand periods.	eater shall have a cover. he pool water, and a time	switch that will allow all pump	s to be set or
	ems or equipment meet the pump s	izing, flow rate, piping, filt	ers, and valve requirements o	f §150(p).
<b>Residential Lighting Mea</b>				
§150(k)1: High efficacy lumina contained in Table 150-C and	aires or LED Light Engine with Integ is not a low efficacy luminaire as sp	ecified by §150(k)2.		fficacies
§150(k)3: The wattage of perr	nanently installed luminaires shall b	e determined as specified	l by §130(d).	
<u>20 kHz.</u>	ent lamps rated 13 Watts or greater			
only high efficacy lamps meet	ed night lights and night lights integr ing the minimum efficacies containe be rated to consume no more than	d in Table 150-C and sha	Il not contain a line-voltage so	cket or line-
§150(k)6: Lighting integral to e	exhaust fans, in rooms other than kit	chens, shall meet the app	plicable requirements of §150	k).
§150(k)7: All switching device §150(k)8: A minimum of 50 per EXCEPTION: Up to 50 watts f exempt from the 50% high effi sensor, dimmer, energy mana luminaries in garages, laundry manual-on occupant sensor.	s and controls shall meet the require recent of the total rated wattage of p or dwelling units less than or equal cacy requirement when: all low effic gement system (EMCS), or a multi- rooms, closets greater than 70 squ	ements of §150(k)7. ermanently installed lighti to 2,500 ft2 or 100 watts fo acy luminaires in the kitch scene programmable con are feet, and utility rooms	ng in kitchens shall be high eff or dwelling units larger than 2, nen are controlled by a manua trol system; and all permanen are high efficacy and controll	ficacy. 500 ft₂ may be I on occupant Ily installed ed by a
§150(k)9: Permanently installe illuminated cabinet.	d lighting that is internal to cabinets	shall use no more than 2	20 watts of power per linear for	ot of
Registration Number:	Registration Date	/Time:	HERS Provider:	
EnergyPro 5.0 by EnergySoft		e: 2010-01-13T11:29:43	ID: 8360P	Page 11 of 13
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MANDATORY ME	ASURES SUM	ARY: Residential	(Page 3 of 3)	MF-1R
Project Name East Manhattan E+A SFI	R (20%)			Date 1/13/2010
closets, and utility rooms shal allowed provided they are cor on occupant sensor that com than 1000 square feet located §150(k)12: Luminaires recess Laboratories or other national leakage less then 2.0 CFM at the luminaire housing and cei §150(k)13: Luminaires provid dwelling units, entrances, balk same lot shall be high efficact they are controlled by a manu and one of the following contr astronomical time clock not h control system (EMCS) not h aluminaires used to comply wit sensing function provided tha luminaires in or around swime be high efficacy luminaires. §150(k)14: Internally illumination more than five watts of power §150(k)15: Lighting for parkin requirements in Sections 130 requirements of Sections 130 §150(k)16: Permanently insta dwelling units shall be high eff	I be high efficacy luimna htrolled by either a dimmo- plies with the applicable d on a residential site is r sed into insulated ceilings ly recognized testing/rati 75 Pascals when tested ling. ing outdoor lighting, inclu- conies, and porches, whi y. EXCEPTION 1: Perma- ial on/off switch, a motion rols: a photocontrol not h aving an override or bypa- aving an override or bypa- th Exception1 to §150(k) t the motion sensor is au- ming pool, water features ted address signs shall c as determined accordin g lots and carports with a , 132, 134, and 147. Ligh , 131, 134, and 146. Iled lighting in the enclos ficacy luminaires. EXCE	a rooms or areas other than in kitch ires. EXCEPTION 1: Permanently er switch that complies with the ap requirements of §119. EXCEPTION not required to comply with §150(k) is shall be listed for zero clearance ing laboratory; and have a label that in accordance with ASTM E283; a rding lighting for private patios in lo ch are permanently mounted to a r in sensor not having an override or aving an override or bypass switch has switch that disables the astrono ass switch that allows the luminaire 13 may be controlled by a tempora tomatically reactivated within six he s, or other location subject to Article omply with Section 148; OR not co g to §130(d). a total of for 8 or more vehicles per tring for parking garages for 8 or m red, non-dwelling spaces of low-rise PTION: Permanently installed low of fied to comply with the applicable r	installed low efficacy luminaires plicable requirements of §119, N 2: Lighting in detached storag 11. insulation contact (IC) by Unde at certifies the lumiunaire is airti- and be sealed with a gasket or ow-rise residential buildings with residential building or to other b by luminaires shall be allowed p by pass switch that disables the that disables the photocontrol omical time clock; OR an energe to be always on EXCEPTION ry override switch which bypas ours. EXCEPTION 3: Permane e 680 of the California Electric ( intain a screw-base socket, and site shall comply with the appli- tore vehicles shall comply with e residential buildings with four efficacy luminaires shall be allo	s shall be or by a manual- ge building less inwriters ight with air caulk between in four or more buildings on the provided that e motion sensor, ; OR an y management 2: Outdoor ses the motion intly installed Code need not d consume no icable the applicable
Registration Number:	Regis	tration Date/Time:	HERS Provider:	····
EnergyPro 5.0 by EnergySoft	User Number: 2100	RunCode: 2010-01-13T11:29:43	ID: 8360P	Page 12 of 13

HVAC SYSTEM HEATING	AND COOLING LOAD	S SUM	MARY			
Project Name East Manhattan E+A SFR (20%)					Date	13/2010
System Name			· · ·			13/2010 r Area
NEW Existing + Addition System						2,742
ENGINEERING CHECKS	SYSTEM LOAD					
Number of Systems		COIL		PEAK	COIL H	TG. PEAK
Heating System	1	CFM	Sensible	Latent	CFM	Sensible
Output per System 69,000	Total Room Loads	2,144	48,554	3,166	1,101	50,683
Total Output (Btuh) 69,000	Return Vented Lighting		0			
Output (Btuh/sqft) 25.2	Return Air Ducts		2,862			3,229
Cooling System	Return Fan		0			(
Output per System	Ventilation	0	0	0	0	(
Total Output (Btuh)	Supply Fan		0			· (
Total Output (Tons) 0.0	Supply Air Ducts		2,862			3,229
Total Output (Btuh/sqft) 0.0						
Total Output (sqft/Ton) 0.0	TOTAL SYSTEM LOAD		54,279	3,166		57,141
Air System						
CFM per System 855	HVAC EQUIPMENT SELECTION					
Airflow (cfm) 855	Carrier Corp. N9MP1075B12**		0	0		69,000
Airflow (cfm/sqft) 0.31					Γ	
Airflow (cfm/Ton) 0.0	).					
Outside Air (%) 0.0 %			0	0	Γ	69,000
Outside Air (cfm/sqft) 0.00	(Adjusted for Peak Design conditions)					
Note: values above given at ARI conditions	TIME OF SYSTEM PEAK			Aug 3 PM		Jan 1 AM
HEATING SYSTEM PSYCHROMETRICS	(Airstream Temperatures at Time of	of Heating	Peak)			
38 °F 68 <b>°</b> F 68 °F	115 °F					
		<b></b>	1	n		
				<b></b>		ר
		<b></b>				★
0 cfm Supply Fan Heating 855 cfm	Coll				1	13 ºF
				D	DOM	
				N		
68 °F					7	70 °F
↓	]     ] ←					
COOLING SYSTEM PSYCHROMETICS (	Airstream Temperatures at Time of	Coolina P	eak)			· · ·
		o o o o i i i g i				
84 / 69 °F 80 / 63 °F 80	0/63 °F 55/54 °F					
						-
Outside Air	- Contractions of the second s			3		<b>↓</b>
0 cfm Supply Fan	Cooling Coil				57	/ 54 °F
855 cfm			42.8 %	, pr	DOM 1	
			42.0 7	•		
80/63 °F	<b>D</b>				78 /	/ 63 °F
<b>←</b>	[]       [] ←					L
EnergyPro 5.0 by EnergySoft User Number	r: 2100 RunCode: 2010-01-13T	11:29:43	ID: 8360P		P	age 13 of 13

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# **BUILDING ENERGY ANALYSIS REPORT**

# **PROJECT:**

East Manhattan SFR (20%)

Manhattan Beach, CA 90266

**Project Designer:** 

Manhattan Beach, CA 90266

# **Report Prepared by:**

Rick Newton NEWTON ENERGY 1401 19th Street Manhattan Beach, CA 90266 310 375-2699



Job Number:

8152R

Date:

1/12/2010

E	<b>XHIBIT</b> C
22	MA, 3/16/10
	(#2)

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC - www.energysoft.com.

EnergyPro 5.0 by EnergySoft

User Number: 2100

RunCode: 2010-01-12T13:57:5 ID: 8152R

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Form MF-1R Mandatory Measures Summary	9
HVAC System Heating and Cooling Loads Summary	12

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PER	FORM/	ANCE CE	<u>:RTIFIC/</u>	<u>\TE: F</u>	Resid	ential			(Part 1	of 5)	CF-1R
Project N East M		n SFR (20%)	)	Buil	lding Type		gle Family Iti Family			n/Alteration	Date 1/12/2010
Project A						ergy Clima	ate Zone   T	otal Cond. F	loor Area	Addition	
			anhattan Be				e 06	3,13	87	n/a	2
		PECTION	_								
🛛 Yes	s 🗆 No	HERS M	easures	If Yes,	A CF-	4R mu	st be pro	vided p	er Part 2	2 of 5 of t	his form.
🗹 Yes	s 🗆 No	Special F	-eatures	· If Yes,	see Pa	art 2 of	5 of this	s form fo	r details	5.	
INSUL	LATION		<u></u>			Area	Spec	ial			
Const	truction	Туре		Cav	vity	(ft <sup>2</sup> )	-	ures (se	e Part 2	2 of 5)	Status
Floor	Wood Fr	amed w/o Crawl	Space	R-30		404					New
Roof	Wood Fr	amed Attic		R-30		1,598	Radiant B	arrier			New
Wall	Wood Fr	amed		R-13		2,675					New
Slab	Unheate	d Slab-on-Grade	<u>,                                    </u>	R-5		1,512					New
Roof	Wood Fr	amed Rafter	<u></u> ,	R-30		291					New
Door	Opaque I	Door		None		21					New
FFAIF											
Orient	STRAT	ION Area( <i>ft<sup>2</sup></i> )	U- Factor	euco		<b>b a m a</b>	Cidefin	Exte			01-11-1
Skylight		26.8	0.390	SHGC	Overl	hang	Sidefin		les		Status
Rear (N)		20.8	0.390	0.29	none		none	None			New
Front (S)	<u> </u>	129.4		0.31	none		none	Bug S			New
Front (S)		54.0	0.330	0.31	none		none	Bug St			New
Right (E)		46.7	0.330	0.31	none	·	none		red Sunscre	90N	New
Left (W)		30.0	0.330	0.31	none none		none none	Bug So Bug So			New
Left (W)		38.0	0.330	0.31	none		none		red Sunscre		New New
Front (S)		84.0	0.330	0.31	6.0		none	Bug So			New
Right (E)		17.5	0.330	0.31	11.0		none	Bug So			New
Right (E)		16.0	0.330	0.31	3.5		none	Bug So			New
Left (W)		20.0	0.330	0.31	3.0		none		ed Sunscre	en	New
	SYSTE	MS					· · · ·				
Qty.	Heating	J	Min. Ef	f Co	oling		Min. E	Eff	Ther	mostat	Status
1	Central Fun	nace	95% AFUE	E No	Cooling	<u>fi</u>	13.0 SEL	ER	Setback		New
		BUTION		_		_				uct	
Locati			ating	Co	oling	Duct	t Locatio	on	R·	-Value	Status
Whole Hou	use System	Ducted		Ducte	ed	Attic, C	eiling Ins, ve	nted	6.	2	New
									-		
						•••••				<u> </u>	
	R HEAT	ING		llana	Bdim (		Distriku				04
Qty.	Туре		Gai 75	llons	Min. I		Distribu				Status
			(5		0.58		Kitchen Pipe	) Ins			New
1	Small Gas										
1	Smail Gas										

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PERFORMANCE CERTIFICATE:	Resider	ntial	(Part 2 of 5)	CF-1R
Project Name East Manhattan SFR (20%)	Building Type	<ul> <li>Single Family</li> <li>Multi Family</li> </ul>	<ul> <li>Addition Alone</li> <li>Existing+ Addition/Alteration</li> </ul>	Date 1/12/2010
SPECIAL FEATURES INSPECTION The enforcement agency should pay special attention justification and documentation, and special verification determines the adequacy of the justification, and may the special justification and documentation submitted	n to the items s on to be used v v reject a buildi	pecified in this che with the performan	ice approach. The enforcement a	al written gency
The HVAC System Carrier Corp. 58UVB060-14 does not inc	lude a cooling s	ystem, field verificatio	on is not necessary.	
This building incorporates an air retarding wrap which shall t	e installed to me	eet the requirements	of Section 150 (f) of the Standards.	
The Roof R-30 Roof Attic w/ Radiant Barrier includes credit specified in Residential Appendix RA4.2.2.	for a Radiant Ba	rrier that is Continuo	us meeting eligibility and installation (	criteria as
				·····
HERS REQUIRED VERIFICATIO Items in this section require field testing and/or v completed CF-4R form for each of the measures	verification by	/ a certified HER / for final to be gi	S Rater. The inspector must i ven.	receive a
Compliance credit for quality installation of insulation has be				· · · ·
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			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u></u>
			14 14 19 19 1	
				-
EnergyPro 5.0 by EnergySoft User Number: 2100	BunCodo	: 2010-01-12T13:57:	<b>5</b> ID: 8152R	Page 4 of 12
EnergyPro 5.0 by EnergySoft User Number: 2100	Ruilode	. 2010-01-12113:37:		1 ayo + 01 12

ANNUAL ENERGY USE SUMMARY         TDV       (kBtu/tf <sup>2</sup> yr)         Space Coling       7.55       4.01       3.53         Space Coling       1.09       0.28       0.80         Fans       1.33       1.04       0.29         Domestic Hot Water       12.31       12.21       0.11         Pumps       0.00       0.00       0.00         Totals       22.26       17.54       4.72         Percent Better Than Standard:       21.2 %       Percent Better Than Standard:       5.94         Building Front Orientation:       (5) 180 deg       Ext. Walls/Roof       Wall Area         Rumber of Dwalling Units:       1.00       5.94       Area         Building Front Orientation:       (5) 180 deg       Ext. Walls/Roof       Wall Area         Relade Floor Area:       404       (W)       835       27         Stab on Grade Area:       1.512       (E)       873       8         Average Colling Height:       9.3       Roof       1.916       2         Rest CASE: No R-19 Cellings. Well Fenestration UFactor       0.33. SHGC = 0.31. Gas Furasce w/ AFUE = 90%, no coline-assumed SEER + 13.0       15%       15%         RMAKS       Exasterinde Area:       5.95 to 6.3%       Ch	PERFORM	ANCE	CERT	FICATE:	Residen	tial	(Part 3 of 5	) <b>CF-1R</b>
ANUAL ENERGY USE SUMMARY TOV (KBludt <sup>2</sup> yr) Sandard Proposed Margin (CKBludt <sup>2</sup> yr) Space Heating 7.55 4.07 3.53 Space Colling 1.08 0.28 0.80 Fans 1.33 1.04 0.29 Domestic Hot Water 71.23 1.122 1 0.11 Pumps 0.00 0.00 0.00 Domestic Hot Water 71.23 1.122 1 0.11 Pumps 0.00 0.00 0.00 Domestic Hot Water 71.23 1.122 1 0.11 Pumps 0.00 0.00 0.00 Building Front Orientation: (S) 170 deg Ext. WalksRoof Wall Area Feetback BUILDING COMPLIES - HERS VERIFICATION REQUIRED Building Front Orientation: (S) 170 deg Ext. WalksRoof Wall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Wall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Wall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Wall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Vall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Vall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Vall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Vall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Vall Area Feetback Building Front Orientation: (S) 170 deg Ext. WalksRoof Vall Area Feetback Building Height: 9.3 Roof 1,916 2 Preservation Average U-Factor: 0.33 Feetback Base Orientation Average U-Factor: 0.33 Feetback Base Orientation: U-Factor: 0.33 Feetback Bater. Basended SEER = 130 Base Orientation: Develope Strints measure requires verification by a contine assumed SEER = 130 Base Orientation average Open: R-19 to R-30: 7.5% to 8.4% E Eas Finance Area Develope Colling requirements for compliance ordit as explained in Sector 4.2 of the Residential Manuel: 6.3% to 78% CASE: A Orientation Base The String Feedback Bater. Basended SEER = 130 Base Orientation Over Garage /Open: R-19 to R-30: 7.5% to 8.4% E Eas Orientation Over Garage /Open: R-19 to R-30: 7.5% to 8.4% E Eas Orientation Over Garage /Open: R-19 to R-30: 7.5% to 8.4% E Eas Orientation Over Garage /Open: R-19 to R-30: 7.5% to 8.4% E Eas Orientation Over Garage /					Building Type			
DV       Return (Fry)         Space Heating       7.55       4.07       3.53         Space Cooling       1.08       0.28       0.80         Fans       1.03       1.04       0.29         Domestic Hot Water       1.23       1.21       0.11         Pumps       0.00       0.00       0.00         Totals       22.26       17.54       4.72         Percent Better Than Standard:       21.2 %       Fenestration         Building Front Orientation:       (S) 180 deg       Ext. Walls/Roof       Wall Area         Number of Dwelling Units:       1.00       (S) 934       Area         Number of Dwelling Units:       1.00       (S) 934       Area         Stab on Grade Area:       404       (N) 853       21         Penetation Area:       404       (N) 853       21         Average Celling Height:       9.3       Roof       1.916       2         Stab on Grade Area:       1.512       (E)       873       8         Average Celling Height:       9.3       Roof       1.916       2         Sto GASE: An P19 Cellings: Well Resettation U-Factor:       0.33       TOTAL:       675         Sto GASE: An P19 Cellings: Well Resettat			,				L Existing+ Addition/Alte	ration 1/12/201
TDV       (KBturff <sup>2</sup> yr)         Space Heating       7.55       4.07       3.53         Space Cooling       1.08       0.29       0.80         Fans       1.33       1.04       0.29         Domestic Hot Water       1.231       1.221       0.11         Pumps       0.00       0.00       0.00         Totals       2.228       17.54       4.72         Percent Better Than Standard:       21.2%       Percentalization       Fenestration         Building Front Orientation:       (5) 180.0%       Ext. Walls/Roof       Wall Area       Area         Building Area:       1.00       (6)       594       28         Reside Floor Area:       404       (N)       853       27         Stab on Grade Area:       1.512       (E)       873       8         Average Ceiling Height:       9.3       Roof       1.976       2         Stab on Grade Area:       1.512       (E)       873       8       3       COTAL:       67         Stab Asc K: No R.19 Ceilings.Wall Fenestration U-Factor = 0.33. SHGC = 0.31. Gas Furnace w/ AFUE = 50%, no colin-samemed Stable on Stable o	Project Name       Building Type       Bingle Family       Addition Alone       Date         ANNUAL ENERGY USE SUMMARY       Standard       Proposed       Margin       1/12/2010         ANNUAL ENERGY USE SUMMARY       Standard       Proposed       Margin       1/12/2010         Space Heating       7.55       4.01       3.53         Space Cooling       1.08       0.28       0.80         Fans       1.33       1.04       0.29         Domestic Hot Water       12.31       12.21       0.11         Pumps       0.00       0.00       0.00         Totals       22.26       17.54       4.72         Percent Better Than Standard:       21.2 %       Penestration         Building Front Orientation:       (9) 180 deg       Ext. Walls/Roof       Wall Area         Number of Dwelling Units:       1.00       (S)       594       267         Fuel Available at Site:       Natural Gas       (W)       1.025       88         Raised Floor Area:       404       (N)       853       214         Stab on Grade Area:       1.512       (E)       873       80         Average U-Factor:       0.33       TOTAL:       676         Avera							
Space Heating       7.55       4.07       3.53         Space Cooling       1.08       0.28       0.80         Fans       1.33       1.04       0.29         Domestic Hot Water       12.31       1.21       0.11         Pumps       0.00       0.00       0.00         Totals       22.26       17.54       4.12         Percent Better Than Standard:       21.2 %       Fenestration         Building Front Orientation:       (5) 180 deg       Ext. Walls/Roof       Wall Area         Number of Dwelling Units:       1.00       (S)       594       Area         Reised Floor Area:       404       (W)       853       27         Stab on Grade Area:       404       (W)       853       27         Stab on Grade Area:       1.512       (E)       873       83         Average SHGC:       0.33       TOTAL:       07       Average SHGC:       21.5 %         Stab Cost:       No.197 Collings: Wall Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0       30         Stab Cost:       No.197 Collings: Wall Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0       30         Stab Cost:       No.196 Coll	TDV (k Ptu)		andard	Proposed	Margin			
Space Cooling       1.08       0.28       0.80         Fans       1.33       1.04       0.29         Domesic Hot Water       1.231       1.211       0.21         Pumps       0.00       0.00       0.00         Totals       2.22.6       17.54       4.72         Percent Better Than Standard:       21.2 %       Fenestration       Fenestration         Building Front Orientation:       (5) 160 dee       Ext. Walls/Root       Wall Area       Fenestration         Number of Dwelling Units:       1.00       6.03       594       594       26         Building Front Orientation:       (5) 160 dee       Ext. Walls/Root       Wall Area       Fenestration         Stab on Grade Area:       404       (N)       853       21         Penestration Average U-Factor:       0.33       Roof       1.916       2         Average SHGC:       0.31       Fenestration/CFA Ratio:       21.58         Sto GASE: An prife Muster       1.916 for the coling Height:       1.93       Average U-Factor:       3.93         Sto GASE: An prife Muster       1.925 for 5.95 for 5.95 for the measure requires verification by a certified HERS Rater.       3.94       1.94       1.94         Sto GASE: An prife Muster       1.95		<u>-yı)</u>	7.55	4.01	3 53			
Fans       1.33       1.04       0.29         Domestic Hot Water       1.23       1.21       0.11         Pumps       0.00       0.00       0.00         Totals       22.26       17.54       4.72         Percent Better Than Standard:       21.2 %       Enclosed and the standard:       21.2 %         Building Front Orientation:       (S) 160 deg       Ext. Walls/Roof       Wall Area         Number of Dwelling Units:       1.00       (S)       594       Area         Number of Dwelling Units:       1.00       (S)       594       Area         Reised Floor Area:       404       (W)       833       27         Stab on Grade Area:       1.512       (E)       873       8         Average Celling Height:       9.3       Roof       1.916       2         Stab on Grade Area:       1.512       (E)       873       8         Average SHGC:       0.31       Fenestration/CFA Ratic:       21.5 %         Stab Or Grade Area:       1.512       (E)       873       8         Average SHGC:       0.31       Fenestration/CFA Ratic:       21.5 %         Stab Conserve:       0.716 & 21.5 %       1.5 %       1.5 %       1.6 %	•							
Domestic Hot Water       12.31       0.21       0.11         Pumps       0.00       0.00       0.00         Totals       22.65       17.54       4.72         Percent Better Than Standard:       21.2 %       BUILDING COMPLIES - HERS VERIFICATION REQUIRED         Building Front Orientation:       (5) 180 deg       Ext. Walls/Roof       Wall Area         Area       Number of Dwelling Units:       1.00       6(3)       594         Fuel Available at Site:       Natural Gas       (W)       1.025       8         Baised Floor Area:       1.612       (E)       873       8         Average Celling Height:       9.3       Roof       1.916       2         Fenestration Average U-Factor:       0.33       Roof       1.916       2         Average SHIGC:       0.31       Fenestration by a coeffine assumed SEER + 13.0         Sto CASE: No R-19 Centings. Wall Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER + 13.0         Sto CASE: No R-12 Centings. Wall Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace M AFUE = 90% no coolin- assumed SEER + 13.0         Sto CASE: No R-12 Centing Height:       1.946         1.0 wall mode for the 2.5 SN to 6.3%.       1.946 to 2.5% to 6.3%.         2. Howe wap Credit: Installation 0.2% to 1.8%.	•							
Pumps       0.00       0.00         Totals       22.26       17.54       4.72         Percent Better Than Standard:       21.2 %         Bullbing Completes - HERS VERIFICATION REQUIRED         Building Front Orientation:       (5) 180 deg       Ext. Walls/Roof       Wall Area         Number of Dwelling Units:       1.00       (S)       Wall Area       Fenestration         Number of Dwelling Units:       1.00       (S)       Wall Area       Area         Raised Floor Area:       404       (W)       653       21         Stab on Grade Area:       1.512       (E)       673       8         Verage Celling Height:       9.3       Roof       1.976       2         Stab on Grade Area:       1.512       (E)       673       8         Average Celling Height:       9.3       Roof       1.976       2         Stab Co Stack Status       Verage SHGC:       0.33       TOTAL:       67         Stab Co Aster Weit PI Oblings, Woll Fensistration UFactor = 0.33, SHGC = 0.31. Gas Fumaes w/APL = 90%, no coolin- assumed SEER = 13.0       30       30       30       30       30       30       30       30       30       30       30       30       30       30       30       30 </td <td></td> <td>ater</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		ater						
Totals       22.26       17.54       4.72         Percent Better Than Standard:       21.2 %         BUILDING COMPLIES - HERS VERIFICATION REQUIRED         Building Front Orelination:       (5) 160 deg       Ext. Walls/Root       Wall Area       Area         Number of Dwelling Units:       1.00       (S)       594       Area         Baised Floor Area:       404       (N)       653       21         Baised Floor Area:       1.512       (E)       673       8         Average Calling Height:       9.3       Roof       1.916       2         Average Calling Height:       9.3       Roof       1.916       2         Remerks:       0.31       Fenestration/CFA Ratio:       21.59         Remarks:       3.28 for 0.33.       TOTAL:       67         Sate CASE: No R-19 Ceelings. Wall Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0       3.00         Sate CASE: No R-19 Ceelings. Wall Fenestration U-Factor = 0.43, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0       3.00         Sate Chase Line Act to R 2: 53 % to 5.3%.       This measure requires verification by a certified HERS Rater.       3.00         Sate Chase Funda KH2 Book 0: 53% to 6.3%.       This the admininstration of a 2.00 thexes dential Manual: 6								
Percent Better Than Standard:       21.2 %         BUILDING COMPLIES - HERS VERIFICATION REQUIRED         Building Front Orientation:       (S) 160 dreg       Ext. Walls/Roof       Wall Area       Fenestration         Number of Dwelling Units:       Name       1.00       (S)       594       28         Puel Available at Site:       Natural Gas       (W)       1.025       8         Raised Floor Area:       404       (W)       853       21         Stab on Grade Area:       1.512       (E)       873       8         Average Celling Height:       9.3       Roof       1.916       2         Average SHGC:       0.31       TOTAL:       6.77         Average SHGC:       0.31       Fenestration/CFA Ratio:       21.5         ABSE CASE: A Quality insulation instatiation UFactor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0         3 Duch insulation R.4 12 N R-2; S 55% to 5.%       10%         2 Mouse Wap Credit: Installed which meets the requirements for compliance credit as explained in Section 4.2 of the Residential Manuel: 6.3% to 78%         3 Nool Grade: add R-5 to 2*** 10.1% to R-30: 7.8% to 8.4%       205         4 State Mace Map Credit: Installed which meets the requirements for compliance fore back to R-19.         State Mace Map Compri		tals	22.26					
BUILDING COMPLIES - HERS VERIFICATION REQUIRED         Building Front Orientation:       (5) 160 deg       Ext. Walls/Roof       Wall Area         Number of Dwelling Units:       1.00       (5)       594       26         Fuel Available at Site:       Natural Gas       (W)       1.025       8         Raised Floor Area:       404       (W)       853       21         Stab on Grade Area:       1.512       (E)       873       8         Average Celling Height:       9.3       Roof       1.916       2         Fenestration       Average SHGC:       0.31       Fenestration/CFA Ratic:       21.5 9         REMARKS       Restantion       Nersg Cedings. Wall Fenestration UF-Rotor:       0.33       TOTAL:       67         30x5 CASE: No R-19 Cellings. Wall Fenestration UF-Rotor:       0.33       Fenestration/CFA Ratic:       21.5 9         REMARKS       10 well insulation:       R-4 0       5.5 % to 6.5 % This measure requires verification by a certified HERS Rater.       3.0 well insulation insulation:       21.5 %         10 well musdetion:       R-4 0       R-30: 7.8 % to 8.4 %       5.6 %       3.6 %         10 well musdetion:       R-4 0: 7.8 % to 8.4 %       5.8 %       6.8 %       6.8 %       6.8 %       6.8 %       6.8			ndard:		21.2 %			
Building Front Orientation:       (5) 180 deg       Ext. Walls/Roof       Wall Area       Area         Number of Dwelling Units:       1.00       (5)       594       26         Puel Available at Site:       Natural Gas       (W)       1.025       8         Raised Floor Area:       404       (N)       853       21         Stab on Grade Area:       1.512       (E)       873       8         Average Ceiling Height:       9.3       Roof       1.916       2         Average QU-Factor:       0.33       TOTAL:       67         Average SHGC:       0.31       Fenestration/CFA Ratio:       21.5 9         REMARKS       Base CASE: No R-19 Ceilings. Wall Fenestration U-Factor = 0.33, SHGC = 0.31 Gas Furace w/ AFUE = 90%, no coolin- assumed SEER = 13.0         Ste CASE: A couldy insulation insulation:       2.7 8% to 5.5% This measure requires verification by a certified HERS Rater.       3.04         Ause Wrap Credit: Installed with meets the requirements for compliance credit as explained in Section 4.2 of the Residential Manual: 6.3% to 76%       5%         Case Furnace AFUE 90% to 95%: 8.4% to 10.1%       58ab Ch Credit: Installed with the requirements for compliance scredit as explained in Section 4.2 of the Residential Manual: 6.3% to 76%       5%         Stabe Chordu pastars avised Natic: with Readiant Barrier: 14% to 21.2% (We can change the R-30 Floor back to R-19				MPLIES		VERIFIC	ATION REQUIR	RED
Number of Dwelling Units:       1.00       (S)       594       26         Fuel Available at Site:       Numa Gas       (W)       1.025       8         Raised Floor Area:       404       (N)       853       21         Stab on Grade Area:       1.512       (E)       873       8         Average Ceiling Height:       9.3       Roof       1.916       2         Fenestration Average U-Factor:       0.33       TOTAL:       67         Average SHGC:       0.31       Fenestration/CFA Ratio:       21.59         REMARKS       3.00       Gradinestration U-Factor = 0.33, SHGC = 0.31, Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0.         256 CASE: A Quality insulation installation:       0.2% to 55% This measure requires verification by a certified HERS Rater.         3.004 insulation rest 20 area;       5 % to 5.5% This measure requires verification by a certified HERS Rater.         3.004 insulation rest 20 area;       5 % to 5.5% to 5.3%         3.1004 insulation over Garage Appen: R-19 to R-30: 7.8% to 8.4%       5.3% to 6.4%         3.1004 insulation ever Garage Appen: R-19 to R-30: 7.8% to 8.4%       5.3% to 1.5%         3.2       Vaulet Roof upstairs revised to Attic w/ Radiant Barrier: 14% to 21.2% (We can change the R-30 Floor back to R-19.)         STATEMENT OF COMPLIANCE       This certificate of compliance								
Fuel Available at Site:       Natural Gas       (W)       1.025       8         Raised Floor Area:       404       (N)       853       21         Raised Floor Area:       1.512       (E)       873       8         Average Celling Height:       9.3       Roof       1.916       2         Fenestration       Average SHGC:       0.33       TOTAL:       67         Average SHGC:       0.31       Fenestration/CFA Ratio:       21.5 9         REMARKS       SASE CASE: No. R19 Cellings: Well Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0.         15% CASE: A. Quality insulation installation:       0.2% to 5.5% This measure requires verification by a certified HERS Rater.         8. Duct Insulation:       R.4 2, 5.5% to 0.3%.       1.0% to 0.3%.         9. Floor Insulation over Garage Open: R-19 to R-30: 7.8% to 8.4%.       5.86 On Gande: add R 5 to 24*.         5.96 On Gande: add R 5 to 24*.       1.0 % to 10.1%.         5.96 On Gande: add R 5 to 24*.       1.0 % to 10.1%.         5.96 On Gande: add R 5 to 24*.       1.0 % to 21.2% (We can change the R-30 Floor back to R-19.)         STATEMENT OF COMPLIANCE       The Administrative Regulations and Part 6 the         Efficiency Standards of the California Code of Regulations.       1/12/2010         Outgreatin stable/				• •	-		oof Wall Area	
Raised Floor Area:       404       (N)       853       21         Slab on Grade Area:       1.512       (E)       873       8         Verrage Calling Height:       9.3       Roof       1.916       2         Fenestration       Average SHGC:       0.31       Fenestration/CFA Ratio:       21.9         REMARKS       State Area:       0.31       Fenestration/CFA Ratio:       21.9         State Area:       0.31       Fenestration/CFA Ratio:       21.9         REMARKS       State Asse: No R-19 Calings. Wall Fenestration UFactor = 0.33. SHGC = 0.31. Gas Furnace w/AFUE = 90%, no coolin: assumed SEER = 13.0         3.0 buck insulation instatiation:       24.9 to 8.5% This measure requires verification by a certified HERS Rater.         3.0 buck insulation over Garage Appen: R-19 to R-30: 7.8% to 8.4%       5.0 3%.         2. floor insulation over Garage Appen: R-19 to R-30: 7.8% to 8.4%       5.9 3%.         3. Valide Roof upstairs revised to Attic w/ Radiant Barrier: 14% to 21.2% (We can change the R-30 Floor back to R-19.)         STATEMENT OF COMPLIANCE         This certificate of compliance lists the building features and specifications needed to complete.         Documentation author hereby certifies that the documentation is accurate and complete.         Documentation Author         Company       NEWTON ENERGY         Vaidres <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		-						
Slab on Grade Area:       1.512       (E)       873       8         Average Ceiling Height:       9.3       Roof       1.916       2         Fenestration       Average U-Factor:       0.33       TOTAL:       677         Average SHGC:       0.31       Fenestration/CFA Ratio:       21.59         REMARKS       Average HGC:       0.31       Fenestration/CFA Ratio:       21.59         REMARKS       Average Colling Height:       nstaller colling Height:       6.3%       1.5%         ASE CASE: A Coulting Insulation Installation: 0.2% to 5.5% This measure requires verification by a certified HERS Rater.       1.00       1.00       1.5%       CASE: A. Coulting Height:       1.5%       0.5%       This measure requires verification by a certified HERS Rater.       1.00       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       1.5%       0.5%       0.5%       0.5%       0.5%						• •		
Average Celling Height:       9.3       Rof       1,916       2         Fenestration       Average SHGC:       0.33       TOTAL:       67.         Average SHGC:       0.31       Fenestration/CFA Ratio:       21.59         REMARKS       Marce and State Control (1997)       State CASE: No R-19 Cellings. Well Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin-assumed SEER = 13.0         30% CASE:       A coult insulation installation: 0.2% to 5.5% to 6.3%.       Total (1997)       State CASE: No R-19 Cellings. Well Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin-assumed SEER = 13.0         30 Duct Insulation installation:       0.2% to 5.5% to 6.3%.       State Coult (1997)       New State State State:         30 Duct Insulation over Garage /Open: R-19 to R-30: 7.8% to 8.4%       Gas Furnace AFUE 90% to 55%: 8.4% to 10.1%       State Counce AFUE 90% to 55%: 8.4% to 10.1%         50 AD Grade: add R-5 to 24": 10.1% to 14%       21.2% (We can change the R-30 Floor back to R-19.)         STATEMENT OF COMPLIANCE         This certificate of compliance lists the building features and specifications needed o comply with Title 24, Parts 1 the Administrative Regulations.       Mutter 11/2/2010         State Method Netron Phone 310 375-2699       Signed       Date         The individual with overall design responsibility hereby certifies that the proposed building design represented in								
Forestration       Average U-Factor:       0.33       TOTAL:       67         Average SHGC:       0.31       Fenestration/CFA Ratio:       21.5 3         REMARKS       Average SHGC:       0.31       Fenestration/CFA Ratio:       21.5 3         REMARKS       Average SHGC:       0.33       SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0.         15% CASE: A. Quality insulation installation:       0.2% to 5.5% to 5.5%.       5.5% to 5.3%.       5.5% to 5.3%.         2. House Wrap Credit: Installed which meets the requirements for compliance credit as explained in Section 4.2 of the Residential Manual: 6.3% to 6%.       6%         3. Dour Insulation:       CHASE to 52*. 10.1% to 10.1%.       5.86.0%.         5. Gao Grade:       add R-5 to 24*. 10.1% to 10.1%.       5.86.0%.         5. Gao Crade:       add R-5 to 24*. 10.1% to 10.1%.       5.86.0%.         5. Gao Crade:       add R-5 to 24*. 10.1% to 14%.       5.84.0%.         3. Vaulted Roof upstairs revised to Attic wir Radiant Barrier:       14% to 21.2% (We can change the R-30 Floor back to R-19.)         State Manual: 6.3% to 24*. 10.1% to 4.40         Author         Complaince lists the building features and specifications needed to compliance using the California Code of Regulations.         Prote of Compliance lists the building features and specifications and c				,				
Average SHGC:       0.31       Fenestration/CFA Ratic:       21.59         REMARKS       Average SHGC:       0.31       Genestration/CFA Ratic:       21.59         ASE CASE: No R-19 Collings: Wall Fenestration U-Factor = 0.33, SHGC = 0.31, Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0.       130         15% CASE: A. Quality insulation installation: 0.2% to 5.5% This measure requires varification by a certified HERS Rater.       10.000         15% CASE: A. Quality insulation installation: 0.2% to 5.5% This measure requires varification by a certified HERS Rater.       10.000         15% CASE: A. Quality insulation installation: 0.2% to 5.5% This measure requires varification by a certified HERS Rater.       10.000         15% CASE: A. Quality insulation installation: 0.2% to 5.3% This measure requires varification by a certified HERS Rater.       10.000         15% Construction: Ref.2 to R-3.0; 7.8% to 8.4%       10.8%         1600 Insulation over Garage /Open: R-19 to R-30; 7.8% to 8.4%       10.8%         178 Stab D on Grade: add R-5 to 24': 10.1% to 14%       10.000         178 Stab D on Grade: add R-5 to 24': 10.1% to 14%       14%         178 Stab D on Grade: add R-5 to 24': 10.1% to 14%       14%         178 Stab D on Grade: add R-5 to 24': 10.1% to 14%       14%         178 Stab D on Grade: add R-5 to 24': 10.1% to 14%       14%         178 Stab D on Grade: add R-5 to 24': 10.1% to 14%       14%		-				Roof		
REMARKS         3ASE CASE: No R-19 Ceilings: Wall Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0.         3S% CASE: A. Quality Insulation Installation: 0.2% to 5.5% This measure requires verification by a certified HERS Rater.         3. Duct Insulation: R-4 2 to R-8.2; 55% to 6.3%.         4. House Wrap Credit: Installed which meets the requirements for compliance credit as explained in Section 4.2 of the Residential Manual: 6.3% to 8.4%.         Case Fumace AFUE 90% to 95%: 8.4% to 10.1%.         Sabo Grade: add R-5 to 24*: 10.1% to 14%.         3. Vaultad Roof upstairs revised to Attic w/ Radiant Barrier: 14% to 21.2% (We can change the R-30 Floor back to R-19.)         STATEMENT OF COMPLIANCE         This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 the Administrative Regulations.         The documentation Author         Company       NewTON ENERGY         Valdress       1401 19th Street         Name       Rick Newton         Typicstate/Zip       Mahatan Beach, CA 90266         Phone 310 375-2699       Signed         Date       Signed         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations or submitted with this permit application, and recognizes that com		-				_		
BASE CASE: No R-19 Ceilings. Wall Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0.         CASE: A. Quality insulation installation: 0.2% to 5.5%. This measure requires verification by a certified HERS Rater.         Duct insulation: R-4 z to R-2; 5.5% to 6.3%.         2. House Wrap Credit: Installed which meets the requirements for compliance credit as explained in Section 4.2 of the Residential Manual: 6.3% to 8%         2. House Wrap Credit: Installed which meets the requirements for compliance credit as explained in Section 4.2 of the Residential Manual: 6.3% to 8%         2. Floor Insulation over Garage /Open: R-19 to R-30: 7.8% to 8.4%         2. Sab On Grade: add R-5 to 24': 10.1% to 10.1%         5. Sab On Grade: add R-5 to 24': 10.1% to 14%         3. Vaulted Roof upstairs revised to Attic w/ Radiant Barrier: 14% to 21.2% (We can change the R-30 Floor back to R-19.)         STATEMENT OF COMPLIANCE         This certificate of compliance lists the building features and specifications needed         p. complay with Title 24, Parts 1 the Administrative Regulations.         Metro Not ENERGY         Name       NewTON ENERGY         Natures       1/12/2010         Signed       Data         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s         of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and     <		Average S	SHGC:	0.	31		enestration/CFA Ratio:	21.5 %
Documentation Author       NEWTON ENERGY       Name	STATEMENT	f complian	MPLIAN Ince lists the	NCE ne building fe Administrative	atures and sp e Regulations	ecifications need		
NEWTON ENERGY       Name       Rick Newton       Intr/2010         City/State/Zip       Manhattan Beach, CA 90266       Phone       310 375-2699       Signed       Date         Che individual with overall design responsibility hereby certifies that the proposed building design represented in this s       Signed       Date         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s       Signed       Date         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s       Signed       Date         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s       Signed       Date         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s       Signed       Use of the specifications, and         Signer or Cluster calculations submitted with this permit application installation quality, and building envelope sealing require       Signed       Use of the specification sealing require         Name       Name       Name       Signed       Date         Company       Name       Name       Date       Signed       Date         Company       Name       Name       Signed       License #       Date	The documentat	ion author	hereby c	ertifies that th	ne documenta	tion is accurate a	and complete.	
NEWTON ENERGY       Name       Rick Newton       1/12/2010         Address       1401 19th Street       Name       Rick Newton       1/12/2010         City/State/Zip       Manhattan Beach, CA 90266       Phone       310 375-2699       Signed       Date         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, insulation installation quality, and building envelope sealing require nstaller testing and certification and field verification by an approved HERS rater.         Designer or Owner (per Business & Professions Code) Company Address       Name         City/State/Zip       Manhattan Beach, CA 90266       Phone (       Signed       License #       Date	Documentati	on Auth	or					
Address       1401 19th Street       Name       Rick Newton       1/12/2010         City/State/Zip       Manhattan Beach, CA 90266       Phone 310 375-2699       Signed       Date         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater. <b>Designer or Owner</b> (per Business & Professions Code)       Signed       License #       Date         Company       Name       License #       Date	ALC: NO						aler	_
City/State/Zip       Manhattan Beach, CA 90266       Phone       310 375-2699       Signed       Date         The individual with overall design responsibility hereby certifies that the proposed building design represented in this s of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, insulation installation quality, and building envelope sealing require nstaller testing and certification and field verification by an approved HERS rater.         Designer or Owner (per Business & Professions Code)       Name         Company       Name         Dity/State/Zip       Manhattan Beach, CA 90266       Phone (       Signed       License #       Date	1.0.7	19th Street			Name Rick New	rton	- w	1/12/2010
The individual with overall design responsibility hereby certifies that the proposed building design represented in this s of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater. <b>Designer or Owner</b> (per Business & Professions Code) Company Address Name City/State/Zip Manhattan Beach, CA 90266 Phone (Signed License # Date	-001633		CA 00266					
of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, luct sealing, verification of refrigerant charge, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.								
Ity/State/Zip Manhattan Beach, CA 90266 Phone ( Signed License # Date	of construction d vith any other ca luct sealing, veri nstaller testing a <b>Designer or (</b>	ocuments Ilculations ification of Ind certific	is consis submitte refrigera ation and	tent with the d with this pe nt charge, ins I field verificat	other complia rmit applicatio sulation install tion by an app	nce forms and w on, and recognize ation quality, and proved HERS rate	orksheets, with the spec es that compliance using d building envelope seal	ifications, and g duct design,
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EnergyPro 5.0 by EnergySoft User Number: 2100 PunCode: 2010-04-12712:67:5 ID: 0152P	City/State/Zip Manha	attan Beach,	CA 90266		<sup>o</sup> hone (		Signed Licen	se # Date
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	t Name						Bu	uilding Typ			Family I				A 14 4	Dat	
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loor	-	404	0.034						0	180	New	4.4.2	2-A7		2nd F	loor Zone	
Roof		1,598	0.032						30	24	New	4.2.1	-A8		2nd F	loor Zone	
Vall		229	0.102	R-13					0	90	New	4.3.1	I-A3		2nd F	loor Zone	
Vall		194	0.102	R-13					180	90	New	4.3.1	I-A3		2nd F	loor Zone	
Vall		393	0.102	R-13					90		New	4.3.1			2nd F	loor Zone	
Vall		372	0.102	R-13					270	90	New	4.3.1			2nd F	loor Zone	
Slab		1,512	0.580						0		New	4.4.7				oor Zone	
Roof		291	0.035				1		30		New		2-A17		_	oor Zone	
Vall		122	0.102		_	_			0		New	4.3.1				oor Zone	
Door		21	0.500						0		New	4.5.1				oor Zone	
Vall		268	0.102						0			4.3.1				oor Zone	
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3	Windov		32.0		NFRC		NFRC		New		ld-Wen W						
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5	Windov		48.0		NFRC		NFRC		New		Id-Wen W						<del>.</del>
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8	Windov Windov		40.0		NFRC NFRC		NFRC		New		ld-Wen W						
9 10	Windov		38.0		NFRC		NFRC		New		ld-Wen W						
11	Windov		17.5		NFRC		NFRC		New		ld-Wen W						
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16	Windov	v	17.5		NFRC		NFRC		New		ld-Wen W	'ood V	lindows l	_ow-E1st	t Floor Z	one	
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CERTIFICATI	E OI	F CC	OMF	PLIAN	ICE	I: R	lesi	der	ntia	l			(F	'ar	t 5 of	5)	С	F-1R
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Whole House System			ond Flo	oor				1,62	_							14,625	-	
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HVAC SYSTEMS						//10 ]		0,70	<u> </u>		L							
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System Na	me			Heating	, I	Co	oling		г	Duct Loc	ation	<b>`</b>			Duct Value	Ducts Tested	,	Status
Whole House System			Du	cted	1	Ducte		Att		ling Ins, v					6.2			New
															- · · · · ·			
																	-+	
WATER HEATING	SYST	EMS																
		1					•									Ext.		
										ated	Tar		Energ Facto		Standby Loss or			
System Name	Qty		Тур	e		Distrik	oution			nput Stuh)	Ca (ga		or RI		Pilot	Value		Status
A O Smith Water Produc			l Gas			en Pip				70,000			0.58		n/a	n/a		New
	_	_																
			TINC	DETAI											OVOTE		_	
MULTI-FAMILY WA	AI ER	пса				Pinin	g Leng	nth						NG	51516		3	1
			ε	1	laion	(ft)	g Long		. 5									
			Eff. Premium				ł		1 ½″ Jati									
Control	Qty.	HP	E E	Plenur		utside		ried	Add ½" Insulation		yste	m N			Pipe Length	Pipe Diame		Insul. Thick.
Control	Qiy.	FIF		rienu	10			ieu			ysic				Lengu	Diame		THICK.
				I						I					Ļ	<u> </u>		]
EnergyPro 5.0 by Energy	/Soft	Us	er Nurr	1ber: 210	)	F	RunCo	<u>de:</u> 2	010-0	1-12T13:	<u>57:</u> 5	1	D: 8152	R			Pa	ge 8 of 12

MANDATORY ME	ASURES SUMM	ARY: Residential	(Page	1 of 3)	MF-1R
Project Name East Manhattan SFR (20	%)				Date 1/12/2010
<u>NOTE:</u> Low-rise residential but the compliance approach use 1R-ALT Form) shall supersed into the permit documents, an specifications whether they ar Form with plans.	d. More stringent energy m e the items marked with an id the applicable features sl	easures listed on the Certif asterisk (*) below. This Ma hall be considered by all pa	cate of Compliance ( ndatory Measures Su rties as minimum com	CF-1R, CF-1R-AE mmary shall be in ponent performa	DD, or CF- ncorporated nce
Building Envelope Measu	ires:				
§116(a)1: Doors and windows §116(a)4: Fenestration produc Coefficient (SHGC), and infiltred to the state of the state o	cts (except field-fabricated	windows) have a label listin	nanufactured to limit a g the certified U-Facto	ir leakage. or, certified Solar	Heat Gain
§117: Exterior doors and wind	lows are weather-stripped;	all joints and penetrations a	ire caulked and sealed	J	
§118(a): Insulation specified of §118(i): The thermal emittanc installation of a Cool Roof is s	e and solar reflectance valu	les of the cool roofing mate	licate type and include rial meets the requirer	e on CF-6R Form ments of §118(i)	when the
*§150(a): Minimum R-19 insul	ation in wood-frame ceiling	or equivalent U-factor.			
§150(b): Loose fill insulation s	hall conform with manufact	urer's installed design labe	ed R-Value.		
*§150(c): Minimum R-13 insul	ation in wood-frame wall or	equivalent U-factor.			
*§150(d): Minimum R-13 insul	ation in raised wood-frame	floor or equivalent U-factor			
§150(f): Air retarding wrap is t	ested, labeled, and installe	d according to ASTM E167	7-95(2000) when spec	ified on the CF-1	R Form.
§150(g): Mandatory Vapor bar §150(I): Water absorption rate rate is no greater than 2.0 per	for slab edge insulation ma	aterial alone without facings	is no greater than 0.3	3%; water vapor p	permeance
Fireplaces, Decorative Ga			nd o'r light dolonolau	011.	· · · · · · · · · · · · · · · · · · ·
§150(e)1A: Masonry or factory §150(e)1B: Masonry or factory equipped with a with a readily §150(e)2: Continuous burning outside of the building, are pro- table.	y-built fireplaces have a cor accessible, operable, and t pilot lights and the use of it	nbustion outside air intake, ight-fitting damper and or a	which is at least six so combustion-air contro	quare inches in a ol device.	rea and is
Space Conditioning, Wate		ng System Measures:			
§110-§113: HVAC equipment, Commission.	water heaters, showerhea	ds, faucets and all other rec		-	•
§113(c)5: Water heating recirc valve, backflow prevention, pu	mp isolation valve, and rec	irculation loop connection re	equirements of §113(c	:)5.	
§115: Continuously burning pil (appliances with an electrical s spa heaters.	supply voltage connection v	vith pilot lights that consume	e less than 150 Btu/hr	are exempt), and	es I pool and
§150(h): Heating and/or coolin					
§150(i): Heating systems are e §150(j)1A: Storage gas water with insulation having an instal	heaters rated with an Energ	y Factor no greater than th	ements of Section 112 e federal minimal stan	2(c). Idard are externa	lly wrapped
§150(j)1B: Unfired storage tan tanks have R-12 external insul tank.	ks, such as storage tanks o ation or R-16 internal insula	or backup tanks for solar wa ation where the internal insu	Ilation R-value is indic	ated on the exter	ior of the
§150(j)2: First 5 feet of hot and recirculating sections of hot wa	ater pipes are insulated per	Standards Table 150-B.		-	
§150(j)2: Cooling system pipin water tank shall be insulated to	Table 150-B and Equation	150-A.	-		
§150(j)2: Pipe insulation for ste 123-A.					lards Table
§150(j)3A: Insulation is protect §150(j)3A: Insulation for chilled conditioned space.	ed from damage, including I water piping and refrigera	that due to sunlight, moistunt suction lines includes a v	re, equipment mainter apor retardant or is er	nance, and wind. Inclosed entirely in	1
§150(j)4: Solar water-heating s	systems and/or collectors and	e certified by the Solar Rati	ng and Certification C	orporation.	
Dedictration Number	<b>_</b>	ion Data (Time a			
Registration Number: EnergyPro 5.0 by EnergySoft	Hegistrat User Number: 2100	ion Date/Time: RunCode: 2010-01-12T13:57		Provider:	Page 9 of 12

MANDATORY MEASURES SUMMARY: Residential	(Page 2 of 3)	MF-1R
Project Name East Manhattan SFR (20%)		Date 1/12/2010
§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to r 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are ins 4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or oth applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requised to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape	ulated to a minimum installe her duct-closure system tha quirements of UL 723. If mas e shall be used	ed level of R- t meets the stic or tape is
§150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constru- sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cau of the ducts.	g cavities and support platfo se reductions in the cross-s	orms may ectional area
§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with c unless such tape is used in combination with mastic and draw bands.	cioth back rubber adhesive (	
§150(m)7: Exhaust fan systems have back draft or automatic dampers. §150(m)8: Gravity ventilating systems serving conditioned space have either automatic or reac dampers.		
§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, Cellular foam insulation shall be protected as above or painted with a coating that is water reta radiation that can cause degradation of the material.	equipment maintenance, ar Irdant and provides shielding	d wind. g from solar
§150(m)10: Flexible ducts cannot have porous inner cores. §150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Visuality in Low-Rise Residential Buildings. Window operation is not a permissible method of prorrequired in Section 4 of that Standard.	Ventilation and Acceptable oviding the Whole Building	ndoor Air /entilation
Pool and Spa Heating Systems and Equipment Measures:		
§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that cor Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate of shall not use electric resistance heating or a pilot light.	or card with operating instru	ctions; and
§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe betwee and return lines, or built-up connections for future solar heating.		
§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover. §114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time swi programmed to run only during off-peak electric demand periods.	itch that will allow all pumps	to be set or
§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters,	, and valve requirements of	§150(p).
<b>Residential Lighting Measures:</b> §150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy	that is no lower than the eff	icacies
contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.		
§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall 20 kHz.	have an output frequency n	o less than
§150(k)5: Permanently installed night lights and night lights integral to a permanently installed only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall no voltage lamp holder; OR shall be rated to consume no more than five watts of power as determ medium screw-base socket.	ot contain a line-voltage soc	ket or line-
§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the application	able requirements of §150(k	)
§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7. §150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting i EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft <sup>2</sup> or 100 watts for dv exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are manual-on occupant sensor.	welling units larger than 2,5 are controlled by a manual system; and all permanentl e high efficacy and controlle	00 ft₂ may be on occupant y installed d by a
§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 w illuminated cabinet.	vatts of power per linear foo	t of
Registration Number: Registration Date/Time:	HERS Provider:	
EnergyPro 5.0 by EnergySoft User Number: 2100 RunCode: 2010-01-12T13:57:51	ID: 8152R	Page 10 of 12

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## MF-1R MANDATORY MEASURES SUMMARY: Residential (Page 3 of 3) Date Project Name 1/12/2010 East Manhattan SFR (20%) \$150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manualon occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11. §150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling. \$150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to \$150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires. \$150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d). §150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146. \$150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Registration Number:	Regis	tration Date/Time:	HERS Provider:	
EnergyPro 5.0 by EnergySoft	User Number: 2100	RunCode: 2010-01-12T13:57:51	ID: 8152R	Page 11 of 12

HVAC SYSTEM H	EATING	AND COOLING LOAD	S SUM	MARY			
Project Name East Manhattan SFR (20	ـــــــــــــــــــــــــــــــــــــ					Date	
System Name	J70)				<b></b>		12/2010 r Area
Whole House System							3,137
<b>ENGINEERING CHECKS</b>		SYSTEM LOAD					
Number of Systems	1		COIL	COOLING I	PEAK	COIL H	TG. PEAK
Heating System		1	CFM	Sensible	Latent	CFM	Sensible
Output per System	56,000	Total Room Loads	996	· · · · · · · · · · · · · · · · · · ·	2,477	769	
Total Output (Btuh)	56,000	Return Vented Lighting	<b>•</b> • •	0			
Output (Btuh/sqft)	17.9	Return Air Ducts		1,146			1,554
Cooling System		Return Fan		0			(
Output per System	0	Ventilation	0	0	0	0	(
Total Output (Btuh)	0	Supply Fan		0			
Total Output (Tons)	0.0	Supply Air Ducts		1,146			1,554
Total Output (Btuh/sqft)	0.0						
Total Output (sqft/Ton)	0.0	TOTAL SYSTEM LOAD		26,352	2,477		31,443
Air System							
CFM per System	1,995	HVAC EQUIPMENT SELECTION					
Airflow (cfm)		Carrier Corp. 58UVB060-14		0	0	Ļ	56,000
Airflow (cfm/sqft)	0.64					Ļ	
Airflow (cfm/Ton)	0.0					-	
Outside Air (%)	0.0 %	Total Adjusted System Output (Adjusted for Peak Design conditions)		0	0	L	56,000
Outside Air (cfm/sqft)	0.00			<u></u>	A 0 PM	ſ	
Note: values above given at AF HEATING SYSTEM PSYCH	ROMETRICS	TIME OF SYSTEM PEAK Airstream Temperatures at Time	of Heating	Peak)	Aug 3 PM		Jan 1 AM
38 ºF	69 °F	105 °F	105 °F				
<b>─▶</b> ╋─╷ ▶ ───		(•)	→ि⊤				-
Outside Air					3		<b>↓</b>
0 cfm	Heating (	Coil Supply Fan 1,995 cfm				1	04 °F
<b>↑</b>		1,995 Citi					
					ĸ	DOM	
69 °F						7	70 °F
<b>←</b>		[]     [] ←					
COOLING SYSTEM PSYCH	ROMETICS (A	irstream Temperatures at Time of	Cooling P	eak)			
84 / 69 °F				······			· · · · · · · · · · · · · · · · · · ·
84 / 69 °F	79	/ 63 °F 55 / 54 °F 55 / 5	94 °F <b>⊂</b>				
		► [](@	▶[]				ר
Outside Air		Supply Fan	8	<b>I</b>			★
0 cfm		Cooling Coil 1,995 cfm				56.	/ 54 °F
				41.9 %	RC	DOM	
79 / 63 °F					L	78.	/ 63 °F
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓						,	
	11	0400		10 61			
EnergyPro 5.0 by EnergySoft	User Number:	2100 RunCode: 2010-01-12T	13:57:51	ID: 8152R		Pa	age 12 of 12

### **BUILDING ENERGY ANALYSIS REPORT**

#### **PROJECT:**

2-Unit Condo (20%) 24.3% Glass Manhattan Avenue/ Bayview Manhattan Beach, CA 90266

#### **Project Designer:**

Manhattan Beach, CA 90266

#### **Report Prepared by:**

Rick Newton NEWTON ENERGY 1401 19th Street Manhattan Beach, CA 90266 310 375-2699



#### **Job Number:**

8261R

Date:

1/13/2010

EXHIE	BITC
CCM4, 3/1	6/10
	#3

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC - www.energysoft.com.

EnergyPro 5.0 by EnergySoft

User Number: 2100

RunCode: 2010-01-13T09:42:5 ID: 8261R

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Form MF-1R Mandatory Measures Summary	10
HVAC System Heating and Cooling Loads Summary	13

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	••••••		RTIFICA	C. F	iesiu	enual		(I	raili	of 5)	CF-1R
Project Na				Buik	ding Type		gle Family			Altoration	Date
	Condo (20%) 2	24.3% G	ass		· · · · · ·		•	Existing			1/13/2010
Proient Ad M	<sup>idress</sup> anhattan Avei	nue/	Bayview			ergy Clima ate Zon		5,202		Addition <i>n/a</i>	# of Stories
	D INSPECT							0,202	L		
			asures I				st ha nro	vidad na	r Part 2	of 5 of th	nis form
				-			•	•			
		ecial Fe	atures I	r yes,	see Pa				details	•	
	ATION ruction Type	10		Cav	vitv	Area	Speci Featu	al ires (see	Part 2	of 5)	Status
oof	Wood Framed R			R-30		2,195	- Outd			0.0/	New
/all	Wood Framed			R-19		4,557					New
oor	Wood Framed w	/o Crawl S	пасе	R-30		470					New
lab	Unheated Slab-o			R-5		1,658					New
/allBG	Hollow Unit Mase			None		1,105	Depth = 10	9.000"			New
oor	Opaque Door			None		40					New
oof	Span Deck or Co	oncrete		None		161					New
FENES	STRATION		U-					Exter			
Orient	ation Area	n( <i>ft<sup>2</sup></i> )	Factor S	HGC	Overl	nang	Sidefine	s Shad	es		Status
ear (N)	3	72.0	0.320	0.32	none		none	Bug Sci	reen		New
ont (S)		48.0	0.320	0.32	5.0		none	Bug Sci	reen		New
ront (S)	3	02.3	0.320	0.32	none		none	Bug Sci	reen		New
ront (S)		42.0	0.320	0.32	10.0		none	Bug Sci	reen		New
eft (W)	1	72.0	0.320	0.32	none		none	Bug Scr	reen		New
eft (W)		48.0	0.320	0.32	14.0		none	Bug Scr	reen		New
eft (W)	1	03.0	0.320	0.32	5.0		none	Bug Scr	reen		New
eft (W)		95.0	0.320	0.32	10.0		none	Bug Scr			New
Right (E)		31.5	0.320	0.32	none		none	Bug Sci			New
ront (S)		48.0	0.320	0.32	7.0		non <del>o</del>	Bug Scr	reen		New
IVAC	SYSTEMS										
Qty. I	Heating		Min. Eff	Co	oling		Min. E	Eff	Ther	nostat	Status
1 (	Central Furnace		80% AFUE	No	Cooling		13.0 SEE	ĒR	Setback		New
1 (	Central Furnace		80% AFUE	No	Cooling		13.0 SEE	R	Setback		New
	DISTRIBUT								Di	JCt	
_ocati		Heat	ting	Co	oling	Duc	t Locatio	on		Value	Status
nit A Syst		Ducted		Duct	¥	Attic, C	eiling Ins, ve	nted	4.2	?	New
nit B Syst	······································	Ducted		Duct			eiling Ins, ve		4.2	?	New
NATE	R HEATING										
Qty.	Гуре		Gall	ons	Min.	Eff	Distribu	tion			Status
2	Small Gas		50		0.60		Kitchen Pipe	) Ins			New

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PERFORMANCE CERTIFICATE:			(Part 2 of 5)	CF-1R
Project Name 2-Unit Condo (20%) 24.3% Glass	Building Type	□ Single Family ☑ Multi Family	Addition Alone     Existing+ Addition/Alteration	Date 1/13/2010
SPECIAL FEATURES INSPECTION The enforcement agency should pay special attention justification and documentation, and special verification determines the adequacy of the justification, and may the special justification and documentation submitted	to the items s on to be used v reject a buildi	pecified in this che with the performan	ce approach. The enforcement ag	al written gency
The HVAC System Carrier Corp. 310JAV024045 does not in		system, field verificat	tion is not necessary.	
This building incorporates an air retarding wrap which shall b	e installed to me	et the requirements	of Section 150 (f) of the Standards.	
HIGH MASS Design - Verify Thermal Mass: 315.0 ft <sup>2</sup> Covere	ed Slab Floor, 3.	500" thick at Baseme	ənt	
HIGH MASS Design - Verify Thermal Mass: 465 sqft Concre				
HIGH MASS Design - Verify Thermal Mass: 315.0 ft² Expose				
The HVAC System Carrier Corp. 310JAV024045 does not in	•		-	
This building incorporates an air retarding wrap which shall b HIGH MASS Design - Verify Thermal Mass: 65 sqft Concrete				
HIGH MASS Design - Verify Thermal Mass: 514.0 ft <sup>2</sup> Covere				
HIGH MASS Design - Verify Thermal Mass: 575 sqft Concre				
HIGH MASS Design - Verify Thermal Mass: 514.0 ft² Expose	ad Slab Floor, 3.	500" thick at Baseme	ent	
		· · · · · · · · · · · · · · · · · · ·		
HERS REQUIRED VERIFICATION Items in this section require field testing and/or v completed CF-4R form for each of the measures	erification by			eceive a
Compliance credit for quality installation of insulation has bee	en used. HERS f	ield verification is red	quired.	
The HVAC System Unit A System incorporates HERS verifie duct leakage meets the specified criteria.				o verify that
Compliance credit for quality installation of insulation has bee	en used. HERS f	ield verification is rec	guired.	
The HVAC System Unit B System incorporates HERS verified duct leakage meets the specified criteria.	d Duct Leakage.	HERS field verificat	ion and diagnostic testing is required t	o verify that
EnergyPro 5.0 by EnergySoft User Number: 2100	RunCode:	2010-01-13T09:42:5	5 ID: 8261R	Page 4 of 14

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2-Unit Condo (20%) 24.3% Glass       ☑ Multi F         ANNUAL ENERGY USE SUMMARY       Standard       Proposed       Margin         TDV       (kBtu/ft²-yr)       Margin       Margin         Space Heating       8.41       4.36       4.05         Space Cooling       1.06       0.40       0.66         Fans       1.70       1.42       0.28         Domestic Hot Water       15.80       15.17       0.63         Pumps       0.00       0.00       0.00         Totals       26.98       21.36       5.62         Percent Better Than Standard:       20.8 %       20.8 %	IFICATION REQUIRE	D
ANNUAL ENERGY USE SUMMARY         Standard       Proposed       Margin         TDV       (kBtu/ft²-yr)       Space Heating       8.41       4.36       4.05         Space Heating       1.06       0.40       0.66         Fans       1.70       1.42       0.28         Domestic Hot Water       15.80       15.17       0.63         Pumps       0.00       0.00       0.00         Totals       26.98       21.36       5.62         Percent Better Than Standard:       20.8 %         BUILDING COMPLIES - HERS VER         Building Front Orientation:       (S) 160 deg       Ext. V         Number of Dwelling Units:       2.00       X.00         Fuel Available at Site:       Natural Gas       X.00	IFICATION REQUIRE Walls/Roof Wall Area	D
Standard         Proposed         Margin           TDV         (kBtu/ft <sup>2</sup> -yr)         Space Heating         8.41         4.36         4.05           Space Heating         1.06         0.40         0.66         Space Cooling         1.06         0.40         0.66           Fans         1.70         1.42         0.28         Domestic Hot Water         15.80         15.17         0.63           Pumps         0.00         0.00         0.00         0.00         0.00         Domestic Hot Water         15.80         15.17         0.63           Pumps         0.00         0.00         0.00         0.00         Domestic Hot Water         1.36         5.62           Percent Better Than Standard:         20.8 %         20.8 %         Ext. No.00         Ext. No.00           Building Front Orientation:         (S) 160 deg         Ext. No.00         Ext. No.00         Ext. No.00           Number of Dwelling Units:         2.00         2.00         Ext. No.00         Natural Gas	Walls/Roof Wall Area	
TDV         (kBtu/ft <sup>2</sup> -yr)           Space Heating         8.41         4.36         4.05           Space Cooling         1.06         0.40         0.66           Fans         1.70         1.42         0.28           Domestic Hot Water         15.80         15.17         0.63           Pumps         0.00         0.00         0.00           Totals         26.98         21.36         5.62           Percent Better Than Standard:         20.8 %         20.8 %           BUILDING COMPLIES - HERS VER         Building Front Orientation:         (S) 160 deg         Ext. V           Number of Dwelling Units:         2.00         2.00         Fuel Available at Site:         Natural Gas	Walls/Roof Wall Area	
Space Cooling         1.06         0.40         0.66           Fans         1.70         1.42         0.28           Domestic Hot Water         15.80         15.17         0.63           Pumps         0.00         0.00         0.00           Totals         26.98         21.36         5.62           Percent Better Than Standard:         20.8 %           BUILDING COMPLIES - HERS VER           Building Front Orientation:         (S) 160 deg         Ext. V           Number of Dwelling Units:         2.00         2.00         Ext. V           Fuel Available at Site:         Natural Gas         Natural Gas         Natural Gas	Walls/Roof Wall Area	
Fans         1.70         1.42         0.28           Domestic Hot Water         15.80         15.17         0.63           Pumps         0.00         0.00         0.00           Totals         26.98         21.36         5.62           Percent Better Than Standard:         20.8 %           Building Front Orientation:         (S) 160 deg         Ext. V           Number of Dwelling Units:         2.00         2.00           Fuel Available at Site:         Natural Gas         Natural Gas	Walls/Roof Wall Area	
Domestic Hot Water       15.80       15.17       0.63         Pumps       0.00       0.00       0.00         Totals       26.98       21.36       5.62         Percent Better Than Standard:       20.8 %         BUILDING COMPLIES - HERS VER         Building Front Orientation:       (S) 160 deg       Ext. V         Number of Dwelling Units:       2.00       2.00         Fuel Available at Site:       Natural Gas	Walls/Roof Wall Area	
Pumps       0.00       0.00       0.00         Totals       26.98       21.36       5.62         Percent Better Than Standard:       20.8 %         BUILDING COMPLIES - HERS VER         Building Front Orientation:       (S) 160 deg       Ext. V         Number of Dwelling Units:       2.00       Ext. V         Fuel Available at Site:       Natural Gas	Walls/Roof Wall Area	
Totals       26.98       21.36       5.62         Percent Better Than Standard:       20.8 %         BUILDING COMPLIES - HERS VER         Building Front Orientation:       (S) 160 deg       Ext. N         Number of Dwelling Units:       2.00       Ext. N         Fuel Available at Site:       Natural Gas       Natural Gas	Walls/Roof Wall Area	
Percent Better Than Standard:       20.8 %         BUILDING COMPLIES - HERS VER         Building Front Orientation:       (S) 160 deg         Number of Dwelling Units:       2.00         Fuel Available at Site:       Natural Gas	Walls/Roof Wall Area	
BUILDING COMPLIES - HERS VER         Building Front Orientation:       (S) 160 deg       Ext. V         Number of Dwelling Units:       2.00       Ext. V         Fuel Available at Site:       Natural Gas       Natural Gas	Walls/Roof Wall Area	
Building Front Orientation: (S) 160 deg Ext. V Number of Dwelling Units: 2.00 Fuel Available at Site: Natural Gas	Walls/Roof Wall Area	
Number of Dwelling Units:     2.00       Fuel Available at Site:     Natural Gas	Walls/Roof Wall Area	Fenestration
Number of Dwelling Units:2.00Fuel Available at Site:Natural Gas	(S) 1,778	Area
· · · · · · · · · · · · · · · · · · ·		440
Deirod Floor Areas	(W) 989	418
haised hoor Area.	(N) 2,582	372
Slab on Grade Area: 1,658	(E) 510	32
Average Ceiling Height: 8.9	Roof 2,356	0
Fenestration Average U-Factor: 0.32		1,262
Average SHGC: 0.32	Fenestration/CFA Ratio:	24.3 %
This certificate of compliance lists the building features and specification to comply with Title 24, Parts 1 the Administrative Regulations and Par	ons needed t 6 the	
This certificate of compliance lists the building features and specification to comply with Title 24, Parts 1 the Administrative Regulations and Par Efficiency Standards of the California Code of Regulations.	t 6 the	
This certificate of compliance lists the building features and specification to comply with Title 24, Parts 1 the Administrative Regulations and Par Efficiency Standards of the California Code of Regulations. The documentation author hereby certifies that the documentation is ad	t 6 the	
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This certificate of compliance lists the building features and specification to comply with Title 24, Parts 1 the Administrative Regulations and Par Efficiency Standards of the California Code of Regulations. The documentation author hereby certifies that the documentation is ac <b>Documentation Author</b> NEWTON ENERGY	t 6 the	1/13/2010
Address 1401 19th Street Name Rick Newton	t 6 the	1/13/2010 Date
This certificate of compliance lists the building features and specification to comply with Title 24, Parts 1 the Administrative Regulations and Par Efficiency Standards of the California Code of Regulations. The documentation author hereby certifies that the documentation is ac <b>Documentation Author</b> Company NEWTON ENERGY Address 1401 19th Street Name Rick Newton City/State/Zip Manhattan Beach, CA 90266 Phone 310 375-2699 The individual with overall design responsibility hereby certifies that the of construction documents is consistent with the other compliance form with any other calculations submitted with this permit application, and re duct sealing, verification of refrigerant charge, insulation installation quarter	t 6 the ccurate and complete. <u>Signed</u> e proposed building design represe is and worksheets, with the specific ecognizes that compliance using d ality, and building envelope sealing	Date nted in this se cations, and uct design,
This certificate of compliance lists the building features and specification to comply with Title 24, Parts 1 the Administrative Regulations and Par Efficiency Standards of the California Code of Regulations.         The documentation author hereby certifies that the documentation is ac Documentation Author         Company       NEWTON ENERGY         Address       1401 19th Street         Name       Rick Newton         City/State/Zip       Manhattan Beach, CA 90266         Phone       310 375-2699         The individual with overall design responsibility hereby certifies that the of construction documents is consistent with the other compliance form with any other calculations submitted with this permit application, and reduct sealing, verification of refrigerant charge, insulation installation quainstaller testing and certification and field verification by an approved H         Designer or Owner (per Business & Professions Code)	t 6 the ccurate and complete. <u>Signed</u> e proposed building design represe is and worksheets, with the specific ecognizes that compliance using d ality, and building envelope sealing	Date nted in this se cations, and uct design,
This certificate of compliance lists the building features and specification to comply with Title 24, Parts 1 the Administrative Regulations and Par Efficiency Standards of the California Code of Regulations.         The documentation author hereby certifies that the documentation is ac Documentation Author         Company       NEWTON ENERGY         Address       1401 19th Street         Name       Rick Newton         City/State/Zip       Manhattan Beach, CA 90266         Phone       310 375-2699         The individual with overall design responsibility hereby certifies that the of construction documents is consistent with the other compliance form with any other calculations submitted with this permit application, and reduct sealing, verification of refrigerant charge, insulation installation quartistateling and certification and field verification by an approved H         Designer or Owner (per Business & Professions Code)	t 6 the ccurate and complete. <u>Signed</u> e proposed building design represe is and worksheets, with the specific ecognizes that compliance using d ality, and building envelope sealing	Date nted in this se cations, and uct design,
This certificate of compliance lists the building features and specification to comply with Title 24, Parts 1 the Administrative Regulations and Par Efficiency Standards of the California Code of Regulations.         The documentation author hereby certifies that the documentation is ac Documentation Author         Company       NEWTON ENERGY         Address       1401 19th Street         Name       Rick Newton         City/State/Zip       Manhattan Beach, CA 90266         Phone       310 375-2699         The individual with overall design responsibility hereby certifies that the of construction documents is consistent with the other compliance form with any other calculations submitted with this permit application, and reduct sealing, verification of refrigerant charge, insulation installation quainstaller testing and certification and field verification by an approved H         Designer or Owner (per Business & Professions Code)	t 6 the ccurate and complete. <u>Signed</u> e proposed building design represe is and worksheets, with the specific ecognizes that compliance using d ality, and building envelope sealing	Date nted in this se cations, and uct design,

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	ct Name n <i>it Con</i>	do (i	20%) 2	24.3%	Glass		E	Building	Туре	⊡ Sir ⊠ Mu				dition A		Alterat/	Da ion 1/1	te 1 <i>3/201</i>
OP/		SURF	ACE [	DETAI	LS		<b>-</b>											
Surf	ace		U-			Insulati						Ĭ		Joint Ap	pendix			
Ту	pe A	rea	Factor		y Exterio	or Fram	e Inter	or Fra	me /		Tilt	Statu		4			cation/Co	
Roof		900	0.036			_				0		New		2-A16			loor Zone	
Vall Vall		377	0.074				-			340		New		1-A5			loor Zone	
vaii Vall		286 130	0.074		_	_				160 70	<u>90</u> 90	New New		1-A5 1-A5			loor Zone loor Zone	
vaii Vall		167	0.074			-				250	<u>90</u> 90			1-A5 1-A5			loor Zone	
loor		470	0.033		-					0		New		2-A15			loor Zone	
Roof		161	0.036							0	0	1		2-A16			loor Zone	
Vall		354	0.074							340	90	New	4.3.				loor Zone	
Vall		319	0.074							160	90	New	4.3.			1st Fl	loor Zone	
Vall		87	0.074							70		New		1-A5		1st Fl	loor Zone	
Vall		163	0.074							250		New	4.3.				oor Zone	
Slab		315	0.720		-					0		New	4.4.				ment Zone	
VallB	G	465	0.046		8	None	13	Wo	od	0	90			5-A10/4.3	3.13-J9		ment Zone	
<u>Nall</u> Nall		168 149	<u>0.074</u> 0.074			_				340	<u>90</u> 90	New New	4.3.	1-A5			ment Zone ment Zone	
Door		143	0.500							0		New		1-A5 1-A4			ment Zone	
	ESTR/				DETAI	IS		_				1101	14.0.			120301	non zone	,
ID	Туре		Area		actor'		IGC <sup>2</sup>	Áz	m	Status		G	azing	Type		Locat	ion/Com	nonte
1	Window		32.0		NFRC		NFRC		340 N		1	ck Hous			20	d Floor		nems
2	Window		24.0		NFRC		NFRC		340 N			ck Hous		-		d Floor i		
3	Window		24.0		NFRC	_	NFRC	_	160 N			ck Hous				d Floor J		
4	Window	,	24.0		NFRC		NFRC		160 N		_	ck Hous				d Floor		
5	Window	,	17.3	0.320	NFRC	0.32	NFRC		160 N	lew	De	ck Hous	e Glas	S	2n	d Floor	Zone	
6	Window		42.0		NFRC		NFRC		160 N		De	ck Hous	e Glas	s		d Floor I		
7	Window		40.0		NFRC		NFRC		160 N			ck Hous				d Floor		
8	Window		30.0		NFRC		NFRC		250 N			ck Hous				d Floor		
9 10	Window Window		48.0		NFRC NFRC		NFRC NFRC		250 N 250 N		_	ck Hous				d Floor		
11	Window	_	16.0		NFRC		NFRC	_	250 N 340 N			ck Hous ck Hous				d Floor I Floor Z		
12	Window		40.0		NFRC		NFRC		340 N			ck Hous		-		Floor Z		
13	Window		32.0		NFRC		NFRC		160 N		_	ck Hous				Floor Z		
14	Window	·	48.0		NFRC		NFRC		160 N		-	ck Hous				Floor Z		
15	Window		11.0	0.320	NFRC	0.32	NFRC		160 N		De	ck Hous	e Glass	3	1st	Floor Z	one	· •
16	Window		40.0		NFRC		NFRC		250 N			ck Hous	e Glass	3	1st	Floor Z	one	
	1) U-Fa				= Default													
	2) SHO				= Default	Table In	om Stan	dards, r	NERC	= Labele	ed va	lue						
EXI	ERIOR	SHA	DING	DETA	ILS													
			<b>.</b> .		0.100	Wind		1		verhang		<b>DC</b> .	<u> </u>	Left Fir		- <u></u>	Right F	
ID 1			ade Ty	pe	SHGC	Hgt	Wd	Len	Hgt		×t	RExt_	Dist	Len	Hgt	Dist	Len	Hgt
1 2	Bug Scr Bug Scr				0.76 0.76				ļ									
	Bug Scr Bug Scr				0.76	7.0	3.4	5.0	1	).1	4.0	4.0						
4	Bug Scr				0.76	8.0	3.4	5.0	1		4.0	4.0				<u> </u>		
	Bug Scr				0.76				Ť									<u> </u>
	Bug Scr				0.76	7.0	6.0	10.0	0	.1	6.0	6.0						
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	Bug Scr				0.76													
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_	Bug Scr	1.000.00.000.00			0.76	6.0	9.0	5.0	0	.1 4	4.0	4.0						
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Acua         Factor         Insulation         Area         Tit         Status         Joint Appendix         Location/Comme           area         Area         Factor         Cavity         Exterior         Frame         Insulation         250         300         New         4.3         1.4         Location/Comme           9.10         0.036         R-19         0         1.60         1.60         1.60         8         Basement Zone           9.20         0.036         R-39         0         0.60         Wew         4.3         1.45         2.61         2.61         0.76         1.60         90         New         4.3         1.45         2.71         2.70         2.70         2.71         2.70         2.71         2.70         2.71 <th></th> <th></th> <th>(2006)</th> <th>74 20%</th> <th>Close</th> <th></th> <th>B</th> <th>uilding I</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>n/Altora</th> <th>  </th> <th></th>			(2006)	74 20%	Close		B	uilding I								n/Altora		
ace         Lu         Insulation         Ava         Title         Status         Joint Appendix         Location/Comme           917         0.074 Pr19         Exterior Frame         Interior Frame         250         90         New         4.21.4.6         Basement Zone           930         0.028 Pr30         0         0         New         4.27.4.6         Datesment Zone           930         0.028 Pr30         0         0         New         4.27.4.6         DateSment Zone           931         0.074 Pr19         1         160         New         4.3.7.65         Dat Floor Zone           121         0.074 Pr19         1         250         90         New         4.3.7.65         Dat Floor Zone           122         0.074 Pr19         1         20.90         New         4.3.7.65         Tat Floor Zone           124         0.074 Pr19         1         0         90         New         4.3.7.65         Tat Floor Zone           221         0.500 Nene         0         0         New         4.3.7.65         Tat Floor Zone           221         0.074 Pr19         1         70.90         New         4.3.7.65         Tat Floor Zone           221 <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>110</th><th></th><th></th><th>isting+ i</th><th></th><th></th><th>1/</th><th>13/20</th></td<>											110			isting+ i			1/	13/20
pe         Area         Tit         Status													-					
171         0.074 R+19         250         20 New         4.3 : A5         Basement Zone           930         0.036         R-30         0         160 New         4.2 : A16         Basement Zone           331         0.074         R-19         0         0         New         4.3 : A5         2nd Floor Zone           322         0.074         R-19         160         90 New         4.3 : A5         2nd Floor Zone           137         0.074         R-19         250         90 New         4.3 : A5         2nd Floor Zone           149         0.036         R-30         0         0         New         4.3 : A5         2nd Floor Zone           214         0.047         R-19         0         0         New         4.3 : A5         1st Floor Zone           221         0.074         R-19         0         90 New         4.3 : A5         1st Floor Zone           221         0.074         R-19         170         00 New         4.3 : A5         1st Floor Zone           221         0.074         R-19         250         90 New         4.3 : A5         1st Floor Zone           221         0.074         R-19         250         90 New         4.3 : A5 <td>Surface</td> <td>- I .</td> <td>· ·</td> <td>Onuit</td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td><u> </u></td> <td></td> <td></td> <td>•</td> <td></td> <td></td> <td></td>	Surface	- I .	· ·	Onuit					_			<u> </u>			•			
315         0.720         Ps.3         0         100         New         4.2.742         pseement Zone           321         0.074         Pr19         340         90         New         4.3.1.45         2nd Floor Zone           3221         0.074         Pr19         160         90         New         4.3.1.45         2nd Floor Zone           1321         0.074         Pr19         200         New         4.3.1.45         Znd Floor Zone           1326         0.074         Pr19         0         0.0         New         4.3.1.45         Znd Floor Zone           1326         0.074         Pr19         0         0.0         New         4.3.1.45         Znd Floor Zone           241         0.074         Pr19         0         0.0         New         4.3.1.45         Tat Floor Zone           320         0.074         Fr19         0         0         0.0         New         4.3.1.45         Tat Floor Zone           44         0.074         Fr19         700         30         New         4.3.1.45         Tat Floor Zone           421         0.074         Fr19         0         Vicod         0         New         4.3.1.45         Tat Floor	Type				Exterio	rirrame	Interio	riFram						· · · · · · · · · · · · · · · · · · ·				
930         0.038         R-30         0         New         4.2.2.416         2nd Floor Zone           9321         0.074         R-19         160         90         New         4.3.1.45         2nd Floor Zone           1215         0.074         R-19         70         90         New         4.3.1.45         2nd Floor Zone           1217         0.074         R-19         0         0         New         4.3.1.45         2nd Floor Zone           1217         0.074         R-19         0         00         New         4.3.1.45         2nd Floor Zone           1217         0.004         R-19         0         00         New         4.3.1.45         1st Floor Zone           211         0.004         R-19         160         00         New         4.3.1.45         1st Floor Zone           210         0.074         R-19         160         00         New         4.3.1.45         1st Floor Zone           220         0.074         R-19         160         0.0 New         4.3.1.45         1st Floor Zone           161         0.035         None         30         Wodd         0         New         4.3.1.45         1st Floor Zone	Vall Slab								<u> </u>									
351         0.074         R-r9         342         0.074         R-r9         160         90         New         4.3.1.45         2nd Floor Zone           137         0.074         R-r9         70         90         New         4.3.1.45         2nd Floor Zone           137         0.074         R-r9         0         0         New         4.3.1.45         2nd Floor Zone           244         0.074         R-r19         0         0         New         4.3.1.45         2nd Floor Zone           214         0.004         R-r19         0         90         New         4.3.1.45         1st Floor Zone           211         0.074         R-r19         0         90         New         4.3.1.45         1st Floor Zone           320         0.074         R-r19         70         90         New         4.3.1.45         1st Floor Zone           44         0.074         R-r19         70         90         New         4.3.1.45         1st Floor Zone           161         0.038         R-30         0         0         0         0         New         4.3.1.45         1st Floor Zone           Window         30         320         NFRC <td< td=""><td>Roof</td><td></td><td>_</td><td>_</td><td></td><td></td><td>+</td><td>-</td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Roof		_	_			+	-	_									
323         0.074         R-r9         160         90         New         4.3.1.45         2nd Floor Zone           137         0.074         R-r9         0         0         New         4.3.1.45         2nd Floor Zone           198         0.036         R-30         0         0         New         4.3.1.45         2nd Floor Zone           244         0.074         R-r9         0         0         New         4.3.1.45         1st Floor Zone           210         0.004 Incre         0         90         New         4.3.1.45         1st Floor Zone           211         0.004 Incre         0         90         New         4.3.1.45         1st Floor Zone           320         0.074 Incre         1         70         90         New         4.3.1.45         1st Floor Zone           440         0.074 Incre         30         Wood         0         New         4.3.1.45         1st Floor Zone           1616         0.038 Incre         30         Wood         0         New         4.3.1.45         1st Floor Zone           17pe         Area         U+Bactor'         SHGC'         Azm         Status         Hauss Glass         1st Floor Zone	Vall						+	+		-								· · · · · · · · · · · · · · · · · · ·
216         0.074         R-19         200         New         4.3.1.4.5         2nd Floor Zone           198         0.036         R-30         0         0         0         New         4.2.4.161         1st Floor Zone           244         0.074         R-19         0         0         0         New         4.2.7.416         1st Floor Zone           211         0.074         R-19         0         0         90         New         4.3.1.45         1st Floor Zone           221         0.074         R-19         0         0         00         New         4.3.1.45         1st Floor Zone           320         0.074         R-19         70         90         New         4.3.1.45         1st Floor Zone           46         0.074         R-19         70         90         New         4.3.1.45         1st Floor Zone           161         0.035         R-30         0         0         New         4.3.1.45         1st Floor Zone           161         0.0320         NRC         3.20         NRC         3.20         NRC         3.20           17pe         Area         U-Factor         SHGC <sup>2</sup> Azm         Status         Glass </td <td>Vall</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Vall					1			_									
198         0.03 <th0< td=""><td>Vall</td><td>216</td><td>0.074</td><td>R-19</td><td></td><td></td><td>1</td><td></td><td></td><td>70</td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th0<>	Vall	216	0.074	R-19			1			70	-							
244         0.074         R:19         0         90         New         4.3.1.4.5         1st Floor Zone           2271         0.074         R:19         0         340         90         New         4.3.1.4.5         1st Floor Zone           320         0.074         R:19         160         90         New         4.3.1.4.5         1st Floor Zone           440         0.074         R:19         70         90         New         4.3.1.4.5         1st Floor Zone           451         0.053         None         30         Wood         0         New         4.2.6.47         Basement Zone           56         0.030         NFRC         0.32         NFRC         250         New         4.2.6.47         Basement Zone           Window         8.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         1st Floor Zone           Window         8.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         8.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass	Vall	137	0.074	R-19					2	50	90	New	4.3.	1-A5		2nd i	Floor Zone	<del>)</del>
21         0.074         P         0         90         New         4.51.44         Ist Floor Zone           320         0.074         R-19         160         90         New         4.31.45         Ist Floor Zone           46         0.074         R-19         70         90         New         4.31.45         Ist Floor Zone           46         0.074         R-19         70         90         New         4.31.45         Ist Floor Zone           470         0.036         R-30         0         0         New         4.31.45         Ist Floor Zone           471         0.036         R-30         0         0         New         4.2.2.416         Basement Zone           ESTRATION SURFACE DETAILS         0         0         New         Deck House Glass         Ist Floor Zone           Window         3.20         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         3.20         0.320         NFRC         0.32         NFRC         360         New         Deck House Glass         Basement Zone           Window         2.0         0.320         NFRC         0.32         NFRC	Roof										_		_			1st F	loor Zone	
271         0.074         R-19         340         90         New         4.3.1.45         Ist Floor Zone           46         0.074         R-19         70         90         New         4.3.1.45         Ist Floor Zone           49         0.074         R-19         250         90         New         4.3.1.45         Ist Floor Zone           49         0.074         R-19         250         90         New         4.3.1.45         Ist Floor Zone           6         0.036         New         4.2.6.47         Basement Zone         1.0         0         New         4.2.6.47         Basement Zone           Window         8.0         0.320         NFRC         0.32         NFRC         0.32         NFRC         1.5         New         Deck House Glass         Ist Floor Zone           Window         8.0         0.320         NFRC         0.32         NFRC         3.40         New         Deck House Glass         Basement Zone           Window         3.0.0         0.320         NFRC         0.32         NFRC         3.40         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC <td>Vall</td> <td></td> <td>+</td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td>·</td> <td></td> <td></td> <td></td> <td></td>	Vall		+			_							_	·				
320         0.074         R:19         160         90         New         4.3.1.A5         Ist Floor Zone           46         0.074         R:19         70         90         New         4.3.1.A5         Ist Floor Zone           161         0.036         R:30         250         90         New         4.3.1.A5         Ist Floor Zone           161         0.036         R:30         0         0         0         New         4.2.6.A1         Basement Zone           17ype         Area         U-Factor'         SHGC*         Azm         Status         Glazing Type         Location/Comments           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Issement Zone           Window         32.0         0.320         NFRC         0.32         NFRC         30         New         Deck House Glass         Basement Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck Ho	Door Vall							_	<u> </u>				_				· · · · · · · · · · · · · · · · · · ·	
46         0.074         R:19         70         90         New         4.3.1.A5         fst Floor Zone           161         0.038         Rone         30         Wood         0         New         4.3.1.A5         Ist Floor Zone           61         0.038         Rone         30         Wood         0         New         4.2.2.A16         Basement Zone           ESTRATION SURFACE DETAILS         0         O New         4.2.2.A16         Basement Zone         Mindow         8.0         0.320         NFRC         0.321	vaii Vall				+			-										
49         0.074         R-19         30         Wood         0         New         4.3.1-A5         fst Floor Zone           161         0.035         None         30         Wood         0         New         4.2.2-A16         Basement Zone           ESTRATION SURFACE DETAILS         0         0         New         4.2.2-A16         Basement Zone           Window         8.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         1st Floor Zone           Window         8.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         1st Floor Zone           Window         8.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC	Vall					+		-										
161         0.033         None         30         Wood         0         New         4.2.6-A7         Basement Zone           ESTRATION SURFACE DETAILS         0         0         0         New         4.2.2-A16         Basement Zone           Window         8.0         0.320         NFRC         0.32	Vall					1	1	1					+			_		
6         0.36 [R-30         0         0         0         New         4.2.2.416         Basement Zone           ISTRATION SURFACE DETAILS           Window         8.0         0.320 [NFRC         0.32 [NFRC         250 [New         Deck House Glass         1st Floor Zone           Window         8.0         0.320 [NFRC         0.32 [NFRC         250 [New         Deck House Glass         1st Floor Zone           Window         8.0         0.320 [NFRC         0.32 [NFRC         340 [New         Deck House Glass         Basement Zone           Window         8.0         0.320 [NFRC         0.32 [NFRC         340 [New         Deck House Glass         Basement Zone           Window         10.0         0.320 [NFRC         0.32 [NFRC         250 [New         Deck House Glass         Basement Zone           Window         20.0         0.320 [NFRC         0.32 [NFRC         250 [New         Deck House Glass         Basement Zone           Window         18.0         0.320 [NFRC         0.32 [NFRC         340 [New         Deck House Glass         Dase floor Zone           Window         18.0         0.320 [NFRC         0.32 [NFRC         340 [New         Deck House Glass         2nd Floor Zone           Window         2.0         <	Roof				1	1	30	Wood										θ
Type         Area         U-Factor <sup>3</sup> SHGC <sup>2</sup> Azm         Status         Glazing Type         Location/Comments           Window         8.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         1st Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         1st Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         18.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone <td>Roof</td> <td>6</td> <td>0.036</td> <td>R-30</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>0</td> <td>New</td> <td>_</td> <td></td> <td></td> <td>Base</td> <td>ment Zon</td> <td>0</td>	Roof	6	0.036	R-30						0	0	New	_			Base	ment Zon	0
Window         8.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         1st Floor Zone           Window         8.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         1st Floor Zone           Window         9.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         20.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         18.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         2nd Floor Zone           Window         48.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         18.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass </td <td>FENES</td> <td>STRATIC</td> <td>N SUR</td> <td>FACE</td> <td>DETAIL</td> <td>.S</td> <td>-</td> <td></td>	FENES	STRATIC	N SUR	FACE	DETAIL	.S	-											
Window         8.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         1st Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         Basement Zone           Window         32.0         0.320         NFRC         340         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         20.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         18.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone	ID	Type	Area	U-Fa	ictor <sup>1</sup>	SH	GC <sup>2</sup>	Azm	St	atus		Gla	zina	Tvpe		Loca	tion/Com	ments
Window         8.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         20.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         18.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         2nd Floor Zone           Window         18.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass<	17 Wi	indow	8.0	0.320	NFRC	0.32	NFRC	25			Dec				1:			
Window         32.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         Basement Zone           Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         20.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         20.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         48.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         2nd Floor Zone           Window         48.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         40.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass	18 Wi	indow	32.0															
Window         10.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         20.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         18.0         0.320         NFRC         0.32         NFRC         300         New         Deck House Glass         Basement Zone           Window         18.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         2nd Floor Zone           Window         48.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass<	19 Wi	indow	8.0	0.320	NFRC	0.32	NFRC	34	0 Nev	V	Dec	k House	Glas	S .	B	asemen	Zone	•
Window         20.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         20.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         Basement Zone           Window         48.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Gla											Dec	ck House	Glas	s	B	asemen	Zone	
Window         20.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         Basement Zone           Window         18.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         40.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         45.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Gla															B	asemen	Zone	
Window         18.0         0.320         NFRC         0.32         NFRC         340         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         40.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         40.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         63.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Gla								_										
Window         48.0         0.320         NFRC         0.32         NFRC         130         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         4.5         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         45.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         43.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glas								_										
Window         42.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         40.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         40.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         42.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           1)         UFactor Type:         116-B = Default Table from Standards, NFRC = Labeled Value         2nd Floor Zone         2nd Floor Zone																		
Window         12.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         4.5         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         4.5         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         63.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         63.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           1)         UFactor Type:         116-8 = Default Table from Standards, NFRC = Labeled Value         Esterior Shade Type         SHGC         Hgt <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									_									
Window         40.0         0.320         NFRC         0.32         NFRC         160         New         Deck House Glass         2nd Floor Zone           Window         4.5         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         12.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         63.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           UF-actor Type:         116-A = Default Table from Standards, NFRC         2blow         Deck House Glass         2nd Floor Zone           1)         U-Factor Type:         SHGC         Mindow         Overhang         Left Fin         Right Fin           Exterior Shade Type         SHGC <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>																		
Window         12.0         0.320         NFRC         0.32         NFRC         70         New         Deck House Glass         2nd Floor Zone           Window         63.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           10         U-Factor Type:         116-8 = Default Table from Standards, NFRC = Labeled Value         2         SHGC Type:         116-B = Default Table from Standards, NFRC = Labeled Value           Exterior Shade Type         SHGC         Hgt         Wd         Len         Hgt         Left Fin         Right Fin           Bug Screen         0.76         Hgt         Wd         Len         Hgt         Dist         Len         Hgt           Bug Screen         0.76         Image: Standards         NFRC         Image: Standards         Image: Standards         Image: Standards         Image: Standards         Image: Standards	28 Wi	indow	40.0	0.320	NFRC	0.32	NFRC	16	0 New	,								
Window         63.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           1)         U-Factor Type:         116-A = Default Table from Standards, NFRC = Labeled Value         2nd Floor Zone         2nd Floor Zone           2)         SHGC Type:         116-B = Default Table from Standards, NFRC = Labeled Value         2nd Floor Zone         2nd Floor Zone           2)         SHGC Type:         116-B = Default Table from Standards, NFRC = Labeled Value         2nd Floor Zone         2nd Floor Zone           ERIOR SHADING DETAILS         Window         Overhang         Left Fin         Right Fin           Bug Screen         0.76         Hgt         Wd         Len         Hgt         Dist         Len         Hgt           Bug Screen         0.76         Image: Solid Screen         0.76         Image: Solid Screen         Image: Solid Scree	29 Wi	ndow						7	0 New	/	Dec	k House	Glass	3	21	nd Floor	Zone	
Window         32.0         0.320         NFRC         0.32         NFRC         250         New         Deck House Glass         2nd Floor Zone           1)         U-Factor Type:         116-A = Default Table from Standards, NFRC = Labeled Value         2         2nd Floor Zone           2)         SHGC Type:         116-B = Default Table from Standards, NFRC = Labeled Value         Exterior Shade Type         Hight Fin         Right Fin           Exterior Shade Type         SHGC         Hgt         Window         Overhang         Left Fin         Right Fin           Bug Screen         0.76         Hgt         Wd         Len         Hgt         Len         Hgt         Len         Hgt           Bug Screen         0.76         Image: Content in the image in the	-														21	nd Floor	Zone	
1)       U-Factor Type:       116-A = Default Table from Standards, NFRC = Labeled Value         2)       SHGC Type:       116-B = Default Table from Standards, NFRC = Labeled Value         ERIOR SHADING DETAILS         Window       Overhang       Left Fin       Right Fin         Bug Screen       0.76       Hgt       Wd       Len       Hgt       Len       Hgt       Len       Hgt         Bug Screen       0.76               Hgt       Window            Hgt       Len       Len       Len       Hgt <td></td>																		
Z)         SHGC Type:         116-B = Default Table from Standards, NFRC = Labeled Value           ERIOR SHADING DETAILS         Window         Overhang         Left Fin         Right Fin           Bug Screen         0.76         Hgt         Wd         Len         Hgt         Let         RExt         Dist         Len         Hgt         U         Hgt         U         Hgt         U         Len         Hgt         U         Hgt         U         Hgt         U         Len         Hgt         U         Len         Hgt         U         Hgt         U         Len         Hgt         US         U         U         U		1							_				Glass	3	21	nd Floor	Zone	
ERIOR SHADING DETAILS         Window         Overhang         Left Fin         Right Fin           Exterior Shade Type         SHGC         Hgt         Wd         Len         Hgt         LExt         RExt         Dist         Len         Hgt         Dist         Dist         Dist         Len         Hgt         Dist         Di	• • •																	
Exterior Shade Type         SHGC         Hgt         Wd         Len         Hgt         Left         Dist         Len         Hgt         Dis											v ai							
Exterior Shade Type         SHGC         Hgt         Wd         Len         Hgt         LExt         RExt         Dist         Len         Hgt         Dist         Len         Hg				1		Windo	14/		Over	hana		T	-	Loft Ei		1	Diabt E	lin
Bug Screen         0.76         0         <		Exterior S	hade Tvi	be S	ывс ⊢			en				RExt	Dist			Dist		
Bug Screen         0.76         Image: Constraint of the stress of the st						<u></u>	<u></u>		· .91	^	+-		5.51	2011	i igi			
Bug Screen         0.76         Image: Constraint of the stress of the st					-						+			-			1	+
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Bug Screen         0.76         Image: Constraint of the stress of the st	20 Bu	g Screen														1	†	
Bug Screen         0.76         6.7         12.0         10.0         0.1         6.0         Image: Constraint of the state of																		
Bug Screen         0.76																		
Bug Screen         0.76         Image: Constraint of the state of th						6.7	12.0	10.0	0.1	6.0	2	6.0				<u> </u>	ļ	
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Bug Screen         0.76         Image: Constraint of the state of th						<del>_</del>					+-					+		
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Bug Screen 0.76 7.0 9.0 5.0 0.1 4.0 4.0											1					1		<u> </u>
Bug Screen 0.76	31 Bug	g Screen	<u></u>			7.0	9.0	5.0	0.1	4.(	)	4.0						t.
	32 Bug	g Screen			0.76						Ι							
	31 Bug	g Screen	••••••••••••••••••••••••••••••••••••••															

-	RTIFIC	AIE	Jr U							<b>F</b>		Part 4		5)		F-1F
	t Name	(0.00())		~		Bui	lding Typ			Family [			i	\learat	Da	
	it Condo	. ,							Multi F	amily L	I Existin	g+ Addin		Alterati	on 1/1	13/201
OPA	QUE SUI	RFACE	DETAIL	-S												
Surfa	ace	U-			Insulatio						Joint	Append	lix			
Тур	e Area			Exterio	r Frame	Interior	Frame	Azm	Tilt	Status		4	_		ation/Co	
Vall		0 0.074						160		New	4.3.1-A5				ment Zone	
VallBO		-	None	8	None	13	Wood	0	90		4.3.5-A1	0/4.3.13-	J9		ment Zone	
Slab	51			-				0		New	4.4.7-B2		10		ment Zone	
VallBO			None	8	None	13	Wood	0	+	New	4.3.5-A1	)/4.3.13-	J9	-	ment Zone	
Vall Mall	25		R-19					340 250	90	New New	4.3.1-A5 4.3.1-A5				ment Zone ment Zone	
Vall Slab	51		R-19			+	<u> </u>	250	180		4.4.7-B2				nent Zone	
ab		4 0.720	<u>R-5</u>		+	+			100	New	4.4.1-02			Daser	Hent Zone	
				+	+	1	<u> </u>									
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FEN	ESTRATI	ON SUR	FACE	DETAIL	.s											
ID	Туре	Area	U-Fa	actor	SH	GC <sup>2</sup>	Azm	Statu	is	Gla	zing Type	<del>,</del>		Locati	ion/Com	ments
	Window	60.0	0.320			NFRC		New		eck House			1st	Floor Z	one	
	Window	8.0		NFRC		NFRC	160	New	De	eck House	Glass		1st	Floor Z	one	
	Window	24.0		NFRC		NFRC		New	De	ck House	Glass		1st	Floor Z	one	
	Window	48.0	0.320			NFRC	160	New	De	eck House	Glass		1st	Floor Z	one	
37	Window	15.0	0.320	NFRC	0.32	NFRC	70	New	De	eck House	Glass		1st	Floor Z	'on <del>o</del>	
38	Window	35.0	0.320	NFRC	0.32	NFRC	250	New	De	eck House	Glass		1st	Floor Z	one	
39	Window	28.0	0.320	NFRC	0.32	NFRC	160	New	De	eck House	Glass		Bas	ement	Zone	
40	Window	84.0	0.320			NFRC		New	De	eck House	Glass		Bas	ement	Zone	
	Window	10.0	0.320	-		NFRC		New		eck House				ement		
42	Window	40.0	0.320	NFRC	0.32	NFRC	250	New	De	eck House	Glass		Bas	ement	Zone	
				-				ļ					<b> </b>			
								ļ								
							ļ						+			
													-			
(	1) U-Facto	r Type'	116-A	= Default	Table fro	m Standa	l rds NFB	L C⊨ Lah	eled Va	alue						
ò	2) SHGC	Type:	116-B	= Default	Table fro	m Standa	rds, NFR	C = Lab	eled Va	alue						
	ERIOR SI															
				<u> </u>	Wind	w		Overha	ana		Lei	t Fin			Right F	in
ID	Exterior	Shade Ty	vpe   s	sнас †	Hgt				Ext	RExt	Dist Le		gt	Dist	Len	Hg
	Bug Screer		• <u> </u>	0.76				<u> </u>					-			
	Bug Screer			0.76												
	Bug Screer			0.76												
	Bug Screer			0.76	7.0	6.9	7.0	0.1	8.0	8.0						
	Bug Screer			0.76												
38	Bug Screer	1		0.76	7.0	5.0	10.0	0.1	6.0	6.0						
	Bug Screer			0.76												
	Bug Screer			0.76												
	Bug Screer			0.76												
42	Bug Screer			0.76	6.7	6.0	10.0	0.1	6.0	6.0						
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	yPro 5.0 by			lser Numb						T09:42:5	ID: 826		1			ge 8 of

CERTIFICAT	ΕO	FC	OMF	PLIAN	ICE	: R	esi	der	ntia	l			(F	Par	t 5 of	5)	CF	F-1R
Project Name 2-Unit Condo (20	%) 2	4.3%	Glas	s		Build	ling Ty			ngle Far ulti Fami						Alteration	Date 1/13	3/2010
BUILDING ZONE	INFO	RMAT	TION													••••••		
										Floor A								
System Name	9			one Nan	10		Ne	ew		xisting	A	ltere	əd F	Rem	noved	Volume	Yea	ar Built
Unit A System			cond Fl					90	-		-					8,910		
			st Floor sement				<u> </u>	1,01	_		-					8,213 5,103		
Unit B System			cond Fi					93	_							8,370		
			st Floor					64			+					6,848		
		Ba	sement					1,08	2							8,764		
									_		_							<u></u>
		_							-									
		_			•				-		+							
											╂							
									1									
					To	tals		5,20	2	0	2		0		0			
HVAC SYSTEMS			<u> </u>			• •			<u> </u>	<del></del>						· · <del>-</del>		<u></u>
System Name Unit A System		Qty.		eating Ty ral Furnac		Min. 80% A				ng Type			n. Eff. 0 SEER	50		ostat Type		Status lew
Unit B System	·	1	_	al Furnac al Furnac	+	80% A				·			0 SEER					ew lew
onk B oyotoni		<u> </u>				00/07	<u>" 0  </u>		001119			10.	JOLLIN		louon -		-	
				· · ·										1				
HVAC DISTRIBUT	ION		<u> </u>															
System N	ama			Heating	.	Coo	Jina		ſ	Duct Loc	oitor	n			Duct Value	Ducts Tested?	,   ,	Status
Unit A System	ame			icted		Ducted		Atti		ling Ins, v				11-1	<u>4.2</u>			ew
Unit B System				icted		Ducted		_		ling Ins, v				<u> </u>	4.2			ew
					·													
									-									
	01/0																	
WATER HEATING	SYS	TEMS	; 								1						<del></del>	
									R	ated	Ta	nk	Energ		Standb	Ext. y Tank	1	
								[		iput	Ca		Facto		Loss of	r   Insul. F	א-	
System Name	Qt		Тур			Distrib			<u>(E</u>	Btuh)	(ga		or RE		Pilot	Value		Status
A.O. SMITH FPS-50-224	4 2	Sm	all Gas		Kitche	en Pipe	Ins			43,000	50	2	0.60		n/a	n/a	Ne	ew
	+	+										+		+				<u></u>
MULTI-FAMILY W			TING	DETAIL	S					HYDE	RON		EATI	NG	SYSTE			
				Hot W		Piping	Leng	th										
			Ξ			(ft)			<u> </u>									
		1	ji ji						J ½ ulat									
Control	Qty.	НР	Eff. Premium	Plenum		utside	Bu	ind	Add 1/2" Insulation		yste	m N			Pipe Length	Pipe Diamet		Insul. Thick.
Control	Gay.					115100					ysic		ame		Lengu			THICK.
																	+	
Enorgy Bro E O by Enorg		11.	or Nu-	abor: 2100	1			da: 21	10.0	1 42700-	47.E	,,	7.0004	D			Deri	0 of 11
EnergyPro 5.0 by Energ	γδοπ	0	er Nun	nber: 2100		R	unCO	ue: 20	10-01	1-13T09:	42:3	11	D: 8261.	ĸ			rage	9 of 14

MANDATORY MEASURES SUMMARY: Residential	(Page 1 of 3)	MF-1R
Project Name	······	Date 1/13/2010
Unit Condo (20%) 24.3% Glass		d, regardless o
ne compliance approach used. More stringent energy measures listed on the Certificate R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandato to the permit documents, and the applicable features shall be considered by all parties a pecifications whether they are shown elsewhere in the documents or in this summary. S orm with plans.	ory Measures Summary shall b as minimum component perforr	e incorporated mance
Building Envelope Measures:		
116(a)1: Doors and windows between conditioned and unconditioned spaces are manuf	factured to limit air leakage.	
116(a)4: Fenestration products (except field-fabricated windows) have a label listing the Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).		ar Heat Gain
117: Exterior doors and windows are weather-stripped; all joints and penetrations are ca	ulked and sealed.	
118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate 118(i): The thermal emittance and solar reflectance values of the cool roofing material metallation of a Cool Roof is specified on the CF-1R Form.		
§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.		
150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R	-Value.	
§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.		
§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.		
150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(	2000) when specified on the Cl	F-1R Form.
150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.		
150(I): Water absorption rate for slab edge insulation material alone without facings is no ate is no greater than 2.0 perm/inch and shall be protected from physical damage and U		or permeance
ireplaces, Decorative Gas Appliances and Gas Log Measures:		
150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door coverin 150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which quipped with a with a readily accessible, operable, and tight-fitting damper and or a com 150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jac utside of the building, are prohibited.	h is at least six square inches in bustion-air control device.	n area and is
pace Conditioning, Water Heating and Plumbing System Measures:		
110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulate ommission.	ed appliances are certified by th	ne Energy
113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise alve, backflow prevention, pump isolation valve, and recirculation loop connection require	ements of §113(c)5.	
115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furn appliances with an electrical supply voltage connection with pilot lights that consume less pa heaters.		
150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMAC	NA or ACCA.	
150(i): Heating systems are equipped with thermostats that meet the setback requirement		
150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the fed ith insulation having an installed thermal resistance of R-12 or greater.		
150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-h nks have R-12 external insulation or R-16 internal insulation where the internal insulatio nk.		
150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recircul criculating sections of hot water pipes are insulated per Standards Table 150-B.	ating systems, and entire lengtl	h of
150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated ater tank shall be insulated to Table 150-B and Equation 150-A.	_	
150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 ps 23-A.	-	· · · ·
150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, e 150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor ponditioned space.		
150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating a	nd Certification Corporation.	
egistration Number: Registration Date/Time:	HERS Provider:	
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MANDATORY MEASURES SUMMARY: Residential	(Page 2 of 3)	MF-1R
Project Name 2-Unit Condo (20%) 24.3% Glass		Date 1/13/2010
		1/13/2010
§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to r 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are ins 4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or ott applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the recused to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape §150(m)1: Building cavities, support platforms for air handlers, and plenums defined or construint.	ulated to a minimum installe her duct-closure system that quirements of UL 723. If mas e shall be used	d level of R- meets the tic or tape is
sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cau of the ducts.	g cavities and support platfo se reductions in the cross-se	rms may ectional area
§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with ounless such tape is used in combination with mastic and draw bands.	cloth back rubber adhesive d	luct tapes
§150(m)7: Exhaust fan systems have back draft or automatic dampers.	10	
§150(m)8: Gravity ventilating systems serving conditioned space have either automatic or read dampers.	illy accessible, manually ope	erated
§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, cellular foam insulation shall be protected as above or painted with a coating that is water reta radiation that can cause degradation of the material.		
§150(m)10: Flexible ducts cannot have porous inner cores.		
§150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of prorequired in Section 4 of that Standard.		
Pool and Spa Heating Systems and Equipment Measures:		
§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that cor Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate of shall not use electric resistance heating or a pilot light. §114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between	or card with operating instruc	tions; and
and return lines, or built-up connections for future solar heating.		
§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover. §114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time swit programmed to run only during off-peak electric demand periods.	tch that will allow all pumps	to be set or
§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters,	and valve requirements of §	150(p).
Residential Lighting Measures:		
§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.		
§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall be below.		less than
\$150(k)5: Permanently installed night lights and night lights integral to a permanently installed I only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall no voltage lamp holder; OR shall be rated to consume no more than five watts of power as determ medium screw-base socket.	ot contain a line-voltage sock	et or line-
§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applica	ble requirements of §150(k)	
§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7. §150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft <sub>2</sub> or 100 watts for dw exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control s luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are manual-on occupant sensor.	velling units larger than 2,50 are controlled by a manual c system; and all permanently high efficacy and controlled	0 ft2 may be on occupant installed by a
§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 wa illuminated cabinet.	atts of power per linear foot	of
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# MANDATORY MEASURES SUMMARY: Residential (Page 3 of 3) MF-1R

Project Name

Date 1/13/2010

2-Unit Condo (20%) 24.3% Glass

§150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luminaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.

§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.

§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildi	ings with four or more
dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to	o other buildings on the
same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be al	llowed provided that
they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disa	
and one of the following controls: a photocontrol not having an override or bypass switch that disables the photo	control; OR an
astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR a	an energy management
control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCE	EPTION 2: Outdoor
luminaires used to comply with Exception1 to \$150(k)13 may be controlled by a temporary override switch which	h bypasses the motion
sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: P	ermanently installed
luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California E	Electric Code need not
be high efficacy luminaires.	

§150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146.

§150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

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HVAC SYSTEM H	IEATING	AND COOLING LOAD	S SUM	MARY			
Project Name	20/ 01	· · · · · · · · · · · · · · · · · · ·				Date	12/2010
2-Unit Condo (20%) 24. System Name	3% Glass						13/2010 Area
Unit A System							2,544
ENGINEERING CHECKS	;	SYSTEM LOAD					
Number of Systems	1		COIL	. COOLING I	PEAK	COIL H	TG. PEAK
Heating System			CFM	Sensible	Latent	CFM	Sensible
Output per System	35,000	Total Room Loads	1,523		3,106	564	20,849
Total Output (Btuh)	35,000	Return Vented Lighting		0	<b>--</b>		
Output (Btuh/sqft)	13.8	Return Air Ducts		2,125			1,328
Cooling System	I	Return Fan		0			0
Output per System	0	Ventilation	0	0	o	0	0
Total Output (Btuh)	0	Supply Fan		0	I		0
Total Output (Tons)	0.0	Supply Air Ducts		2,125			1,328
Total Output (Btuh/sqft)	0.0			L	1		
Total Output (sqft/Ton)	0.0	TOTAL SYSTEM LOAD		40,292	3,106		23,505
Air System					iii		
CFM per System	1,995	HVAC EQUIPMENT SELECTION					
Airflow (cfm)	1,995	Carrier Corp. 310JAV024045		0	0	1	35,000
Airflow (cfm/sqft)	0.78			İ			
Airflow (cfm/Ton)	0.0						
Outside Air (%)	0.0 %	Total Adjusted System Output		0	0		35,000
Outside Air (////sqft)	0.00	(Adjusted for Peak Design conditions)				L	
Note: values above given at A		TIME OF SYSTEM PEAK			Aug 3 PM		Jan 1 AM
		(Airstream Temperatures at Time of	of Heating	Peak)		l	
38 °F	69 °F	105 °F	105 °F				
<b>&gt;-</b>		_لر)	_▶[] ]				- I
Outside Air			E		8		↓
0 cfm	Heating (					1(	04 °F
+		1,995 cfm					
					RC	)om 🗍	
69 °F						7	′0 °F
4							
	•						
					· · · · ·		
COOLING SYSTEM PSYCH	ROMETICS (A	Airstream Temperatures at Time of	Cooling F	'eak)			
84 / 69 °F	79	/ 63 °F 55 / 54 °F 55 / 5	54 °F				
					-		
			╼╟				1
Outside Air 0 cfm		Supply Fan				56 /	▼ / 54 °F
		Cooling Coil 1,995 cfm				-	
}				42.1 %	6 RO	OM	
79 / 63 °F					L	787	/ 63 ⁰F
<b>←</b>							
	•						
EnergyPro 5.0 by EnergySoft	User Number	: 2100 <b>RunCode: 2010-01-137</b>	09:42:55	ID: 8261R		Pa	age 13 of 14

HVAC SYSTEM HE	EATING	AND COOLING	LOAD	S SUM	MARY			
Project Name							Date	
2-Unit Condo (20%) 24.3 System Name	% Glass							/13/2010 r Area
Unit B System								2,658
ENGINEERING CHECKS	·	SYSTEM LOAD						
Number of Systems	1			COIL		PEAK	COIL H	ITG. PEAK
Heating System	············	1		CFM	Sensible	Latent	CFM	Sensible
Output per System	35,000	Total Rov	om Loads	1,462	2 34,669	3,137	594	21,933
Total Output (Btuh)	35,000	Return Vented	d Lighting	<u></u>	0			
Output (Btuh/sqft)	13.2	Return	Air Ducts		2,044	ļ		1,397
Cooling System	- <u>r</u> !	-	eturn Fan	r	0	·····	r	C
Output per System	0	1 .	entilation	0			0	
Total Output (Btuh)	0	1	upply Fan		0	ł		0
Total Output (Tons)	0.0	1	Air Ducts		2,044	I		1,397
Total Output (Btuh/sqft)	0.0						I	
Total Output (sqft/Ton)	0.0	TOTAL SYSTI	EM LOAD		38,757	3,137		24,728
Air System	1 005							
CFM per System	1,995			. <u></u>	T			25.000
Airflow (cfm)	1,995 0.75	· · · · · · · · · · · · · · · · · · ·	45	I	0	0	F	35,000
Airflow (cfm/sqft)	0.75				++		F	
Airflow (cfm/Ton)	0.0 %				0	0	F	35,000
Outside Air (%) Outside Air (cfm/sqft)	0.00	(A diversed for Deals Dealers		I		<u>_</u>	L	
Note: values above given at AR	1	TIME OF SYSTI	FM PEAK	ŕ	· · · · · · · · · · · · · · · · · · ·	Aug 3 PM		Jan 1 AM
HEATING SYSTEM PSYCHR				of Heating	Peak)			
38 °F	69 °F	105 °F		105 °F	<b></b>	<b>-</b> -1		
		J	_ <b>@</b>	→[]		₫		٦
		<b>i</b> 	Supply Fan	ـــــــــــــــــــــــــــــــــــــ	ł	a		₩
0 cfm	Heating C	Joil	1,995 cfm				1	104 °F
l †						R(	DOM	
						120	1	
69 °F			0				Ĩ	70 ºF
↓ ←			[] ←					
COOLING SYSTEM PSYCHR	IOMETICS (	Airstream Temperatures	at Time of	Cooling F	'eak)			
84 / 69 °F	70	9 / 63 °F 55 / 54 °F	55 / 5	54 °F				
047031	, .			<b>n</b>		n		
		→		→[]		Ī		1
		Sur	ply Fan	<b>L</b>	······		56	▼ 754 °F
0 cfm		Cooling Coll	95 cfm				•	7.044 1
					42.2 %	6 <b>RC</b>	DOM	
79 / 63 °F						<u></u>	78	/ 63 °F
4	<b></b>						<b>.</b>	
			E					
E	Lizzz Number	- 0400 BunCada	0040 04 40T		/D: 8261R			11 of 11
EnergyPro 5.0 by EnergySoft	User Number:	2100 Runcoue.	2010-01-13T	09:42:55	ID: 0201K		Г	Page 14 of 14

#### **BUILDING ENERGY ANALYSIS REPORT**

#### **PROJECT:**

2-Unit Condo (20%) 39.5% Glass `Manhattan Avenue/ Bayview Manhattan Beach, CA 90266

#### **Project Designer:**

Manhattan Beach, CA 90266

#### **Report Prepared by:**

Rick Newton NEWTON ENERGY 1401 19th Street Manhattan Beach, CA 90266 310 375-2699



#### Job Number:

8261R

Date:

1/13/2010

**EXHIBIT** C <u>CC MHJ. 3/16/10</u> #4

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC - www.energysoft.com.

EnergyPro 5.0 by EnergySoft

User Number: 2100

RunCode: 2010-01-13T09:03:5 ID: 8261R

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Form MF-1R Mandatory Measures Summary	10
HVAC System Heating and Cooling Loads Summary	13

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		NCE CE	RTIFIC						rt 1 of 5)		<b>F</b> -'
	Condo (2	0%) 39.5%	<b>Gla</b> ss		ilding Type	🗹 Mu	lti Family	<b>y</b>	dition/Alteration	Date 1/1	3/2
Project /	Address <i>Manhattan</i>	Avonur	Bayvie		alifornia En			Total Cond. Floor A 5,202	rea Addition	#	of S G
			ENERG				e 00	5,202	n/a		
						-		un vide due au Du			
								rovided per Pa		nis toi	m
Ø Ye	s 🗆 No	Special I	-eatures	If Yes	, see P	art 2 of	5 of th	nis form for de	tails.		
	LATION					Area	•	ecial			
Cons	truction	Туре		Ca	vity	(fť)	Fea	tures (see Pa	art 2 of 5)	Stat	us
Roof	Wood Fra	med Attic			)	1,830	Radian	t Barrier		New	
Wall	Wood Fra	med		R-19	)	3,765		·		New	
Floor	Wood Fra	med w/o Craw	Space	R-30	)	470		a		New	
Roof	Wood Fra	med Rafter		R-30	)	365				New	
Slab	Unheated	Slab-on-Grade	)	R-5		1,658				New	
WallBG		nit Masonry		None		1,105	Depth =	= 109.000"		New	
Door	Opaque D			Non	_	40				New	
Roof	<u> </u>	k or Concrete		Non	θ	161				New	
	STRATION tation	ON Area( <i>ft<sup>2</sup></i> )	U- Factor	SHGC	Over	hang	Sidefi	Exterior ns Shades		Stat	us
Rear (N)		734.4	0.320	0.32	none	÷	none	Bug Screen		New	
Front (S)		54.0	0.320	0.32	5.0		none	Bug Screen		New	
Front (S)		442.4	0.320	0.32	none		none	Bug Screen		New	
Front (S)		68.5	0.320	0.32	10.0		none	Bug Screen		New	
Left (W)		266.4	0.320	0.32	none		none	Bug Screen		New	
Left (W)		73.3	0.320	0.32	14.0		none	Bug Screen		New	
Left (W)		210.6	0.320	0.32	5.0		none	Bug Screen		New	
Ləft (W)		109.3	0.320	0.32	10.0		none	Bug Screen		New	
Right (E)		41.2	0.320	0.32	none		none	Bug Screen		New	
Front (S)		53.4	0.320	0.32	7.0		none	Bug Screen		New	
HVAC	SYSTE	MS									
Qty.	Heating		Min. Et	ff Co	ooling		Min	. Eff T	hermostat	Stat	us
1	Central Furn	асө	90% AFU	E No	o Cooling		13.0 \$	SEER Sett	back	New	
1	Central Furn	nace	90% AFU	E No	o Cooling		13.0 \$	SEER Sett	back	New	
	DISTRI			-		-			Duct	<b>~</b>	
Locat			ating		ooling		t Loca		R-Value	Stat	JS
Unit A Sy		Ducted			cted		eiling Ins,		6.2	New	
Unit B Sy	stem	Ducted	1	Duc	cted	Attic, C	eiling Ins,	vented	6.2	New	
\A/ A								· ·			
_		ING	<u>^-</u>	ilons	Mis	C#		ution		CIAL	
Qty.	Туре			nuns	Min.	611	Distrik			Stat	12
2	Small Gas		50		0.60		Kitchen P	upe ins	<u></u>	New	
									· · · · · ·		

PERFORMANCE CERTIFICATE:	Resider	ntial	(Part 2 of 5)	CF-1R
Project Name 2-Unit Condo (20%) 39.5% Glass	Building Type	<ul> <li>Single Family</li> <li>Multi Family</li> </ul>	<ul> <li>Addition Alone</li> <li>Existing+ Addition/Alteration</li> </ul>	Date 1/13/2010
SPECIAL FEATURES INSPECTION	ON CHEC	KLIST		
The enforcement agency should pay special attention	to the items s	pecified in this che	ecklist. These items require specia	al written
justification and documentation, and special verification determines the adequacy of the justification, and may				
the special justification and documentation submitted.	-		•	
The HVAC System Carrier Corp. N9MP2050B12** does not i	nclude a cooling	ı system, field verific	ation is not necessary.	
This building incorporates an air retarding wrap which shall b				
HIGH MASS Design - Verify Thermal Mass: 315.0 ft <sup>2</sup> Covere	d Slab Floor, 3.	500" thick at Baseme	ent	
HIGH MASS Design - Verify Thermal Mass: 465 sqft Concre				
HIGH MASS Design - Verify Thermal Mass: 315.0 ft <sup>2</sup> Expose	d Slab Floor, 3.	500" thick at Basem	ent	
The HVAC System Carrier Corp. N9MP2050B12** does not i	nclude a cooling	system, field verific	ation is not necessary.	
This building incorporates an air retarding wrap which shall b	e installed to me	et the requirements	of Section 150 (f) of the Standards.	
HIGH MASS Design - Verify Thermal Mass: 65 sqft Concrete	ə, Heavyweight i	Exterior Mass, 8.000	" thick at Basement	
HIGH MASS Design - Verify Thermal Mass: 514.0 ft <sup>2</sup> Covere				
HIGH MASS Design - Verify Thermal Mass: 575 sqft Concre	te, Heavyweight	Exterior Mass, 8.00	0" thick at Basement	
HIGH MASS Design - Verify Thermal Mass: 514.0 ft <sup>2</sup> Expose	d Slab Floor, 3.	500" thick at Basem	ent	
The Roof R-30 Roof Attic - Radiant Barrier includes credit for in Residential Appendix RA4.2.2.	a Radiant Barri	er that is Continuous	meeting eligibility and installation crite	eria as specified
HERS REQUIRED VERIFICATION				
Items in this section require field testing and/or v completed CF-4R form for each of the measures				eceive a
Compliance credit for quality installation of insulation has been				
The HVAC System Unit A System incorporates HERS verified	d Duct Leakage	HERS field verificat	tion and diagnostic testing is required	to verify that
duct leakage meets the specified criteria. Compliance credit for quality installation of insulation has bee	n used. HERS I	ield verification is rea	quired.	
	d Durd Landrage			
The HVAC System Unit B System incorporates HERS verified duct leakage meets the specified criteria.	u Duci Leakage.	HERS field vertical	ion and diagnostic testing is required t	o verny that
	<u></u>			
EnergyPro 5.0 by EnergySoft User Number: 2100	RunCode:	2010-01-13T09:03:	5 ID: 8261R	Page 4 of 14

PERFO	RMANCE (	CERTIF	ICATE:	Residen	tial	<u> </u>	3 of 5)	CF-1F
Project Name				Building Type	Single Family			Date
2-Unit Col	ndo (20%) 39.5	5% Glass			🛛 Multi Family	Existing + Ad	dition/Alteration	1/13/201
ANNUAL I	ENERGY USE S	SUMMARY	/					
		ndard P	Proposed I	Margin				
TDV (k	(Btu/ft <sup>2</sup> -yr)							
Space Hea	ating	8.40	3.48	4.92				
Space Coc	oling	1.04	1.24	-0.20				
Fans		1.69	1.63	0.06				
Domestic H	Hot Water	15.80	15.17	0.63				
Pumps		0.00	0.00	0.00				
	Totals	26.93	21.52	5.42				
Percent B	etter Than Stan	idard:		20.1 %				
	BUILDIN	G COM	<b>MPLIES</b>	- HERS	VERIFIC	ATION RE	QUIRED	
								nestration
	ont Orientation:			60 deg	Ext. Walls/R	oof Wall A	lrea	Area
	Dwelling Units:			00	(S)		1,778	618
	able at Site:			al Gas	(W)		989	660
Raised Flo				70	(N)		2,582	734
Slab on Gr				58	(E)		510	41
	eiling Height:	_		.9	Roof		2,356	0
Fenestratic	0			32	_		OTAL:	2,054
REMARKS	Average S	HGC:	<b>.</b>	32	Fe	enestration/CFA	Ratio:	39.5 %
his certific comply v	ENT OF CON cate of compliant with Title 24, Par Standards of the	ce lists the ts 1 the Ac	building fea	Regulations	ecifications need and Part 6 the	led		
					tion is accurate a	and complete		
	ntation Author	-						
	NEWTON ENERG					115	A	
Company		I				phen	1/1	13/2010
Adress	1401 19th Street		1	Name Rick New	rton			
city/State/Zip	Manhattan Beach,	CA 90266	F	-hone 310 375-	2699	Signed	C	Date
of construct vith any oth luct sealing nstaller tes	tion documents i her calculations g, verification of	is consiste submitted refrigerant ation and fi	nt with the c with this per charge, ins eld verificat	other complia rmit applicatio ulation install ion by an app	s that the proposi- nce forms and w on, and recognize ation quality, and proved HERS rate ode)	orksheets, with es that complian d building envel	the specification the using duct	ons, and design,
Company	Michael Lee Archite				,			
ddress	2200 Highland Ave	nue		Name Michael L	ee			
							-	
ity/State/Zip	Manhattan Beach, (	CA 90266	F	hone (310) 545	-5/71	Signed	License #	Date
norauDro 5 0	by EnergySoft	HoorNer	or: 9100	Br	040 04 40700 00 -	10.00040		D 5 5
neigyriù 5.0	by Litergy SUIL	User Numbe	21. 2100	Runcoae: 2	010-01-13T09:03:5	ID: 8261R		Page 5 of 1

	RTI	FICA	TE (	DF C	OMP	LIAN	CE:	Res	side	entia	al			(Pa	rt 4 (	of 5)		C	<u>F-1</u>
•	ct Nam		200/1 1	20 5%	Glass			Building	Туре			Family amily		ddition Al		n/Altera	ition	Date	; 3/20 <sup>-</sup>
					Glass													1/1	3/20
Surfa			U-			Insulation	on					1	<u> </u>	Joint Ap	pendix				
Typ		Area	Factor	Cavity	y Exterio	r Fram	e Inter	ior Fra	me	Azm	Tilt	Statu		4	•		ocation	/Con	nmen
Roof		900	0.032							0		New		.1-A8			Floor Z		
Vall		341	0.074							340	90			.1-A5			Floor Z		
Vall Vall		217 130	0.074 0.074			_				160 70		New	_	.1-A5 .1-A5			Floor Z Floor Z		
Vall Vall		83	0.074							250		New		.1-A5			Floor Z	-	
loor		470	0.033			-	-			0	180	New	4.4	.2-A15		1st i	Floor Zo	ne	
Roof		161	0.036							Ó	(			.2-A16			Floor Zo		
Vall		304	0.074		-					340		New		.1-A5			Floor Zo		
Vall Vall		250 87	<u>0.074</u> 0.074							160 70	90 90			.1-A5 .1-A5			Floor Zo Floor Zo		
Vall		127	0.074							250		New	_	.1-A5 .1-A5			Floor Zo		
Slab		315	0.720					_		0	180			.7-B2			ement Z		
VallB	G	465		None	8	None	13	Wo	od	0	90	) New		.5-A10/4.3	3.13-J9	Bas	ement Z	Zone	
Wall		125	0.074							340	90			.1-A5			ement Z		
Nall		149	0.074	-						0	90	New New		.1-A5 .1-A4			ement 2 ement 2		
Door	ECTO	19		None						0	90	New	4.0	. 1-84		Das	ementz	0110	
ID			Area		actor <sup>1</sup>		IGC <sup>2</sup>	Az	m	Statu		G	azino	Туре		Loca	ation/C	omm	onte
1	Typ Windo		51.0		NFRC		NFRC		340 1			eck Hous				2nd Floo			101110
2	Windo		41.2		NFRC		NFRC		340 1			eck Hous				2nd Floo			
3	Windo		30.0		NFRC		NFRC		160 N	New	D	eck Hous	e Gla	ss	2	2nd Floo	r Zone		
4	Windo	w	24.0		NFRC		NFRC		160 N			eck Hous				2nd Floo		_	
5	Windo		17.3		NFRC		NFRC		160 N			eck Hous				2nd Floo			
<u>6</u> 7	Windo		68.5 76.5		NFRC NFRC		NFRC		160 N 160 N			eck Hous eck Hous				2nd Floo 2nd Floo			
-/	Windo Windo		74.5		NFRC		NFRC		250			eck Hous				2nd Floo			
9	Windo		73.3		NFRC		NFRC		250 1			eck Hous				nd Floo			
10	Windo	w	53.8	0.320	NFRC	0.32	NFRC		250 \Lambda	Vew	D	eck Hous	e Gla	ss	2	2nd Floo	r Zone		
11	Windo	~	22.2		NFRC		NFRC		340 1			eck Hous				st Floor			
12	Windo Windo		83.7 59.3		NFRC NFRC		NFRC		340 N 160 N			eck Hous eck Hous				ist Floor Ist Floor			
<u>13</u> 14	Windo		89.3		NFRC		NFRC		160 N			eck Hous				st Floor			
15	Windo		11.0		NFRC		NFRC		160 N	Vew		eck Hous			1	st Floor	Zone		
16	Windo		41.3		NFRC		NFRC		250 \			eck Hous	e Gla	ss	1	st Floor	Zone	==.	
(	(1) U-	Factor 1	Туре:		= Default														
					B = Default	Table in	JIII Otal	juarus, i	NERU	= Lau	eleu v	alue			····				
			abind			Winc	0.00			verha	na			Left Fi	n		Bia	ht Fi	n
ID	Fxte	erior SI	hade Ty	/pe	SHGC	Hgt	Wd	Len	Hq		Ext	RExt	Dist		 Hgt	Dis			Hg
	Bug S				0.76				1										
2	Bug S	creen			0.76														
	Bug S				0.76	8.0	3.8	5.0		0.1	4.0	4.0		+	<u> </u>				
	Bug S				0.76	8.0	3.0	5.0	'  (	0.1	4.0	4.0			+				
	Bug S Bug S				0.76 0.76	9.9	6.9	10.0		0.1	6.0	6.0			+		+		
	Bug S				0.76	0.0		, 0.0	† ``			0.0		1	1				
	Bug S				0.76														
	Bug S				0.76	9.9	7.4	14.0		0.1	6.0	6.0							
	Bug S				0.76	6.0	9.0	5.0	- (	0.1	4.0	4.0							
	Bug S Bug S				0.76 0.76														
	Bug S				0.76														
13	Bug S	creen			0.76	-												_	
14		creen			0.76										L				
14 15	Bug So Bug So				0.76														

PIDIE	ct Name				OMP							Femily	<b>[]</b> A a		rt 4 (	<u>(c IC</u>		<b>CF-1F</b>
		-	20%) 3	20 5%	Glass		!	Building	giype			amily		Idition A		n/Altera	Da	
												u)				in/ intorta	1/	13/201
Surf		<u>30nr</u>			L3	Insulatio	<u></u>				1	<u> </u>		loint An	pondix		· ······	
Ty		Area	-	Cavity	Exterio			ior Fr	ame	Azm	Tilt	Statu		Joint Ap 4			cation/Co	mment
Nall		12	0.074							250		New	_	1-A5			ment Zon	
Slab		315	0.720	R-5						0	180	New		7-B2			ment Zon	
Roof		930	0.032							0		) New		1-A8		2nd I	-loor Zone	)
Nall		287	0.074			_				340	<u> </u>	New		<u>1-A5</u>			Floor Zone	
Nall Nall		297 206	0.074	· · · · · · · · · · · · · · · · · · ·						<u>160</u> 70		New	_	<u>1-A5</u> 1-A5			Floor Zone Floor Zone	
Nall		32	0.074							250	-	New		1-A5			-loor Zone	
Roof		198	0.036							0	(		<u> </u>	2-A16			loor Zone	
Wall		244	0.074	R-19						0	90	New	4.3.	1-A5		1st F	loor Zone	
Door		21	0.500		<u> </u>					0		New		1-A4			loor Zone	
Nali		192	0.074		+		_			340		New	_	1-A5			loor Zone	
Nali Nali		311 46	0.074 0.074							160 70		) New ) New	_	<u>1-A5</u> 1-A5			loor Zone loor Zone	
Wall		40	0.074		1		-			250		New		1-A5 1-A5			loor Zone	
Roof		161	0.053				30	Wo	od	0		New		6-A7			ment Zon	e
Roof		6	0.036							0	C	New	4.2.	2-A16		Base	ment Zon	e
FEN	ESTR	ATIO	N SUR	FACE	DETAI	_												
ID	Тур	e /	Area	U-Fa	actor	SH	GC <sup>2</sup>	A	zm	Statu	IS	GI	azing	Туре		Loca	tion/Com	ments
17	Windo		18.9		NFRC		NFRC		250			eck Hous		-		st Floor		
18	Windo		55.5		NFRC	+	NFRC		250			eck Hous		-		st Floor		
<u>19</u> 20	Windo		28.0 54.8		NFRC NFRC		NFRC NFRC		340 340			eck Hous eck Hous				lasement lasement		
21	Window		10.0	0.320			NFRC		250			eck Hous				asement		
22	Window		23.3	0.320			NFRC		250			eck Hous				asement		
23	Window	w	21.3	0.320	NFRC	0.32	NFRC		250	New	De	eck Hous	e Glas	s	В	asement	Zone	
24	Window		38.3	0.320			NFRC		340			eck Hous				nd Floor		
25	Window		91.8	0.320			NFRC		340			eck Hous				nd Floor		
26 27	Window Window		43.4	0.320			NFRC NFRC		160 I 160 I			eck Hous eck Hous				nd Floor nd Floor		
28	Window		59.3	0.320			NFRC		160			eck Hous				nd Floor		
29	Window		4.5	0.320	NFRC		NFRC			New		ck Hous		-		nd Floor		
30	Window		21.7	0.320			NFRC			New		eck Hous		-	2	nd Floor	Zone	· ·
31	Window		156.8	0.320			NFRC		250 1			eck Hous		-		nd Floor		
32	Window 1) U-F		42.9	0.320	NFRC = Default		NFRC	darda	250 I			eck Hous	e Glas	S	2	nd Floor	Zone	
	2) SH				= Default													
			DING															
			·····			Wind	w		С	Verha	ng	[		Left Fi	n		Right F	in
ID			ade Ty	pe S	SHGC	Hgt	Wd	Len	Hg		Ext	RExt	Dist	Len	Hgt	Dist	Len	Hgt
	Bug Sc				0.76													
	Bug Sc		1		0.76				<u> </u>							_		
	Bug Sc Bug Sc				0.76 0.76				-									+
	Bug Sc Bug Sc				0.76				+								<u> </u>	+
	Bug Sc				0.76				+									1
23	Bug Sc	reen			0.76	6.7	12.0	10.0	)	0.1	6.0	6.0						
	Bug Sc				0.76													
	Bug Sc				0.76													ļ
	Bug Sc Bug Sc				0.76													<u> </u>
	вид Sc Bug Sc				0.76	·										+		
	Bug Sc				0.76				1		$\rightarrow$				<u> </u>	1		1
30	Bug Sc	reen			0.76				Ť							1		
0.4	Bug Sc				0.76	9.0	17.4	5.0		0.1	4.0	4.0						
	<b>n</b>	reen		1	0.76	1			1	F							1	1

CE	RTIFIC	ATE	OF C	OMP	LIAN	CE:	Res	iden	tial			(Pai	rt 4 c	of 5)	C	F-1R
	ct Name						Building '			Family					Dat	te
	nit Condo	(20%)	39.5%	Glass		1	g		1 Multi			sting+ A		/Alterat	ion 1/1	3/201
	QUE SU									-						0/201
Surfa					Insulati	on						oint Apr	endix	1		
Typ		-	Cavity				ior Fra	ne Azı	n Tili	Status		4		Loc	ation/Co	mments
Wall			R-19							0 New	4.3.1	-A5			ment Zone	
WallB	G		None	8	None	13	Woo	d	0 9	0 New	4.3.5	5-A10/4.3	.13-J9	Base	ment Zone	)
Slab	5	14 0.720	R-5						0 18	30 New	4.4.7	7-B2		Base	ment Zone	<del>)</del>
WallB			None	8	None	13	Woo		-	00 New		5 <b>-A10/4</b> .3	.13-J9		ment Zone	
Wall			R-19		_					0 New	4.3.1				ment Zone	
Wall			R-19	-			_	2		0 New	4.3.1				ment Zone	
Slab	5	14 0.720	18-5						0 18	30 New	4.4.7	-82		Base	ment Zone	,
					-									_		• ·
									-							
		_					_									
			[													
			<u> </u>							_						
	ESTRAT					10.02	1 -					<b>r</b>			·	
ID	Туре	Area		actor <sup>1</sup>		HGC <sup>2</sup>	Az		atus		azing <sup>•</sup>		<u> </u>		ion/Com	nents
33	Window	139.3		NFRC		NFRC		340 Nev		Deck House				st Floor Z		
34	Window	11.5		NFRC		NFRC		160 Nev 160 Nev		Deck Hous Deck House				st Floor 2 st Floor 2		
35 36	Window Window	24.0 53.4		NFRC NFRC				160 Nev		Deck House				st Floor Z		
37	Window	15.0		NFRC		NFRC		70 Nev		Deck House				st Floor Z		
38	Window	44.0		NFRC		NFRC		250 Nev		Deck House				st Floor Z		
39	Window	33.4		NFRC		NFRC		160 Nev	/ 1	Deck House	- Glass	3	В	asement	Zone	
40	Window	173.4	0.320	NFRC	0.32	? NFRC		340 Nev		Deck House	e Glass	3	B	asement	Zone	
41	Window	10.7		NFRC		2 NFRC		340 Nev		Deck House				asement		
42	Window	44.0	0.320	NFRC	0.32	? NFRC	; 2	250 Nev	<u> </u>	Deck House	e Glass	; 	B	asement	Zone	
						+										
					1		-								·	
	(1) U-Fact			= Default		-										
	2) SHGC			= Default	I able fr	om Stai	ndards, N	IFRC = L	abeled	value						
EXI	ERIOR S	HADING	DEIA									1 - 6 5				
	<b>F</b> utania	Ohada T			Wind	Wd	Lan		hang	RExt	Dist	Left Fil		Dist	Right F	Hgt
ID	1	Shade T	ype	SHGC	Hgt	vva	Len	Hgt	LExt	REXL	DISt	Len	Hgt	Dist	Len	– ngi
33 34	Bug Scree Bug Scree			0.76 0.76			-				-					
	Bug Scree Bug Scree			0.76											+	<u> </u>
36	Bug Scree			0.76	7.7	7.0	7.0	0.1	8.0	8.0				-		1
37	Bug Scree			0.76											1	
38	Bug Scree			0.76	8.0	5.5	10.0	0.1	6.0	6.0						
39	Bug Scree	n		0.76												
40	Bug Scree			0.76						I					<b> </b>	
41	Bug Scree			0.76		40.0	40.0								┟	
10	Bug Scree	n		0.76	6.7	12.0	10.0	0.1	6.0	6.0				+	<u> </u>	<u> </u>
42	l							5 <b>6</b> - 1					1	+		
42										+ +		_	<u> </u>	+		1
42										<u> </u>				1	1	
42				1						·				-+		-
42																
42		······														
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42																

CERTIFICAT	ΕC	)F	CC	)MF	PLIAN	ICE	E: R	esi	den	itia	l			(P	art	5 of	5)	CF	-1R
Project Name 2-Unit Condo (20					3		Build	ding Ty			ngle Far ulti Fami						Iteration	Date 1/13/	/2010
BUILDING ZONE	NFC	RM	IATI	ION			·												
System Name				7	one Nan		┝	NL	ew	TE	Floor A xisting		(ft <sup>2</sup> ) Altere		Remov	(od	Volume	Vaa	- D
Unit A System	,		Seco	ond Fle		Ie .			<u>900</u>		xisting		MUER		101101		8.910	real	r Built
				Floor			-		1,014								8,213		
			Base	əment					630	2							5,103		
Unit B System			Seco	ond Fle	oor				930	2							8,370		
				Floor				••• _••	64	+							6,848	0	
			Base	əment					1,082	2							8,764		
		-							-	-									
												<u>†</u>							
												ļ							
										-		-						· · · · ·	. <u></u>
												+							
· · · · · · · · · · · · · · · · · · ·						Тс	otals		5,202	2	0	+		0		0			
HVAC SYSTEMS																			
System Name		0	Dty.	He	ating Ty	pe	Min.				ng Type			n. Eff.			stat Type	S	Status
Unit A System			1		al Furnac				No C					0 SEER				Ne	
Unit B System		_	1	Centr	al Furnac	θ	90% /	AFUE	No C	ooling	]		13.	0 SEER	Setba	ack		Ne	w
		+					<u> </u>							<u> </u>					
		+																	
		<u> </u>					1												
<b>HVAC DISTRIBUT</b>	ION																		
							0								Duc	-	Ducts		
System Na Unit A System	ame				Heating	1	Ducted	oling_			Duct Loc iling Ins, v				R-Va	lue 6.2	Tested?	Net	tatus
Unit B System					cted		Ducted				iling Ins, v					6.2		Ne	
· · · · · · · · · · · · · · · · · · ·																			
WATER HEATING	SYS	STE	MS			<u> </u>													
		1								R	ated	Та	nk	Energ	vs	tandby	Ext.		
										Ir	nput	Ca	р.	Facto	r   L	oss or	Insul. F		
System Name		ty.		Тур	e		Distrib			(E	Btuh)	(ga		or RE		Pilot	Value		tatus
A.O. SMITH FPS-50-224		2	Sma	ll Gas		Kitch	en Pipe	e ins			43,000	50		0.60	_	n/a	n/a	Ne	<u>N</u>
	+												+		+				
MULTI-FAMILY W	ATE	RH	EAT	ING	DETAI	LS					HYDR	ON	IC F	IEATI	VG S	YSTE		<u>,</u>	
							Piping	Leng	jth										
				Ē			(ft)			tion "									
				Eff. Premium					ŀ	Add 1/2" Insulation						Pipe	Dine		nsul.
Control	Qty.	ŀ	-IP	Eff. Pre	Plenun	10	utside	Bur	ried	P E A	l s	vste	m N	ame		Length	Pipe Diamet		hick.
						Ĺ													
					-														
								+											
<u> </u>		<u> </u>			L	. 1		<u> </u>										[	
EnergyPro 5.0 by Energ	ySoft		Use	r Num	ber: 210	)	R	unCo	de: 20	10-0	1-13T09:	03:5	1	D: 82611	2			Page 9	9 of 14
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MANDATORY MEASURES SUMMARY: Residential	(Page 1 of 3)	MF-1R
Project Name 2-Unit Condo (20%) 39.5% Glass		Date 1/13/2010
<u>NOTE:</u> Low-rise residential buildings subject to the Standards must comply with all applic the compliance approach used. More stringent energy measures listed on the Certificate R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandate to the permit documents, and the applicable features shall be considered by all parties a pecifications whether they are shown elsewhere in the documents or in this summary. S	of Compliance (CF-1R, CF-1R ory Measures Summary shall b as minimum component perform	-ADD, or CF- e incorporated mance
Building Envelope Measures:		
§116(a)1: Doors and windows between conditioned and unconditioned spaces are manul §116(a)4: Fenestration products (except field-fabricated windows) have a label listing the Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).		lar Heat Gain
117: Exterior doors and windows are weather-stripped; all joints and penetrations are ca	ulked and sealed.	
118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate 118(i): The thermal emittance and solar reflectance values of the cool roofing material metallation of a Cool Roof is specified on the CF-1R Form.	type and include on CF-6R Fc	orm. (i) when the
§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.		
150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R	-Value.	
§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.		
§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.		
150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(	2000) when specified on the C	F-1R Form.
150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16. 150(I): Water absorption rate for slab edge insulation material alone without facings is no ate is no greater than 2.0 perm/inch and shall be protected from physical damage and U		or permeance
ireplaces, Decorative Gas Appliances and Gas Log Measures:		
150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, whic equipped with a with a readily accessible, operable, and tight-fitting damper and or a com 150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jac butside of the building, are prohibited. Space Conditioning, Water Heating and Plumbing System Measures:	bustion-air control device.	
110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulate commission.	ed appliances are certified by the	ne Energy
113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise alve, backflow prevention, pump isolation valve, and recirculation loop connection require	ements of §113(c)5.	
115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furn appliances with an electrical supply voltage connection with pilot lights that consume less pa heaters.		
150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMAC	NA or ACCA.	
150(i): Heating systems are equipped with thermostats that meet the setback requirement		
150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the fed ith insulation having an installed thermal resistance of R-12 or greater.		
150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-h anks have R-12 external insulation or R-16 internal insulation where the internal insulatio ank.	n R-value is indicated on the e	xterior of the
150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recircul acirculating sections of hot water pipes are insulated per Standards Table 150-B.		
150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated vater tank shall be insulated to Table 150-B and Equation 150-A.	-	
150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 ps 23-A.	i, meets the requirements of S	iandards l'able
150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, e 150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor onditioned space.		
150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating a	nd Certification Corporation.	
Registration Number: Registration Date/Time:	HERS Provider:	
EnergyPro 5.0 by EnergySoft User Number: 2100 <b>RunCode: 2010-01-13T09:03:50</b>	ID: 8261R	Page 10 of 14

MANDATORY MEASURES SUMMARY: Residentia	I (Page 2 of 3)	MF-1R
Project Name 2-Unit Condo (20%) 39.5% Glass		Date 1/13/2010
§150(m)1: All air-distribution system ducts and plenums installed, are sealed and i 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plen 4.2 or enclosed entirely in conditioned space. Openings shall be sealed with masti applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that n used to seal openings greater than 1/4 inch, the combination of mastic and either §150(m)1: Building cavities, support platforms for air handlers, and plenums defined	nums are insulated to a minimum installe ic, tape or other duct-closure system tha neets the requirements of UL 723. If mas mesh or tape shall be used	ed level of R- t meets the stic or tape is
sheet metal, duct board or flexible duct shall not be used for conveying conditioner contain ducts. Ducts installed in cavities and support platforms shall not be compro of the ducts.	d air. Building cavities and support platfor essed to cause reductions in the cross-s	orms may ectional area
§150(m)2D: Joints and seams of duct systems and their components shall not be unless such tape is used in combination with mastic and draw bands.	sealed with cloth back rubber adhesive (	duct tapes
§150(m)7: Exhaust fan systems have back draft or automatic dampers. §150(m)8: Gravity ventilating systems serving conditioned space have either autor dampers.	matic or readily accessible, manually op	erated
§150(m)9: Insulation shall be protected from damage, including that due to sunligh Cellular foam insulation shall be protected as above or painted with a coating that radiation that can cause degradation of the material.		
§150(m)10: Flexible ducts cannot have porous inner cores. §150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard Quality in Low-Rise Residential Buildings. Window operation is not a permissible n required in Section 4 of that Standard.		
Pool and Spa Heating Systems and Equipment Measures:		
§114(a): Any pool or spa heating system shall be certified to have: a thermal efficie Regulations; an on-off switch mounted outside of the heater; a permanent weather shall not use electric resistance heating or a pilot light. §114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of	rproof plate or card with operating instruc	ctions; and
and return lines, or built-up connections for future solar heating.		
§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a §114(b)3: Pools shall have directional inlets that adequately mix the pool water, an programmed to run only during off-peak electric demand periods.		to be set or
§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, p	iping, filters, and valve requirements of	§150(p).
Residential Lighting Measures:		
§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k) \$150(k)2). The unit of permanantly installed luminaire about the determined as a specified by \$150(k)2).	<)2.	cacies
§150(k)3: The wattage of permanently installed luminaires shall be determined as §150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electror 20 kHz.	nic and shall have an output frequency n	o less than
\$150(k)5: Permanently installed night lights and night lights integral to a permanent only high efficacy lamps meeting the minimum efficacies contained in Table 150-C voltage lamp holder; OR shall be rated to consume no more than five watts of pow medium screw-base socket.	and shall not contain a line-voltage soch	ket or line-
§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall mee	et the applicable requirements of §150(k)	
§150(k)7: All switching devices and controls shall meet the requirements of §150(k) §150(k)8: A minimum of 50 percent of the total rated wattage of permanently instal EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft <sup>2</sup> or 100 exempt from the 50% high efficacy requirement when: all low efficacy luminaires in sensor, dimmer, energy management system (EMCS), or a multi-scene programm luminaries in garages, laundry rooms, closets greater than 70 square feet, and utili manual-on occupant sensor.	led lighting in kitchens shall be high effic 0 watts for dwelling units larger than 2,50 the kitchen are controlled by a manual able control system; and all permanently ty rooms are high efficacy and controlled	00 ft2 may be on occupant r installed I by a
§150(k)9: Permanently installed lighting that is internal to cabinets shall use no mo illuminated cabinet.	re than 20 watts of power per linear foot	of
Registration Number: Registration Date/Time:	HERS Provider:	
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,

#### **MANDATORY MEASURES SUMMARY:** Residential (Page 3 of 3) MF-1R Date 2-Unit Condo (20%) 39.5% Glass \$150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manualon occupant sensor that complies with the applicable requirements of \$119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with \$150(k)11.

§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.

\$150(k)13; Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.

\$150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146.

\$150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Registration Number:	Regis	stration Date/Time:	HERS Provide	r:
EnergyPro 5.0 by EnergySoft	User Number: 2100	RunCode: 2010-01-13T09:03:50	ID: 8261R	Page 12 of 14

Project Name

1/13/2010

HVAC SYSTEM HE	ATING	AND COOLING LOAD	S SUM	MARY			
Project Name						Date	13/2010
2-Unit Condo (20%) 39.5 System Name						Floor	
Unit A System							2,544
ENGINEERING CHECKS		SYSTEM LOAD					
Number of Systems	1		COIL	COOLING F	'EAK	COIL H	IG. PEAK
Heating System			CFM	Sensible	Latent	CFM	Sensible
Output per System	44,000	Total Room Loads	2,111	49,703	3,106	644	23,807
Total Output (Btuh)	44,000	Return Vented Lighting		0			
Output (Btuh/sqft)	17.3	Return Air Ducts		2,367			1,305
Cooling System	,	Return Fan		0			0
Output per System	0	Ventilation	0	0	0	0	0
Total Output (Btuh)	0	Supply Fan		0			0
Total Output (Tons)	0.0	Supply Air Ducts	I	2,367			1,305
Total Output (Btuh/sqft)	0.0	TOTAL OVOTEN LOAD		E4 439	2 106	ł	26,417
Total Output (sqft/Ton)	0.0	TOTAL SYSTEM LOAD		54,438	3,106	I	20,417
Air System	1,995	HVAC EQUIPMENT SELECTION					·······
CFM per System		Carrier Corp. N9MP2050B12**		0	0		44,000
Airflow (cfm)	0.78	Camer Corp. Namir 2000 12		v		-	
Airflow (cfm/sqft) Airflow (cfm/Ton)	0.78					F	
Outside Air (%)	0.0 %	Total Adjusted System Output		0	0	·	44,000
Outside Air (%) Outside Air (cfm/sqft)	0.00	(Adjusted for Peak Design conditions)	I	I		L	<u>.</u>
Note: values above given at ARI	1	TIME OF SYSTEM PEAK			Aug 3 PM		Jan 1 AM
		Airstream Temperatures at Time of	of Heating	Peak)			······································
	00.0E	4 m m	105 °F				
38 °F	69 °F	105 °F			п		
			→[]		<b>_</b>		1
Outside Air	Heating (	Supply Fan					*
0 cfm							
	nealing (	1,995 cfm				1	04 °F
<b>↓</b>	Heating	-011			RC		04 %
	neaung -	-011			RC	DOM	
69 °F	neating	-011			RC	DOM	04 %- 70 %F
69 °F		-011			RC	DOM	
<b>▲</b>		1,995 cfm			RC	DOM	
<b>▲</b>		-011		eak)	RC	DOM	
<b>▲</b>		1,995 cfm	f Cooling P	eak)	RC	DOM	
COOLING SYSTEM PSYCHR		1,995 cfm	f Cooling P	eak)	<b>RC</b>	DOM	
COOLING SYSTEM PSYCHR 84 / 69 °F		1,995 cfm	f Cooling P	eak)	RC	DOM	
COOLING SYSTEM PSYCHR		Airstream Temperatures at Time of 1/63 °F 55/54 °F 55/5 Cooling Coil	f Cooling P	eak)	RC	<b>DOM</b> 7	
COOLING SYSTEM PSYCHR 84 / 69 °F Outside Air		1,995 cfm         Airstream Temperatures at Time of         1/63 °F       55 / 54 °F         55 / 54 °F	f Cooling P			<b>DOM</b> 7	70 °F 
COOLING SYSTEM PSYCHR 84 / 69 °F Outside Air		Airstream Temperatures at Time of 1/63 °F 55/54 °F 55/5 Cooling Coil	f Cooling P	<b>Peak)</b> 42.1 %		<b>DOM</b> 7	70 °F 
COOLING SYSTEM PSYCHR 84 / 69 °F Outside Air		Airstream Temperatures at Time of 1/63 °F 55/54 °F 55/5 Cooling Coil	f Cooling P			DOM 7	70 °F 
COOLING SYSTEM PSYCHR 84 / 69 °F Outside Air 0 cfm		Airstream Temperatures at Time of 1/63 °F 55/54 °F 55/5 Cooling Coil	f Cooling P			DOM 7	70 °F  / 54 °F
COOLING SYSTEM PSYCHR 84 / 69 °F Outside Air 0 cfm		Airstream Temperatures at Time of 1/63 °F 55/54 °F 55/5 Cooling Coil	f Cooling P			DOM 7	70 °F  / 54 °F

HVAC SYSTEM HE	ATING	AND COOLING LOAD	S SUM	MARY	·····	·	
Project Name					· · · · ·	Date	
2-Unit Condo (20%) 39.5 System Name							/13/2010 or Area
Unit B System							2,658
ENGINEERING CHECKS	· ;	SYSTEM LOAD					
Number of Systems	1		COIL	. COOLING F	PEAK		ITG. PEAK
Heating System			CFM	Sensible	Latent	CFM	Sensible
Output per System	44,000	Total Room Loads	2,107		1		+
Total Output (Btuh)	44,000			0	I		
Output (Btuh/sqft)	16.6	1		2,363	1		1,369
Cooling System		Return Fan		0	I		C
Output per System	0	Ventilation	0	0	0	0	) (
Total Output (Btuh)	0	Supply Fan		0	1		C
Total Output (Tons)	0.0	Supply Air Ducts		2,363	I		1,369
Total Output (Btuh/sqft)	0.0						
Total Output (sqft/Ton)	0.0	TOTAL SYSTEM LOAD		54,328	3,137	I	27,711
Air System							·
CFM per System	1,995	HVAC EQUIPMENT SELECTION					
Airflow (cfm)				0	0	i [	44,000
Airflow (cfm/sqft)	0.75					, [	
Airflow (cfm/Ton)	0.0			[]		, [	
Outside Air (%)	0.0 %	Total Adjusted System Output		0	0	. [	44,000
Outside Air (cfm/sqft)	0.00	(Adjusted for Peak Design conditions)					
Note: values above given at ARI		TIME OF SYSTEM PEAK			Aug 3 PM		Jan 1 AM
HEATING SYSTEM PSYCHRO	OMETRICS (	(Airstream Temperatures at Time of	of Heating	Peak)			
38 °F	69 °F	105 ⁰F	105 °F				
					n		
			-→[]]		[		٦
Outside Air 0 cfm	Heating C	Supply Fan	1		<b></b>		¥
U Cim	nearing c	1,995 cfm				1	104 °F
l T					R	DOM	
69 °F						7	70 ºF
<b>← ≁</b>		───[]    [] ←	<u>.</u>				
COOLING SYSTEM PSYCHR	OMETICS (A	Airstream Temperatures at Time of	f Cooling P	eak)			<u> </u>
84 / 69 °F	79	/ 63 °F 55 / 54 °F 55 / 5	<b>си о</b> ⊑				
04/09 F	10		94 г <b>п</b>		_		
		★	→[]		F		Т
Outside Air		Supply Fan	B	<u>I</u> IC	E		♦
0 cfm		Cooling Coil 1,995 cfm			ſ	56	/ 54 °F
				42.1 %	6 RC	DOM	
770 / 20 OF						<b>]</b>	/ 63 °F
79 / 63 °F							
							~
EnergyPro 5.0 by EnergySoft	User Number:	2100 RunCode: 2010-01-13T	09:03:50	/D: 8261R		P	Page 14 of 14

## **BUILDING ENERGY ANALYSIS REPORT**

### **PROJECT:**

The Strand SFR (20%) The Strand Manhattan Beach, CA 90266

### **Project Designer:**

Manhattan Beach, CA

## **Report Prepared by:**

**Rick Newton NEWTON ENERGY** 1401 19th Street Manhattan Beach, CA 90266 310 375-2699



### **Job Number:**

7273R

Date:

1/13/2010



The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC - www.energysoft.com.

EnergyPro 5.0 by EnergySoft

User Number: 2100

RunCode: 2010-01-13T09:51:4

ID: 7273R

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HVAC System Heating and Cooling Loads Summary	13
Form ECON-1 Energy Use and Cost Summary	14
Form UTIL-1R Utility Incentive Worksheet	15

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Project Addr The The FIELD I Yes INSULA Constru Roof Floor Wall Door Roof Slab	nd SFR (20%) <sup>ress</sup> Strand Manhatt <b>INSPECTION</b> D No HERS M D No Special F	ENERGY easures If Features If	CA Clim CHECKL Yes, A CF- Yes, see P Cavity	I Multi F ergy Climate Z ate Zone C IST 4R must k art 2 of 5 o Area	amily DE: one Total C 26 Provide of this for	•	Addition n/a of 5 of t	3
Project Addr The The FIELD I Yes INSULA Constru Roof Floor Wall Door Roof Slab	Strand Manhatt INSPECTION NO HERS M NO Special f TION Iction Type Wood Framed Rafter Wood Framed w/o Crawl Wood Framed Opaque Door	ENERGY easures If Features If	CA Clim CHECKL Yes, A CF- Yes, see P Cavity	ergy Climate Z ate Zone C IST 4R must k art 2 of 5 c Area	one Total C 26 Provide of this for	ond. Floor Area 5,551 ed per Part 2	Addition n/a of 5 of t	# of Stories 3
The FIELD	Strand Manhatter  Strand Manhatter  No HERS M  No Special F  TION  Strain Type  Wood Framed Rafter  Wood Framed w/o Crawl Wood Framed Opaque Door	ENERGY easures If Features If	CA Clim CHECKL Yes, A CF- Yes, see P Cavity	ate Zone 0 I <b>ST</b> 4R must b art 2 of 5 o <b>Area</b>	e provide	5,551	<i>n/a</i> of 5 of t	3
Yes     Yes     INSULA     Constru     Roof     Floor     Wall     Door     Roof     Slab	NO HERS M NO Special F TION Iction Type Wood Framed Rafter Wood Framed w/o Crawl Wood Framed Opaque Door	easures If Features If	Yes, A CF- Yes, see P Cavity	4R must b art 2 of 5 Area	be provide	ed per Part 2		his form.
Yes     Yes     INSULA     Constru     Roof     Floor     Wall     Door     Roof     Slab	NO HERS M NO Special F TION Iction Type Wood Framed Rafter Wood Framed w/o Crawl Wood Framed Opaque Door	easures If Features If	Yes, A CF- Yes, see P Cavity	4R must b art 2 of 5 Area	of this for	•		his form.
Yes     INSULA     Constru     Roof     Floor     Wall     Door     Roof     Slab	No Special F TION Iction Type Wood Framed Rafter Wood Framed w/o Crawi Wood Framed Opaque Door	Features If	Yes, see P Cavity	art 2 of 5 of <b>Area</b>	of this for	•		
INSULA Constru Roof Floor Wall Door Roof Slab	TION Iction Type Wood Framed Rafter Wood Framed w/o Craw Wood Framed Opaque Door		Cavity	Area		in for details.		
Constru Roof Floor Wall Door Roof Slab	Iction Type Wood Framed Rafter Wood Framed w/o Crawl Wood Framed Opaque Door	Space		<u> </u>				
Roof Floor Galactic Stab Galactic Stab Galactic Stab Stab Stab Stab Stab Stab Stab Stab	Wood Framed Rafter Wood Framed w/o Craw Wood Framed Opaque Door	Space			Special	s (see Part 2	of $5$	Status
Floor Wall Door Roof Slab	Wood Framed w/o Crawi Wood Framed Opaque Door	Space	R-30	1.971	i catures		01 3)	New
Wali Door ( Roof ( Slab (	Wood Framed Opaque Door		R-30	656				New
Door ( Roof ( Slab (	Opaque Door		R-19	4,838				New
Roof Slab I			None	23		· · · ·		New
Slab I			R-38	751				New
WallBG I	Unheated Slab-on-Grade	)	None	2,115				New
	Hollow Unit Masonry		None		epth = 30.000	"		New
<b>FENES</b>	<b>FRATION</b>	U-			E	Exterior		
Orientat	tion Area( <i>ft</i> <sup>2</sup> )	Factor SH	IGC Over	hang Si	defins S	Shades		Status
Skylight	12.6	0.370	0.29 none	nor	1 <del>0</del> 1	None		New
Skylight	6.3	0.370	0.29 non <del>o</del>	nor	ne l	None		New
Skylight	20.0	0.370	0.29 none	nor	1 <del>0</del> I	None		New
Skylight	6.3	0.370	0.29 none	nor	ne l	None		New
Ləft (W)	401.0	1.086	0.51 none	nor	ne L	Bug Screen		New
Rear (N)	362.0	0.370	0.32 none	nor	ne L	Bug Screen		New
Right (E)	98.0	0.370	0.32 none	nor	ne L	Bug Screen		New
Front (S)	220.5	0.370	0.32 non <del>o</del>	nor	ne E	Bug Screen		New
Right (E)	36.0	0.340	0.33 none	nor	ne E	Bug Screen		New
HVAC S	YSTEMS					· · · · · ·		
	eating	Min. Eff	Cooling	I	Min. Eff	Thern	nostat	Status
2 Ce	entral Furnace	91% AFUE	Split Air Con	ditioner	13.0 SEER	Setback		New
	ISTRIBUTION		0. ľ	<b>D</b>		Du		
Locatio		ating	Cooling		ocation		Value	Status
Whole House	Systems Ducted	1	Ducted	Attic, Ceilin	g Ins, vented	6.2		New
				<u>.</u>				
WATER	HEATING							
Qty. Ty	/ре	Gallo	ons Min.	Eff Dis	stribution	ì		Status
1 La	arge Gas	74	0.78	Kitc	hen Pipe Ins			New

,

PERFORMANCE CERTIFICATE:	Resider	ntial	(Part 2 of 5)	CF-1R
Project Name	Building Type		Addition Alone	Date
The Strand SFR (20%)		Multi Family	Existing+ Addition/Alteration	1/13/2010
SPECIAL FEATURES INSPECTI The enforcement agency should pay special attention justification and documentation, and special verification determines the adequacy of the justification, and may the special justification and documentation submitted	n to the items s ion to be used y reject a buildi	pecified in this che with the performan	ce approach. The enforcement a	gency
The DHW System A O Smith Water Products FPSH-75 is a	non-NAECA larg	e storage gas water	heater. Verify DHW details.	
This building incorporates an air retarding wrap which shall	be installed to me	et the requirements	of Section 150 (f) of the Standards.	
		· · · · · · · · · · · · · · · · · · ·		
			· · · · · · · · · · · · · · · · · · ·	
HERS REQUIRED VERIFICATIO Items in this section require field testing and/or completed CF-4R form for each of the measure	verification by			eceive a
Compliance credit for quality installation of insulation has be				
The HVAC System Whole House Systems incorporates HE verify that duct leakage meets the specified criteria.	RS verified Duct	Leakage. HERS field	I verification and diagnostic testing is	required to
	/ · · · · · · · · · · · · · · · ·			
				<i>.</i>
EnergyPro 5.0 by EnergySoft User Number: 2100	RunCode:	2010-01-13T09:51:	4 ID: 7273R	Page 4 of 15

PERFORMANCE	CERTIF	ICATE:	Residen	tial	(Part 3 of 5)	CF-1R
Project Name			Building Type	Single Family	Addition Alone	Date
The Strand SFR (20%)				🗆 Multi Family	Existing+ Addition/Alterat	tion 1/13/2010
ANNUAL ENERGY USE	SUMMARY	/				
	Standard P	roposed I	Margin			
TDV (kBtu/ft <sup>2</sup> -yr)						
Space Heating	10.19	7.81	2.38			
Space Cooling	0.86	1.16	-0.30			
Fans	1.07	1.12	-0.06			
Domestic Hot Water	6.96	5.02	1.94			
Pumps	0.00	0.00	0.00			
Totals	19.07	15.11	3.96			
Percent Better Than Sta	andard:		20.8 %			
BUILDI	NG COM	<b>NPLIES</b>	- HERS	VERIFIC	ATION REQUIR	ED
						Fenestration
<b>Building Front Orientation</b>			42 deg	Ext. Walls/R		Area
Number of Dwelling Units	s:		00	(SE)	2,011	221
Fuel Available at Site:			al Gas	(SW)	956	401
Raised Floor Area:			56	(NW)	2,557	362
Slab on Grade Area:		2, 1	115	(NE)	454	134
Average Ceiling Height:		10	).2	Roof	2,767	45
	U-Factor:		63		TOTAL:	1,163
Average	SHGC:	0.	39	Fe	enestration/CFA Ratio:	20.9 %
REMARKS					ity Insulation Installation has bee	
F. 80% AFUE Furnace to 91%: <b>STATEMENT OF CC</b> This certificate of complia to comply with Title 24, P	OMPLIANC ance lists the arts 1 the Ac	CE building fea dministrative	e Regulations		ded	
Efficiency Standards of th						
The documentation autho	-	rtifies that tr	ne documenta	ation is accurate	and complete.	
Documentation Aut						
Company NEWTON ENER	RGY				prent	1/13/2010
Address 1401 19th Street	t		Name Rick Nev	vton	<i>k</i> -	1/13/2010
City/State/Zip Manhattan Beac	h, CA 90266		Phone 310 375-		Signed	Date
The individual with overal of construction document with any other calculation	l design resp s is consiste s submitted of refrigerant	oonsibility h nt with the o with this pe charge, ins	ereby certifie other complia rmit applicatio sulation instal	s that the propos ince forms and w on, and recogniz lation quality, and	ed building design represe vorksheets, with the specifi es that compliance using o d building envelope sealing	ented in this set ications, and duct design,
Designer or Owner	(per Busin	ess & Pro	fessions C	ode)		
Company						
Address		1	Name			
City/State/Zip Manhattan Beac	h, CA 90267		Phone (	·	Signed License	# Date
						_
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		SURF	ACE D	DETAI																	
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Roof		490	0.030						71	1			-A16	2nd Floor Zone							
Roof		496	0.036						161	1			?-A16								
loor		598	0.034						0	180	New	4.4.2			2nd F	nd Floor Zone					
Vall		251	0.074						251	90	New	4.3.1	-A5		2nd F	loor Zone					
Vall		841	0.074						341	90		4.3.1				loor Zone					
Vall		231	0.074						71			4.3.1			_	loor Zone					
Vall Floor		855 58	0.074						161 0	90 180	+	4.3.1				loor Zone oor Zone					
Vall		157	0.034				-		251	90		4.4.2				oor Zone					
Vall		494	0.074			-			341		New	4.3.1				oor Zone					
Vall		123	0.074						0	90		4.3.1			_	oor Zone					
Door		23	0.500	None					0	90	New	4.5.1				oor Zone					
Vall		89	0.074		-				71	90		4.3.1				oor Zone					
Vall		613	0.074						161	90	New	4.3.1	-A5		1st Fle	oor Zone					
				-	DETAI																
ID	Тур		Area		actor		GC <sup>2</sup>	Azm	Statu			zing 1				on/Com	nents				
	Skyligh		12.6		NFRC		NFRC	251					) Lowe2/Arg		f Floor 2						
	Skyligh		6.3		NFRC		NFRC	_	New				) Lowe2/Arg		f Floor 2						
3 4	Skyligh Skyligh		20.0 6.3		NFRC NFRC		NFRC NFRC		71 New 51 New												
5	Window		112.0	1.086		0.23	COG		New							2nd Floor Zone					
6	Window		130.0		NFRC		NFRC		New		C 5300 V	<u> </u>				nd Floor Zone					
7	Window	w	86.0		NFRC	1	NFRC		New	IW	C 5300 V	nyl/Low-E 2nd			Floor 2	Zone					
8	Window		138.0		NFRC		NFRC		New	IW	'C 5300 V	/			2nd Floor Zone						
	Window		150.0	1.086			COG		New						Floor Z						
10	Window		110.0		NFRC		NFRC		New		C 5300 V				Floor Z						
<u>11</u> 12	Windov Windov		36.0 12.0		NFRC NFRC		NFRC NFRC	. 71	New New		dersen Pe C 5300 V				1st Floor Zone 1st Floor Zone						
13	Window		40.5		NFRC		NFRC		New		C 5300 V			1st Floor Zone			÷				
14	Window		139.0	1.086		0.51	COG	251	<u> </u>				Non-Metal		Basement Zone						
15	Window	w	122.0		NFRC	0.32	NFRC	341	New	IW	C 5300 V	inyl/Lo	w-E	Bas	Basement Zone						
	Window		42.0		NFRC		NFRC		New		'C 5300 V	inyl/Lo	w-E	Bas	sement .	Zone					
(	1) U-F	Factor T	ype:		= Default																
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Surface Type		•							Multi F	amily		sting+ /	Addition/	Alterati	ion 1/	13/201
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/all	454							341	+	New	4.3.1	-A5			ment Zon	
/all	323							161		New	4.3.1			-	ment Zon	
/all	260					40	14/2 2 2	0		New	4.3.1		40.40		ment Zon	
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allBG /allBG	63			<u> </u>	<u> </u>	13	Wood	0		-		-A9/4.3.			nent Zon	
/allBG	14					13	Wood	0				-A9/4.3.			ment Zon	
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CERTIFICAT	E OI	FCC	OMF	PLIAN	CE:	R	esi	der	ntia				(F	<sup>2</sup> a	rt 5 of	<sup>•</sup> 5)	C	<b>F-1R</b>
Project Name The Strand SFR (	· · · ·					Buildi	ing Ty			ngle Far ulti Fami						Alteration	Da 1/	ite 13/2010
BUILDING ZONE I	NFOF	MAT	ON									- 1						
Sustan Nama			7				Nic			Floor A xisting		(ft <sup>2</sup> ) Itere		Por	moved	Volume		/oor Built
System Name Whole House Systems		2nd	Floor	one Nam	ie		Ne	2,00		xisting	<u> </u>	litere	30		moved	19,277		ear Built
While House Cystems			Floor					1,42	_							14,708	-	
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										iput	Ca		Fact		Loss c			
System Name	Qty	'.	Тур	e	D	istribu	ution			tuh)	(ga		or R	E	Pilot			Status
A O Smith Water Produc	ts 1	Larg	le Gas		Kitcher	n Pipe	Ins			80,000	74	4	0.7	3	0.00 %	6 0.0		New
				DETAI	<u> </u>										C EVET			
MULTI-FAMILY W	AIER	<b>NCA</b>			ater P	ining	Long	th					IEAI	1140	3 3131		G	1
				1	fater (f		Leng	juri	ñ									
-			l li						½" latic									
			Eff. Premium	-					Add 1/2" Insulation						Pipe			Insul.
Control			tside	Bu	ried		S	yste	stem Name		Lengt	h Diame	eter	Thick.				
																		<u> </u>
							+											
							1											1
I		· · · · ·		L														·
EnergyPro 5.0 by Energy	ySoft	Us	er Nurr	ber: 2100	)	Rı	unCo	de: 2	010-01	1-13T09:	51:4	L	D: 727	3R			Pa	ge 9 of 15

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MANDATORY MEASURES SUMMARY: Residential	(Page 1 of 3)	<u>MF-1R</u>
Project Name The Strand SFR (20%)		Date 1/13/2010
<u>NOTE:</u> Low-rise residential buildings subject to the Standards must comply with all applic the compliance approach used. More stringent energy measures listed on the Certificate 1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandate nto the permit documents, and the applicable features shall be considered by all parties a specifications whether they are shown elsewhere in the documents or in this summary. S Form with plans. Building Envelope Measures:	of Compliance (CF-1R, CF-1R- ory Measures Summary shall be as minimum component perform	ADD, or CF- e incorporated nance
116(a)1: Doors and windows between conditioned and unconditioned spaces are manuf	actured to limit air leakage.	
§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).		ar Heat Gain
§117: Exterior doors and windows are weather-stripped; all joints and penetrations are ca	ulked and sealed.	
§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate §118(i): The thermal emittance and solar reflectance values of the cool roofing material m installation of a Cool Roof is specified on the CF-1R Form.		
\$150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.		
150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R	-Value.	
§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.		
§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.		
150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(	2000) when specified on the CF	-1R Form.
150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.		
150(I): Water absorption rate for slab edge insulation material alone without facings is no ate is no greater than 2.0 perm/inch and shall be protected from physical damage and U		or permeance
Fireplaces, Decorative Gas Appliances and Gas Log Measures:		
§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering §150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which equipped with a with a readily accessible, operable, and tight-fitting damper and or a com	h is at least six square inches ir bustion-air control device.	n area and is
§150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jac butside of the building, are prohibited.	ket, when that indoor air is ven	ted to the
Space Conditioning, Water Heating and Plumbing System Measures:		
110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulate Commission.		
113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise ralve, backflow prevention, pump isolation valve, and recirculation loop connection require	ements of §113(c)5.	
115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furn appliances with an electrical supply voltage connection with pilot lights that consume less pa heaters.	aces, household cooking applia than 150 Btu/hr are exempt), a	nces and pool and
150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMAC	NA or ACCA.	
150(i): Heating systems are equipped with thermostats that meet the setback requirement		
150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the fed vith insulation having an installed thermal resistance of R-12 or greater.		
150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-h anks have R-12 external insulation or R-16 internal insulation where the internal insulation ank.		
150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating sections of hot water pipes are insulated per Standards Table 150-B.		
150(j)2: Cooling system piping (suction, chilled water, or brine lines), and piping insulated vater tank shall be insulated to Table 150-B and Equation 150-A.	between heating source and ir	ndirect hot
150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 ps 23-A.	i, meets the requirements of Sta	andards Table
150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, en 150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor anditioned space	quipment maintenance, and wir retardant or is enclosed entirely	nd. y in
onditioned space. 150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating a	nd Certification Corporation.	<u> </u>
egistration Number: Registration Date/Time:	HERS Provider:	
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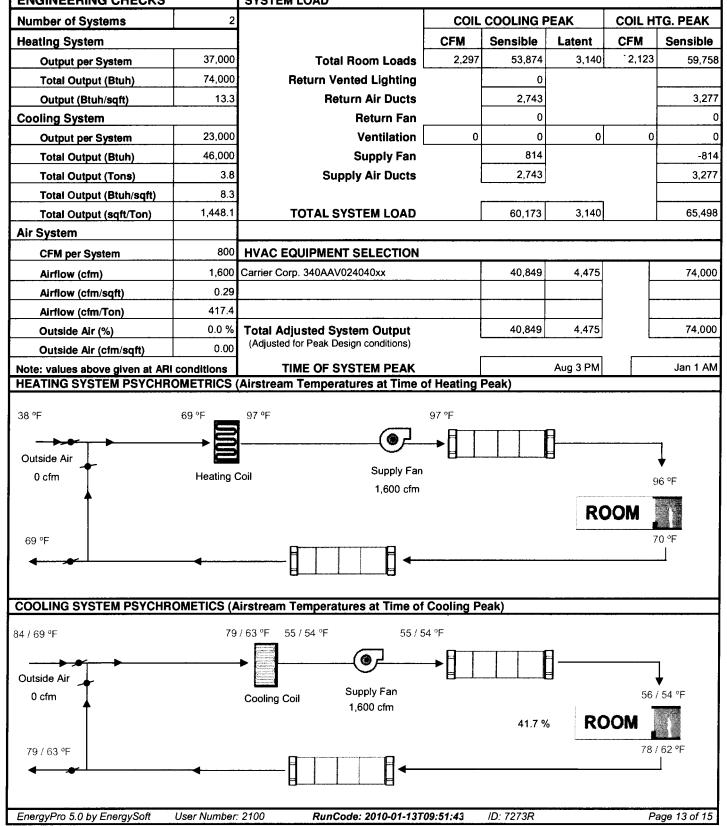
MANDATORY MEASURES SUMMARY: Residential	(Page 2 of 3)	MF-1R
Project Name The Strand SFR (20%)		Date 1/13/2010
§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are in 4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or c applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the reused to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tag	sulated to a minimum installe other duct-closure system that equirements of UL 723. If mas be shall be used	ed level of R- t meets the stic or tape is
§150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constr sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Buildin contain ducts. Ducts installed in cavities and support platforms shall not be compressed to ca of the ducts.	ng cavities and support platfo use reductions in the cross-s	rms may ectional area
§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with unless such tape is used in combination with mastic and draw bands.		Juci lapes
§150(m)7: Exhaust fan systems have back draft or automatic dampers. §150(m)8: Gravity ventilating systems serving conditioned space have either automatic or rea dampers.	adily accessible, manually ope	erated
§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture Cellular foam insulation shall be protected as above or painted with a coating that is water ret radiation that can cause degradation of the material.		
§150(m)10: Flexible ducts cannot have porous inner cores. §150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of p required in Section 4 of that Standard.	Yventilation and Acceptable I roviding the Whole Building V	ndoor Air /entilation
Pool and Spa Heating Systems and Equipment Measures:		
§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that co Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate shall not use electric resistance heating or a pilot light.	or card with operating instruc	ctions; and
§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe betwe and return lines, or built-up connections for future solar heating.		
§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover. §114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time sv programmed to run only during off-peak electric demand periods.	vitch that will allow all pumps	to be set or
§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters	s, and valve requirements of §	§150(p).
Residential Lighting Measures:	w that is no lower than the offi	
§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.	·	
§150(k)3: The wattage of permanently installed luminaires shall be determined as specified b §150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall 20 kHz.	y §130(d). Il have an output frequency n	o less than
§150(k)5: Permanently installed night lights and night lights integral to a permanently installed only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall r voltage lamp holder; OR shall be rated to consume no more than five watts of power as deter- medium screw-base socket.	not contain a line-voltage socl	ket or line-
§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applic	cable requirements of §150(k)	).
§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7. §150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft2 or 100 watts for exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitcher sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms at manual-on occupant sensor.	dwelling units larger than 2,50 n are controlled by a manual ol system; and all permanently	00 ft2 may be on occupant / installed
§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 illuminated cabinet.	watts of power per linear foot	of
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MANDATORY MEASURES SUMMARY: Residential	(Page 3 of 3)	MF-1R
Project Name		Date
The Strand SFR (20%)		1/13/2010
· · · · · · · · · · · · · · · · · · ·	alled low efficacy luminaires s ble requirements of §119, or Lighting in detached storage lation contact (IC) by Underw rtifies the lumiunaire is airtigh be sealed with a gasket or ca se residential buildings with f ential building or to other buildings with f ential building or to other buildings switch that disables the photocontrol; C al sables the photocontrol; C al sine clock; OR an energy be always on EXCEPTION 2: verride switch which bypasse . EXCEPTION 3: Permanent 0 of the California Electric Co in a screw-base socket, and c shall comply with the applica- vehicles shall comply with the sidential buildings with four of acy luminaires shall be allowed	1/13/2010 ry rooms, shall be by a manual- building less rriters nt with air ulk between our or more Idings on the byided that notion sensor, DR an management Outdoor Is the motion Iy installed ide need not consume no able e applicable r more
<b>-</b>		
Registration Number:         Registration Date/Time:	HERS Provider:	

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Begistration Number	Registration Date/Time:	HEBS Provider:	

# Date Project Name Date The Strand SFR (20%) 1/13/2010 System Name Floor Area Whole House Systems 5,551 ENGINEERING CHECKS SYSTEM LOAD



# ENERGY USE AND COST SUMMARY

Project Name The Strand SFR (20%)

ĺ	Rate: STANDARD				PROPOSED				MARGIN	
	Energy Use (kWh)	Peak Demand (kW)	Cost (\$)	Energy Use (kWh)	Peak Demand (kW)		Cost (\$)	Energy Use (kWh)	Peak Demand (kW)	Co: (\$
Jan	46	1		44	1			3	0	
Feb	52	6		60	6			-8	0	
Mar	43	3		37	0			6	2	
Apr	44	4		47	6			-3	-2	
May	24	0		23	0			1	0	
Jun	63	7		91	10			-28	-3	
Jul	36	7		47	8			-11	-1	
Aug	43	7		60	8			-16	-1	
Sep	104	8		122	9			-17	-1	
Oct	24	5		32	7			-8	-2	
Nov	38	3		34	3			4	0	
Dec	72	6		62	4			9	2	
Year	590	8		660	10			-69	-2	
CO <sub>2</sub>		lbs/yr			lbs/yr				lbs/yr	
	Rate:				<b>.</b>		••	Fuel Type:	Natural Gas	
ſ		STANDARD			PROPOSED	)			MARGIN	
ſ	Energy	Peak		Energy	Peak			Energy	Peak	
	Use (therms)	Demand (kBtu/hr)	Cost (\$)	Use (therms)	Demand (kBtu/hr)		Cost (\$)	Use (therms)	Demand (kBtu/hr)	Cos (\$)
Jan	96	135		73	119			23	17	
Feb	79	121	· · · · -	60	103			19	18	
Mar	81	110		59	90			21	20	
Apr	54	102		40	86			14	16	
May	37	93		26	77			11	15	
Jun	21	6		15	5			6	1	
Jul	22	6		15	5	_		6	1	
Aug	21	6		15	5			6	1	
Sep	21	6		15	5			6	1	
Oct	22	35		16	27	-		6	8	
Nov	52	115		40	94			13	21	
Dec	115	138		89	114			25	25	
Year	620	138		463	119			157	20	
CO <sub>2</sub>		lbs/yr			lbs/yr				lbs/yr	
<u> </u>								1		
Annual 1	otals	Energy		Demand	Cost		(	Cost/sqft	Virtual R	ate
Electricity				10 <b>kW</b>	\$	0	\$	0.00 / <b>sqft</b>	\$ 0.00 /	
Nati	ural Gas	463 t <b>hern</b>	IS		\$	0	\$	0.00 /sqft	\$ 0.00 /	herm
			L	Total	\$ Avoided CO;	0 2 <b>Em</b> i	\$ issions	0.00 /sqft	0 lbs/yr	

ECON-1

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UTILITY INCENTIV	E WORKS	HEET		UTIL-1F	2
Project Name				Date	
The Strand SFR (20%)			<b>64</b>	1/13/2010 Step 2 PERCENT BELOW TITLE 24	
Step 1 ANNUAL T ENERGY COMPONENT		USE (kBtu/sq	<u>Margin</u>	Step 2 PERCENT BELOW TITLE 24 % Below	
Space Heating	<u>Standard</u> 10.19	Proposed 7.81	2.38		
Space Cooling	0.86	1.16	-0.30	Margin         Standard         Title 24*           3.96         /         19.07         20.8 %	l
Indoor Fans	1.07	1.12	-0.06		
Domestic Hot Water	6.96	5.02	1.94	Cooling Standard	
Pumps	0.00	0.02	0.00	incentive Eligibility Yes No	I.
Fumps	0.00	0.00	0.00	Owner Incentive (>=15%)	
				NSHP Incentive (>=30%)	
TOTALS:	19.07	15.11	3.96	Conditioned Fioor Area = 5,551.0 ft <sup>2</sup>	
			·	Number of Bedrooms = 5	
Step 3 ANNUAL S	ITE ENERGY	USE			
Average 2pm - 5pm	Standard	Proposed	Margin	Single Orientation	
Peak Demand (kW)	1.3	1.5	-0.2		
ENERGY COMPONENT	Stand			oosed Margin	
	Electricity (kWh)	Natural Gas (therms)	Electricity (kWh)	Natural Gas Electricity Natural Gas (therms) (kWh) (therms)	
Space Heating	0	359	0	275 0 84	
Space Cooling	185	0	251	0 -66 0	
Indoor Fans	405	0	409	0 -3 0	
Domestic Hot Water	0	260	0	188 0 73	
Pumps	0	0	0	0 0 0	
TOTALS:	590	620	660	463 -69 157	
Step 4 POTENTIA	L OWNER INC	CENTIVE CAL			
			elow Title-24* rom step 2)	Incentive Savings Rate (from Step 3) Subtotal	
Potential incentives indicated	d Electric	$\rightarrow$ 0.60 × 0 = \$0			
on this report are available		\$/kWh kWh			
only through the California Advanced Homes Program f	or Electr	$\rightarrow$ 104 X 0.0 = \$0			
new construction and are NC				\$/kW kW	
GUARANTEED. Projects mu	ist Na	2.38 X 157 = \$373			
meet all other program requirements to qualify.				\$/therm therm	
Potential incentives are subj	ect	Bas	e Incentive	= \$373	
to program limitations.					,
		Energy Sta	ar Incentive	n/a X 10% = n/a	
					.
SOUTHERN CA	LIFORNIA	Green Hom	e Incentive	n/a X 10% = n/a	
<b>EDIS</b>					.
		Compact Hom	e Incentive	n/a × 15% = n/a	1
An EDISON INTERNATIONAL	Company     Company				ı İ
		Photovolta	ic Incentive	n/a X n/a = n/a DC Rating kW	1
		and the second	<i>w</i>		, I
	aller, aller	and and and and and and and and and and		NSHP =n/a	i
	Ce	linuu	1 <b>1</b>		
	a	ivanced	inomes	Total = \$373	
Frank Des 5.0.40 h . 5 0. "	Ilaan NIt.a. O		ada. 9040 04 403	*% Below in this equation is limited to 45	
EnergyPro 5.0.18 by EnergySoft	User Number: 2	TUU RunC	ode: 2010-01-137	<b>T09:51:4</b> ID: 7273R Page 15 of 1.	э

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