Green For Life is an energy-saving program funded by the California Public Utilities Commission through Southern California Edison and administered by the Coachella Valley Association of Governments.

www.greenforlifecv.org
CITY STAFF:
We all recognize that the California Energy Code continues to evolve. The COACHELLA VALLEY GREEN BUILDING PROGRAM (CVGBP) is voluntary. We see it as a “soft opening” to energy efficient measures that will soon be mandatory.

The Program is also a learning tool to help explain both the “what and why” of energy efficiency building. We start by asking “What should I do? (to save energy and money)”. We then illustrate and explain specific measures (cool roof) so that the owner, the designer, the contractor can all discuss the options that are available and appropriate.

The Program is intended to be a learning tool to help demystify the California Energy Code and other energy efficiency measures. Because the Program is voluntary, it is more an invitation than a mandate for the entire project design team to consider energy efficiency from the initial concept through the entire construction process.
ARCHITECTS AND DESIGNERS:
The Voluntary Green Building Program and this GUIDE are learning tools. As practitioners, we know how overwhelming and intimidating Building Codes are – for us and our clients. So we start with practical questions: “What should I do?” (to save money and energy). We give some simple practical steps, and then we illustrate the principles that underlie energy efficiency.

By starting simple and explaining terms and ideas, we hope everyone who uses this Program will have discussions about what options are available and appropriate for their project. Our goal is to bring “green” into the entire process of imagining, designing and building.

CONTRACTORS:
The Voluntary Green Building Program and this Guide are intended to help everyone who uses this Program understand the principles of energy efficient building. We have organized the Program and this GUIDE around the practical question “What should I do? (to save energy and money)”. The Program is set up so you and your client can discuss the options available and appropriate for their project. Using the Program to help explain the principles behind energy efficient building, you can be an advisor as well as a builder.

Finally, the California Energy Code and the construction industry will continue to evolve toward the goal of “net zero” buildings. Becoming an advocate and expert now places you as a leader in your industry.

This GUIDE to the Valley-Wide VOLUNTARY GREEN BUILDING PROGRAM introduces the issues of energy efficiency in buildings from the practical perspective of a property owner: “What should I do (to save energy/money)?” This practical introduction is not comprehensive, but rather is a “soft” opening. A knowledgeable person may choose to skip over these few pages. This GUIDE is an introduction to the VOLUNTARY GREEN BUILDING PROGRAM and the GREEN BUILDING MANUAL which is the “meat and potatoes” of the Program. You can find the GREEN BUILDING MANUAL online at www.greenforlifecv.org.

CHAPTER ONE, the next section, addresses the primary “things to do” with more information.

CHAPTER TWO illustrates the principles that underlie the “things to do.” This section is intended to help interested citizens, building owners, contractors and professionals become more fluent in the language of “green building.” If one understands the principles of energy-efficient design, other actions can also be taken to complement and supplement the basic “What should I do?” actions.

(CHAPTER THREE) Finally, because this Voluntary Program and the California Building Code are based upon standards and measurements, the Voluntary Program includes an extensive checklist of specific actions, and how they are counted toward a more energy efficient building.

What follows is the INTRODUCTION to the Valley-wide VOLUNTARY GREEN BUILDING PROGRAM.
Where else to look for information...

Energy conservation is on everyone’s mind, but it isn’t always easy to find your way around all the programs and websites.

Below are links to some of these organizations – ones we think are especially relevant to our Desert Climate. By no means is the list comprehensive, but it will get you started looking for more information – or the same information presented differently.

- Southern California Edison
  http://www.sce.com

- The California Energy Commission
  http://www.energy.ca.gov/title24/

- California State Energy Code
  http://www.bsc.ca.gov/Home/CALGreen.aspx

- United States Green Building Council
  http://www.usgbc.org

- Build It Green
  http://www.builditgreen.org/greenpoint-rated/

- California Energy Upgrade
  https://energyupgradeca.org/
The GUIDE is written to assist City staff in understanding the Voluntary Program. It is also intended to explain the principles of energy efficient measures and design so that interested property owners, contractors and designers can communicate with each other about the most appropriate energy efficient measures to implement in their projects.

This GUIDE is organized as follows:

**INTRODUCTION**

The Practical Approach (What can I do now?)

The Informative Approach (Why does it save energy?)

The Technical Approach (How is it measured?)

Financial Analysis

Financial & Processing Incentive

Permitting Process

**THE GUIDE IS ORGANIZED AS FOLLOWS:**

**CHAPTER ONE**

The Practical Approach

(What can I do now?)

**CHAPTER TWO**

The Informative Approach

(Why does it save energy?)

**CHAPTER THREE**

The Technical Approach

(How is it measured?)

**CHAPTER FOUR**

Financial Analysis

**CHAPTER FIVE**

Financial & Processing Incentive

**CHAPTER SIX**

Permitting Process
Between the years 2007 and 2012, Southern California Edison's (SCE) energy efficiency programs have saved more than five billion kilowatt-hours—enough energy to power 725,000 homes for an entire year. The programs have reduced greenhouse gas emissions by more than 2 million metric tons—the equivalent of removing 350,000 cars from the road.

- SCE.com

The VOLUNTARY GREEN BUILDING PROGRAM is designed to allow builders, developers and homeowners to go above and beyond California's Energy Code in terms of energy efficiency. As part of this Program, some Cities have committed to making it easier for those voluntarily participating in the Program to process their plans through the planning and building departments.

The requirements are different for each city. Please check the permitting process of your individual city.

Inspections by the City will continue to be required for the mandatory T24 requirements of the California Energy Code. These inspections are provided by the City's Staff (Building Department Inspector).

www.greenfortlifecv.org
The INTRODUCTION explains why the Valley-wide VOLUNTARY GREEN BUILDING PROGRAM was developed:

Why was the Voluntary Program developed:
• To encourage building owners to exceed the California Energy Code by 15%
• To promote energy efficient design specific to THE COACHELLA & PALO VERDE VALLEY
• To promote energy efficient measures that are not part of the California Energy Code
• To explain the principles that underlie energy efficient design
• To promote practical and low-cost energy-saving measures and design

How does it relate to existing legislature and Codes:
• Make progress toward the 2020/2030 “net zero” State legislature goals
  • By 2020 all new single family homes must be “net zero”
  • By 2030 all new commercial buildings must be “net zero”
  “Net zero” means that a building will generate, on site, as much energy as it uses.
• Provide a “soft opening” for upcoming changes to the California Energy Code (2014)
• Provide an extended learning period for City staff, contractors and designers regarding proposed changes to the California Energy Code.

How will it be implemented:
• It is voluntary
• It is customized to each jurisdiction
• It is parallel to the California Energy Code – it does NOT replace Title 24 or the California Energy Code

Edison International’s subsidiary Southern California Edison (SCE) is the nation’s largest purchaser of renewable energy, buying and delivering approximately 12.6 billion kilowatt hours (kWh) from wind, solar, biomass, geothermal and small hydro suppliers—almost 16 percent of the power it delivered to customers.

- SCE.com
Financial and Processing Incentive

To encourage participation in this Program, financial incentives are available to offset the costs of energy efficient upgrades. Incentives come in the form of private and public subsidies that support a variety of projects, including appliance upgrades and energy efficient building designs. The purpose of this section is to provide resources and information pertaining to current financial incentives for energy efficient upgrades.

The following websites and corresponding links provide incentive information:

Southern California Edison (SCE.com)
- Rebates and Savings - SCE’s Rebates and Savings homepage
- Heating and Cooling - Rebates for products, installation and maintenance
- Multifamily Energy Efficient Rebate Program - Offers property owners and managers incentives on a broad list of efficient improvements
ENRGY STAR (ENERGYSTAR.gov)
- ENERGY STAR - Energy Star’s homepage
- Special Offers and Rebates - Check for special offers on qualified products
Energy Upgrade California (energyupgradeca.org)
- Homeowners - Incentives offered to residential homeowners
- Contractors - Incentives offered to licensed contractors
U.S. Department of Energy (energy.gov)
- California Appliance Rebates - An application based, mail-in rebate program
- Tax Credits - Federal tax credits for purchasing energy-efficient products
Incentives of up to $4,000 are available to SCE and SoCalGas® residential customers with detached single-family homes (including all-electric) who complete qualifying energy-saving home upgrade projects. With a variety of participation options, you can correct your home’s energy inefficiencies and reduce your monthly utility bills.

- SCE.com
“What can I do now for my apartment building?”

CHAPTER FIVE offers a cost benefit analysis to help determine the most appropriate measures to apply for specific budgets. You can use this tool to determine the cost of the measures you have chosen and how long it will take for these measures to pay for themselves.

1 SHADE TREES
2 SHADE WINDOWS (E, S & W)
   Add trellis, awnings, trees, lattice/vines
3 COOL ROOF
   Add coating on existing or select light colored materials for new construction
4 HEATING VENTILATION & AIR CONDITIONING ≥ SEER 13
   Replace unit with higher efficiency rating
5 LIGHT COLORS
   Paint exterior light colors to reflect the sun and heat
6 HIGH PERFORMANCE WINDOWS
   Install film on the interior with a low Solar Heat Gain Coefficient.
The Southern California Edison (SCE) Resource Guide (PDF), also available in Spanish, helps link customers with community resources that can help, including programs to help income-qualified customers. The California Alternate Rates for Energy (CARE) program offers income-qualified customers a discount of 20% or more off their monthly electric bill. The Energy Savings Assistance Program pays for the cost of purchasing and installing energy efficient appliances and equipment for income-qualified customers.

- SCE.com
The Residential Multifamily Energy Efficiency Rebate Program offers property owners and managers incentives on a broad list of energy efficiency improvements in lighting, HVAC, insulation, and window categories. These improvements are to be used to retrofit existing multifamily properties of two or more units.

- SCE.com
Informative Approach

"Why does it save energy?"

CHAPTER TWO of the Voluntary Program presents practical energy saving measures and illustrates the principles that underlie those measures.

When you check this specific box, the Title 24 calculations must show that in fact your building is 15% over T-24 requirements.

Credit 3.1
Credit 4.2
Credit 9.3
Credit 11.1
Credit 12.2
help in the calculation of T-24 and do not provide points outside of the credit.

See CHAPTER TWO of the GREEN BUILDING MANUAL for full pages.
Let's break it down...

The Sample New Home is designed with these energy efficient principles in mind:

**ORIENTATION**
This sample home is configured to minimize west-facing walls and windows. The long axis is within 30 degrees of south.

**SHADE**
The roof on the south & east facing sides of the house extends beyond the exterior wall 5' providing a covered porch. 25% of liveable area is outdoors.

**WATER/DRAINAGE**
Permeable pavers are installed on 20% of site for patios, walkways and driveways/parking.

**ROOF**
A radiant barrier is installed at the roof level. Roof is made of high durability/low maintenance fiber cement.

**WINDOWS**
Spectrally selective glazing is used on the east-, south- and west-facing windows.

**EQUIPMENT/AC**
Condensing units with two-stage compressor units are installed (SEER ≥ 16). Use units with a minimum Energy Efficient Ratio (EER) of 11.5.

**SOLAR THERMAL**
A solar water heating system is installed because the demand for hot water is equivalent to the production of hot water.

On the next pages, we have reproduced the credits related to the items above and then added up the "points" to see how the sample house will score.
Now that you have gone through the GUIDE, picture a sample home of 3 bedrooms with 2 bathrooms built in 2010 somewhere in the valley. It was designed, built and scored using credits from the Voluntary Green Building Program.

Here in the Valley, we want protection from the sun: we park our cars under carports or under trees; we want roofs over our patios; we like the shade from trees. But the sun also feels good part of the year. So controlling exposure to the sun is the trick.

In the desert, cooling our buildings takes a lot more energy than heating them. So a common sense approach to energy saving is to shade the west (and south) sides of our buildings – with trees, patio covers, even “living walls.”
See CHAPTER TWO of the GREEN BUILDING MANUAL for full pages.

**Informative Approach**

**CHARTER TWO**

**Technical Approach**

See CHAPTER THREE of the GREEN BUILDING MANUAL for full pages.

- **HVAC equipment.** Carefully consider the energy efficiency of HVAC equipment. Consider the energy efficiency of the HVAC equipment to be selected in this Code that will influence the actual heat load on the heating and cooling system. The size of the system (measured in 'tons') may be only as much as 30% through careful design and upgraded energy measures.

- **duct leakage testing** to verify a total leakage rate of less than 6% of the total fan flow.

- **HVAC equipment verification and correction**

- **Dampers units with two-stage compressors** (generally on units with 9 or higher). Use units with a minimum of EER 11.5.

- and install a whole-house fan system.

- and install an evaporative cooling system.

- and network within the conditioned envelope of building, in an unconditioned space, with an R-8 or higher insulation value or buried in the ceiling in.

- the HVAC system to be zoned such that no more than two enclosed spaces are controlled by one thermostat (do not include bathrooms, closets, pantries, and laundry rooms).

- the furnace as a sealed combustion unit.

**GREEN AREA:**

- **THESE ITEMS RELATE TO T-24**

**POINT SYSTEM:** RECEIVE POINTS FOR EACH ITEM (‘M’ IS MANDATORY)

- **CHECKBOX:** CHECK THIS IF YOU COMMIT TO THIS ITEM
CHAPTER THREE is the technical part of the Voluntary Green Building Program. All the design and equipment choices are listed and assigned a point value, and a “score card” is created for your building. When the points are totaled you will know whether the building meets or exceeds the minimum goal of the Voluntary Green Building Program: to exceed Title 24 by 15%.

Some of the items listed are mandatory (M) and some are already part of Title 24 energy calculations. These are highlighted in green (naturally) so one could simply select those items in green and they will directly improve Title 24 calculations. You may be able to reach the +15% simply by upping the values of these “green” items.

Items not highlighted in green do not directly relate to Title 24, but are valuable for energy efficient buildings. These items are assigned “points” and when the adjacent “check box” is checked, a running total is started.

The rest of CHAPTER TWO includes explanations and illustrations of the principles that underlie “Why does it save energy?” For example the idea of “cool roofs” is explained in terms of the solar reflectivity and emissivity of a roof.

ROOF: Roofs get hot because they absorb the sun’s energy. A “cool roof” is a system that reflects sunlight and doesn’t absorb (reflectivity), store and “emit” a lot of heat (emissivity). The minimum values for a “cool roof” are:

- Reflectivity > 0.70 (Black tar ~ 0.10; Pure white ~ 0.95)
- Emissivity > 0.75 (Aluminum foil ~0.90; Black tar ~ 0.20)

U vs R: The U-factor measures the entire assembly of a window, wall, roof, etc. The R-value is the resistance to thermal transfer of a single component (glass, insulation, stucco, etc.) To get the U-factor, you add up all the R-values and divide into 1 – sort of.
CHAPTER TWO
Informative Approach

See CHAPTER TWO of the GREEN BUILDING MANUAL for full pages.

CHAPTER THREE
Technical Approach

See CHAPTER THREE of the GREEN BUILDING MANUAL for full pages.
Like CHAPTERS ONE & TWO, CHAPTER THREE is organized by building type (homes, apartments, and businesses) and progresses from issues outside the building (site conditions, building orientation, drainage, etc.), to the building envelope (roof, windows, etc), to the structural system (framing systems), to equipment selection and finally passive strategies and health considerations.

Each item is also cross referenced to other rating systems (Cal Green, LEED, Green Point) to direct a design professional toward further investigation.

WINDOW: Windows leak heat from conductance (air temperature) and radiation (sunlight.) Energy efficient windows resist conducting heat by double glazing and insulated frames; this is measured by the “U-value.” Windows resist radiant heat transfer by coatings (low-e) on the glass; this is measured by SHGC (solar heat gain coefficient.) Here in the Valley (Climate Zone 15), the practical minimum values are:

- U-factor 0.35 (lower is better)
- SHGC 0.30 (lower is better)

INSULATION: Insulation resists heat transfer by creating air pockets. The better the insulation material resists heat transfer the higher the R value (per inch.) Here in the Valley (Climate Zone 15), the practical minimum values are:

- Walls R-19 (higher is better)
- Roof/ceiling R-38
Consider unplugging consumer electronics when they are not in use. (Even when turned off, CD players in the U.S. consume enough energy in one year to power the Las Vegas Strip for six months.) Consumer electric products are responsible for approximately 15 percent of household electricity use.

Replace lights and lamps with energy-efficient ENERGY STAR® qualified compact fluorescent (CFL) bulbs, which last up to 10 times longer and use up to 75% less electricity.

- SCE.com
Consider unplugging consumer electronics when they are not in use. (Even when turned off, CD players in the U.S. consume enough energy in one year to power the Las Vegas Strip for six months.) Consumer electric products are responsible for approximately 15 percent of household electricity use.

Replace lights and lamps with energy-efficient ENERGY STAR® qualified compact fluorescent (CFL) bulbs, which last up to 10 times longer and use up to 75% less electricity.

- SCE.com

CHAPTER THREE of the Voluntary Program is the technical scorecard and point system of the energy saving building measures. The more green principles used in your building, the higher your scorecard will read in this Program.
Like CHAPTERS ONE & TWO, CHAPTER THREE is organized by building type (homes, apartments, and businesses) and progresses from issues outside the building (site conditions, building orientation, drainage, etc.), to the building envelope (roof, windows, etc), to the structural system (framing systems), to equipment selection and finally passive strategies and health considerations.

Each item is also cross referenced to other rating systems (Cal Green, LEED, Green Point) to direct a design professional toward further investigation.

**INSULATION:** Insulation resists heat transfer by creating air pockets. The better the insulation material resists heat transfer the higher the R value (per inch.) Here in the Valley (Climate Zone 15), the practical minimum values are:

- **U-factor** 0.35 (lower is better)
- **SHGC** 0.30 (lower is better)

**WINDOW:** Windows leak heat from conductance (air temperature) and radiation (sunlight.) Energy efficient windows resist conducting heat by double glazing and insulated frames; this is measured by the “U-value.” Windows resist radiant heat transfer by coatings (low-e) on the glass; this is measured by SHGC (solar heat gain coefficient.) Here in the Valley (Climate Zone 15), the practical minimum values are:

- **U-factor** 0.35 (lower is better)
- **SHGC** 0.30 (lower is better)

**INSULATION:** Insulation resists heat transfer by creating air pockets. The better the insulation material resists heat transfer the higher the R value (per inch.) Here in the Valley (Climate Zone 15), the practical minimum values are:

- **Walls** R-19 (higher is better)
- **Roof/ceiling** R-38
CHAPTER TWO

Informative Approach

See CHAPTER TWO of the GREEN BUILDING MANUAL for full pages.

CHAPTER THREE

Technical Approach

See CHAPTER THREE of the GREEN BUILDING MANUAL for full pages.

15.1
- Use high efficiency equipment (higher SEER and EER rating means higher efficiency - lower electrical usage; lower monthly bill). Efficiency is increased by dual-stage compressor and better controls. NOTE: the more choices you make that reduce the overall heat load on your home (more insulation, better windows, more shade) may reduce the size of the conditioning unit (e.g. 3 ton vs. 4 ton).

15.2
- Select right HVAC equipment. Carefully consider the energy efficiency measures included in this Code that will influence the actual heat load on the air conditioning system. The size of the system (measured in tons) may be reduced by as much as 20% through careful design and upgraded energy efficient measures.

15.3
- **Window Sticking: Reducing total damage risk to less than 6 percent of the total base line**
  - Use windows with dual-stage compressors (generally at SEER 8 or higher). Use units with a minimum of EER 11.5.
  - **AZ (Scott)**

15.4
- **Design and install a window-knee false type system.**

15.5
- **Design and install an evaporative cooling system.**

15.6
- **Design and install within the conditioned envelope of building.**

15.7
- **Design and install within the conditioned envelope of building.**

**Window Sticker** indicating type, U-value and SHGC

**Window Assembly**

**Wall Insulation**

**Voluntary Green Building Program - Menu of Sustainable Design Options**

For the homeowner planning to build a new home.

**Windows & Walls**

**Keep the Heat Out**

Windows: Direct sunlight heats up the inside of a building the same way it makes a clearing where too hot to touch. The best way to prevent heat buildup is to shade the window. Additionally, the glass should be coated with a low emissivity (Low-e) substance.

This type of coating reflects much of the radiant energy and is measured by Solar Heat Gain Coefficient (SHGC). The lower the number, the better (0.25 is much better than 0.50). However, the lower values are only useful on windows that get direct sunlight! Reflecting windows can have a higher SHGC.

**Walls:**

Residing heat transfer through walls mostly is

**Graphic Detail of Sustainable Design Option**

**How to Achieve the Sustainable Design Option & What It Will Accomplish**

**Specific Category & Brief Description of Underlying Principle**

**Individual Credit with Description**

**Reference to Other Rating Systems**
CHAPTER THREE is the technical part of the Voluntary Green Building Program. All the design and equipment choices are listed and assigned a point value, and a “score card” is created for your building. When the points are totaled you will know whether the building meets or exceeds the minimum goal of the Voluntary Green Building Program: to exceed Title 24 by 15%.

Some of the items listed are mandatory (M) and some are already part of Title 24 energy calculations. These are highlighted in green (naturally) so one could simply select those items in green and they will directly improve Title 24 calculations. You may be able to reach the +15% simply by upping the values of these “green” items.

Items not highlighted in green do not directly relate to Title 24, but are valuable for energy efficient buildings. These items are assigned “points” and when the adjacent “check box” is checked, a running total is started.

The rest of CHAPTER TWO includes explanations and illustrations of the principles that underlie “Why does it save energy?” For example the idea of “cool roofs” is explained in terms of the solar reflectivity and emissivity of a roof.

ROOF: Roofs get hot because they absorb the sun’s energy. A “cool roof” is a system that reflects sunlight and doesn’t absorb (reflectivity), store and “emit” a lot of heat (emissivity). The minimum values for a “cool roof” are:

- Reflectivity > 0.70  (Black tar ~ 0.10; Pure white ~ 0.95)
- Emissivity > 0.75  (Aluminum foil ~0.90; Black tar ~ 0.20)

U vs R: The U-factor measures the entire assembly of a window, wall, roof, etc. The R-value is the resistance to thermal transfer of a single component (glass, insulation, stucco, etc.) To get the U-factor, you add up all the R-values and divide into 1 – sort of.
Informative Approach

See CHAPTER TWO of the GREEN BUILDING MANUAL for full pages.

Technical Approach

See CHAPTER THREE of the GREEN BUILDING MANUAL for full pages.

GRAPHIC DETAIL OF SUSTAINABLE DESIGN OPTION

HOW TO ACHIEVE THE SUSTAINABLE DESIGN OPTION & WHAT IT WILL ACCOMPLISH

GREEN AREA: THESE ITEMS RELATE TO T-24 CALCULATIONS

POINT SYSTEM: RECEIVE POINTS FOR EACH ITEM (‘M’ IS MANDATORY)

CHECKBOX: CHECK THIS IF YOU COMMIT TO THIS ITEM
Now that you have gone through the GUIDE, picture a sample home of 3 bedrooms with 2 bathrooms built in 2010 somewhere in the valley. It was designed, built and scored using credits from the Voluntary Green Building Program.

Here in the Valley, we want protection from the sun: we park our cars under carports or under trees; we want roofs over our patios; we like the shade from trees. But the sun also feels good part of the year. So controlling exposure to the sun is the trick.

In the desert, cooling our buildings takes a lot more energy than heating them. So a common sense approach to energy saving is to shade the west (and south) sides of our buildings – with trees, patio covers, even “living walls.”
Let's break it down...

The Sample New Home is designed with these energy efficient principles in mind:

**ORIENTATION**
This sample home is configured to minimize west-facing walls and windows. The long axis is within 30 degrees of south.

**SHADE**
The roof on the south & east facing sides of the house extends beyond the exterior wall 5' providing a covered porch. 25% of liveable area is outdoors.

**WATER/DRAINAGE**
Permeable pavers are installed on 20% of site for patios, walkways and driveways/parking.

**ROOF**
A radiant barrier is installed at the roof level. Roof is made of high durability/low maintenance fiber cement.

**WINDOWS**
Spectrally selective glazing is used on the east-, south- and west-facing windows.

**EQUIPMENT/AC**
Condensing units with two-stage compressor units are installed (SEER ≥ 16). Use units with a minimum Energy Efficient Ratio (EER) of 11.5.

**SOLAR THERMAL**
A solar water heating system is installed because the demand for hot water is equivalent to the production of hot water.

On the next pages, we have reproduced the credits related to the items above and then added up the "points" to see how the sample house will score.
"Why does it save energy?"

When you check this specific box, the Title 24 calculations must show that in fact your building is 15% over T-24 requirements.

Credit 3.1
credit 4.2
credit 9.3
credit 11.1
credit 12.2
help in the calculation of T-24 and do not provide points outside of the credit.
The Residential Multifamily Energy Efficiency Rebate Program offers property owners and managers incentives on a broad list of energy efficiency improvements in lighting, HVAC, insulation and window categories. These improvements are to be used to retrofit existing multifamily properties of two or more units.

-SCE.com

### WINDOW

<table>
<thead>
<tr>
<th>Source Code</th>
<th>Points</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>T24</td>
<td>Use spectrally selective glazing (SHGC &lt; 0.30) on south-facing windows</td>
<td></td>
</tr>
<tr>
<td>15.1</td>
<td>Use high-efficiency equipment (higher SEER and EER rating means higher efficiency)</td>
<td>M</td>
</tr>
<tr>
<td>15.3</td>
<td>Use condensing units with two-stage compressors</td>
<td></td>
</tr>
</tbody>
</table>

See CHAPTER THREE of the GREEN BUILDING MANUAL for full pages.

**Congratulations!! Your home scored at the Energy Leader Level**

These credits are just a few examples. There are additional credits in CHAPTER THREE of the Voluntary Green Building Program but you are not required to select all.
1. TREES ON WEST SIDE
2. UPDATE LIGHTING
   Install compact fluorescent bulbs
3. SHADE WINDOWS
   Add trellis, awnings, trees, lattice/vines
4. COOL ROOF
   Add coating on existing or select light colored materials for new construction
5. ADD INSULATION
   Add spray foam with higher R-value to existing construction or select high R-value for new
6. UPDATE WINDOWS
   Install high efficiency windows with low U-value ≤ .34 on new construction or replace/add film to existing single-glazed windows
7. DUCT TEST/SEAL
   Tape leaks in existing pipes and ducts
8. HEATING VENTILATION & AIR CONDITIONING ≥ SEER 13
   Replace unit with higher efficiency rating

The Southern California Edison (SCE) Resource Guide (PDF), also available in Spanish, helps link customers with community resources that can help, including programs to help income-qualified customers. The California Alternate Rates for Energy (CARE) program offers income-qualified customers a discount of 20% or more off their monthly electric bill. The Energy Savings Assistance Program pays for the cost of purchasing and installing energy efficient appliances and equipment for income-qualified customers.

- SCE.com
1 SHADE TREES
2 SHADE WINDOWS (E, S & W)
   Add trellis, awnings, trees, lattice/vines
3 COOL ROOF
   Add coating on existing or select light colored materials for new construction
4 HEATING VENTILATION & AIR CONDITIONING ≥ SEER 13
   Replace unit with higher efficiency rating
5 LIGHT COLORS
   Paint exterior light colors to reflect the sun and heat
6 HIGH PERFORMANCE WINDOWS
   Install film on the interior with a low Solar Heat Gain Coefficient.

CHAPTER FOUR offers a cost benefit analysis to help determine the most appropriate measures to apply for specific budgets. You can use this tool to determine the cost of the measures you have chosen and how long it will take for these measures to pay for themselves.
Incentives of up to $4,000 are available to SCE and SoCalGas® residential customers with detached single-family homes (including all-electric) who complete qualifying energy-saving home upgrade projects. With a variety of participation options, you can correct your home’s energy inefficiencies and reduce your monthly utility bills.

- SCE.com

1 SHADE
Add trellis, awnings, trees, lattice/vines

2 WINDOWS
Install high efficiency windows with low U-value ≤ .34 on new construction or replace/add film to existing

3 COOL ROOF
Add coating on existing or select light colored materials for new

4 ENVELOPE AIR SEAL
Seal gaps at existing wall penetrations

5 DUCT SEAL
Tape leaks in existing pipes and ducts

6 ENVELOPE INSULATION
Add spray foam with higher R-value to existing construction or select high R-value for new

7 HEATING VENTILATION & AIR CONDITIONING ≥ SEER 13
Replace unit with higher efficiency rating but proper size the A/C first

8 EVAPORATIVE COOLER
Add cooler to existing or new for energy efficient ventilation

“What can I do now for my home?”

www.greenforlifecv.org

CHAPTER ONE
The Practical Approach

SINGLE FAMILY
Harvesting the power of the sun is easy for homeowners and businesses like you who want to generate their own electricity. Incentives from the California Solar Initiative (CSI) program make it possible. Combined with tax credits and energy efficiency measures, CSI incentives can significantly reduce a solar system's cost, which means you get to keep more "green" in your wallet.

- SCE.com

www.greenfortlifecv.org

Financial and Processing Incentive

CHAPTER FIVE

FINANCIAL INCENTIVES

To encourage participation in this Program, financial incentives are available to offset the costs of energy efficient upgrades. Incentives come in the form of private and public subsidies that support a variety of projects, including appliance upgrades and energy efficient building designs. The purpose of this section is to provide resources and information pertaining to current financial incentives for energy efficient upgrades.

The following websites and corresponding links provide incentive information:

Southern California Edison (SCE.com)
- Rebates and Savings - SCE's Rebates and Savings homepage
- Heating and Cooling - Rebates for products, installation and maintenance
- Multifamily Energy Efficient Rebate Program - Offers property owners and managers incentives on a broad list of efficient improvements

ENERGY STAR (ENERGYSTAR.gov)
- ENERGY STAR - Energy Star's homepage
- Special Offers and Rebates - Check for special offers on qualified products

Energy Upgrade California (energyupgradeca.org)
- Homeowners - Incentives offered to residential homeowners
- Contractors - Incentives offered to licensed contractors

U.S. Department of Energy (energy.gov)
- California Appliance Rebates - An application based, mail-in rebate program
- Tax Credits - Federal tax credits for purchasing energy-efficient products
The INTRODUCTION explains why the Valley-wide VOLUNTARY GREEN BUILDING PROGRAM was developed:

Why was the Voluntary Program developed:
• To encourage building owners to exceed the California Energy Code by 15%
• To promote energy efficient design specific to THE COACHELLA & PALO VERDE VALLEY
• To promote energy efficient measures that are not part of the California Energy Code
• To explain the principles that underlie energy efficient design
• To promote practical and low-cost energy-saving measures and design

How does it relate to existing legislature and Codes:
• Make progress toward the 2020/2030 “net zero” State legislature goals
  • By 2020 all new single family homes must be “net zero”
  • By 2030 all new commercial buildings must be “net zero”
  “Net zero” means that a building will generate, on site, as much energy as it uses.
• Provide a “soft opening” for upcoming changes to the California Energy Code (2014)
• Provide an extended learning period for City staff, contractors and designers regarding proposed changes to the California Energy Code.

How will it be implemented:
• It is voluntary
• It is customized to each jurisdiction
• It is parallel to the California Energy Code – it does NOT replace Title 24 or the California Energy Code
Between the years 2007 and 2012, Southern California Edison's (SCE) energy efficiency programs have saved more than five billion kilowatt-hours—enough energy to power 725,000 homes for an entire year. The programs have reduced greenhouse gas emissions by more than 2 million metric tons—the equivalent of removing 350,000 cars from the road.

- SCE.com

The VOLUNTARY GREEN BUILDING PROGRAM is designed to allow builders, developers and homeowners to go above and beyond California's Energy Code in terms of energy efficiency. As part of this Program, some Cities have committed to making it easier for those voluntarily participating in the Program to process their plans through the planning and building departments.

The requirements are different for each city. Please check the permitting process of your individual city.

Inspections by the City will continue to be required for the mandatory T24 requirements of the California Energy Code. These inspections are provided by the City's Staff (Building Department Inspector).
INSPECTIONS

The VOLUNTARY PROGRAM is self-reporting (except for the Title-24 credits.) It is based upon an honor system: you say you are going to do something to improve the energy efficiency of your building, and we believe that you will. However, there is great value to have third party verification of the actual installation of various measures.

Now, why do we say we will trust you, but not your contractor? Simply because the complexities and idiosyncrasies of every construction project present challenges to contractors. Sometimes they miss something, overlook something or simply make a mistake. It is in your interest to confirm that what the plans and specifications state, and what you pay for, are actually well-executed.

Therefore both the California Energy Code and the VOLUNTARY PROGRAM place high value on third party verification of four major elements: insulation, duct leakage, whole house leakage, and HVAC equipment. The first three require careful attention to detail and connections. Insulation and ducting is often installed improperly. HVAC requires proper sizing of the equipment prior to purchase. By inspecting insulation and duct work before walls are closed up (so errors can be corrected), the overall performance of the building is greatly enhanced. Professionals such as Home Energy Rating System (HERS) inspectors, are available to provide these services.

Every process of manufacturing and fabrication requires quality control; you can think of third-party verification as construction quality control.

PRACTICAL, INFORMATIVE, TECHNICAL

The GUIDE is written to assist City staff in understanding the Voluntary Program. It is also intended to explain the principles of energy efficient measures and design so that interested property owners, contractors and designers can communicate with each other about the most appropriate energy efficient measures to implement in their projects.

This GUIDE is organized as follows:

INTRODUCTION

The Practical Approach CHAPTER ONE
(What can I do now?)

The Informative Approach CHAPTER TWO
(Why does it save energy?)

The Technical Approach CHAPTER THREE
(How is it measured?)

Financial Analysis CHAPTER FOUR

Financial & Processing Incentive CHAPTER FIVE

Permitting Process CHAPTER SIX
The purpose of the VOLUNTARY GREEN BUILDING PROGRAM is to answer three questions:

“What should I do to make my building more energy efficient?”
“What do those actions reduce energy usage?”
“How are the effects of doing those actions measured?”

The Voluntary Program is intended for four audiences:

City Staff (Building & Planning Departments)
Owner and interested citizens
Building Contractors
Designers

The Voluntary Program addresses three building types:

Single family homes (new and remodel)
Multi-family (new and remodel)
Commercial (new and remodel)

Where else to look for information...

Energy conservation is on everyone’s mind, but it isn’t always easy to find your way around all the programs and websites.

Below are links to some of these organizations – ones we think are especially relevant to our Desert Climate. By no means is the list comprehensive, but it will get you started looking for more information – or the same information presented differently.

Southern California Edison
http://www.sce.com

The California Energy Commission
http://www.energy.ca.gov/title24/

California State Energy Code
http://www.bsc.ca.gov/Home/CALGreen.aspx

United States Green Building Council
http://www.usgbc.org

Build It Green
http://www.builditgreen.org/greenpoint-rated/

California Energy Upgrade
https://energyupgradeca.org/

The Gas Company
http://socalgas.com

Imperial Irrigation District
http://www.iid.com
ARCHITECTS AND DESIGNERS:
The Voluntary Green Building Program and this GUIDE are learning tools. As practitioners, we know how overwhelming and intimidating Building Codes are – for us and our clients. So we start with practical questions: “What should I do?” (to save money and energy). We give some simple practical steps, and then we illustrate the principles that underlie energy efficiency.

By starting simple and explaining terms and ideas, we hope everyone who uses this Program will have discussions about what options are available and appropriate for their project. Our goal is to bring “green” into the entire process of imagining, designing and building.

CONTRACTORS:
The Voluntary Green Building Program and this Guide are intended to help everyone who uses this Program understand the principles of energy efficient building. We have organized the Program and this GUIDE around the practical question “What should I do? (to save energy and money)”. The Program is set up so you and your client can discuss the options available and appropriate for their project. Using the Program to help explain the principles behind energy efficient building, you can be an advisor as well as a builder.

Finally, the California Energy Code and the construction industry will continue to evolve toward the goal of “net zero” buildings. Becoming an advocate and expert now places you as a leader in your industry.

ARCHITECTS AND DESIGNERS:
The Voluntary Green Building Program and this GUIDE are learning tools. As practitioners, we know how overwhelming and intimidating Building Codes are – for us and our clients. So we start with practical questions: “What should I do?” (to save money and energy). We give some simple practical steps, and then we illustrate the principles that underlie energy efficiency.

By starting simple and explaining terms and ideas, we hope everyone who uses this Program will have discussions about what options are available and appropriate for their project. Our goal is to bring “green” into the entire process of imagining, designing and building.

CONTRACTORS:
The Voluntary Green Building Program and this Guide are intended to help everyone who uses this Program understand the principles of energy efficient building. We have organized the Program and this GUIDE around the practical question “What should I do? (to save energy and money)”. The Program is set up so you and your client can discuss the options available and appropriate for their project. Using the Program to help explain the principles behind energy efficient building, you can be an advisor as well as a builder.

Finally, the California Energy Code and the construction industry will continue to evolve toward the goal of “net zero” buildings. Becoming an advocate and expert now places you as a leader in your industry.

This GUIDE to the Valley-Wide VOLUNTARY GREEN BUILDING PROGRAM introduces the issues of energy efficiency in buildings from the practical perspective of a property owner: “What should I do (to save energy/money)?” This practical introduction is not comprehensive, but rather is a “soft” opening. A knowledgeable person may choose to skip over these few pages. This GUIDE is an introduction to the VOLUNTARY GREEN BUILDING PROGRAM and the GREEN BUILDING MANUAL which is the “meat and potatoes” of the Program. You can find the GREEN BUILDING MANUAL online at www.greenforlifecv.org.

CHAPTER ONE, the next section, addresses the primary “things to do” with more information.

CHAPTER TWO illustrates the principles that underlie the “things to do.” This section is intended to help interested citizens, building owners, contractors and professionals become more fluent in the language of “green building.” If one understands the principles of energy-efficient design, other actions can also be taken to complement and supplement the basic “What should I do?” actions.

(CHAPTER THREE) Finally, because this Voluntary Program and the California Building Code are based upon standards and measurements, the Voluntary Program includes an extensive checklist of specific actions, and how they are counted toward a more energy efficient building.

What follows is the INTRODUCTION to the Valley-wide VOLUNTARY GREEN BUILDING PROGRAM.
CITY STAFF:
We all recognize that the California Energy Code continues to evolve. The COACHELLA VALLEY GREEN BUILDING PROGRAM (CVGBP) is voluntary. We see it as a “soft opening” to energy efficient measures that will soon be mandatory.

The Program is also a learning tool to help explain both the “what and why” of energy efficiency building. We start by asking “What should I do? (to save energy and money)”. We then illustrate and explain specific measures (cool roof) so that the owner, the designer, the contractor can all discuss the options that are available and appropriate.

The Program is intended to be a learning tool to help demystify the California Energy Code and other energy efficiency measures. Because the Program is voluntary, it is more an invitation than a mandate for the entire project design team to consider energy efficiency from the initial concept through the entire construction process.
Green For Life is an energy-saving program funded by the California Public Utilities Commission through Southern California Edison and administered by the Coachella Valley Association of Governments.