MEETING NOTICE AND AGENDA

ENERGY WORKING GROUP
The Energy Working Group may take action on any item appearing on this agenda.

Thursday, December 18, 2008
11:30 a.m. to 1:00 p.m.
SANDAG, 7th Floor Board Room
401 B Street, Suite 800
San Diego, CA 92101-4231

Staff Contact: Susan Freedman
(619) 699-7387
sfr@sandag.org

AGENDA HIGHLIGHTS

• REBUILD AMERICA: ENERGY CODE RECOMMENDATION AND ENERGY MARKETING STRATEGY PLAN
• REGIONAL CLIMATE ACTION PLAN DEVELOPMENT
• REGIONAL DISTRIBUTED GENERATION UPDATE

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1. **WELCOME AND INTRODUCTIONS**

2. **SUMMARY OF THE NOVEMBER 20, 2008, ENERGY WORKING GROUP (EWG) MEETING**

   The November 20, 2008, meeting summary is attached for the EWG review and approval.

3. **PUBLIC COMMENT**

   Members of the public who would like to address the EWG on a topic not on the agenda should do so at this time. Speakers are limited to three minutes each.

4. **REGIONAL ENERGY STRATEGY (RES) UPDATE: ENERGY CODE RECOMMENDATION**

   At the November 20 meeting, EWG members requested additional items be addressed in the accepted recommendation for exceeding nonresidential Title 24 building standards for energy efficiency for use in the RES Update. The California Center for Sustainable Energy (CCSE) has made those modifications and the updated recommendation is attached.

5. **REBUILD AMERICA ENERGY MARKETING STRATEGY PLAN**

   CCSE will present a regional energy marketing strategy plan. The plan is a deliverable for the California Energy Commission Rebuild America grant.

6. **REGIONAL CLIMATE ACTION PLAN DEVELOPMENT**

   Staff will update the EWG on tasks related to development of the regional climate action plan, including a review of transportation-related greenhouse gas reduction measures and a detailed outline of the plan. EWG members will be asked to provide input on transportation-related GHG reduction measures.

7. **REGIONAL DISTRIBUTED GENERATION (DG) UPDATE**

   CCSE will brief the EWG on energy policy and program changes related to DG resources. This will inform the EWG discussion on the role of DG in the San Diego region as part of the RES Update.
8. SCHEDULING AGENDA ITEMS FOR FUTURE MEETINGS

EWG members are invited to suggest topics for the upcoming January 22, 2009, meeting. Please note that beginning with the January meeting, the EWG will resume its regular schedule of meeting on the fourth Thursday of the month.

9. ADJOURN

+ next to an item indicates an attachment
SUMMARY OF NOVEMBER 20, 2008, ENERGY WORKING GROUP MEETING

1. WELCOME AND INTRODUCTIONS
Carrie Downey, EWG Chair, invited members and guests to introduce themselves.

2. SUMMARY OF OCTOBER 23, 2008, MEETING
Ms. Downey asked if there were any corrections to the meeting summary. None were raised to her. Upon motion from Donna Frye, City of San Diego, and seconded by Andrew McAllister, CCSE, the Working Group recommended the approval of the meeting minutes. Motion carried.

Staff received a request for correction to public comment by Don Wood from the September 24, 2008, meeting. The revision is to further state that Don Wood, Citizen Coordinate for Century 3 (CCC-3), urged the SANDAG EWG members to work with their respective water agencies to encourage them to move to tiered water rates for all customer classes, similar to the tiered electric rates that all energy utility customers are currently paying. Most water agencies in the San Diego region only charge tiered rates to residential water customers and charge non-residential customers flat rates.

3. PUBLIC COMMENTS
Members of the public were given the opportunity to address the EWG on a topic not on the agenda.

Brit Coupens, Invenergy LLC, commented on the need to address renewable energy sites in the General Plan Update for the County of San Diego and streamlining the process for renewable energy projects in order to successfully implement the RES.

Don Wood, CCC-3, commented that the County’s General Plan would be the place to address the development of back-county wind farms, and there is a need to link the EWG work on the RES to land use planning process of the County. Mr. Wood also announced that the SAN DIEGO SUSTAINABLE FORUM will be meeting on November 25, 2008, from 4:30 p.m. to 6:00 p.m. at the California Center for Sustainable Energy office. This meeting will also take place on December 2 and 16, 2008.

Joe Bessler, Silverwood Energy, agreed with the idea of identifying sites for renewables. He added, however, that it is also important to define regulations for these sites prior to project development.
Ms. Downey announced that former committee member Alan Ball received an award on behalf of Qualcomm from Coastkeepers in recognition for Qualcomm’s efforts in energy and water conservation.

4. REGIONAL ENERGY STRATEGY (RES) UPDATE: ENERGY CODE RECOMMENDATION
Mr. McAllister presented recommendations to the EWG to exceed non-residential Title 24 building standards for energy efficiency for inclusion in the RES Update. Local jurisdictions have the ability to go beyond Title 24, Section 6, if standards are cost-efficient and approved by the Energy Commission. These recommendations are a way for cities to use their creativity to obtain better results in energy efficiency. The recommendations are as follow:

- Mandatory Measures
  1. Achieve above 10% of current Title 24 standards, or
  2. Design to LEED standards, but no certification required
  3. For schools: use collaborative High Performance School Standards

- Voluntary Measures
  1. Go beyond 30% of current Title 24 standards, or
  2. Achieve LEED Silver certification with the USGBC
  3. For schools: design certification with the High Performance School Standards

- Future Measures
  1. LEED Silver equivalent
  2. For schools: use of then current High Performance School Standards and certification
  3. For voluntary measures: 30% above then current Title 24 or LEED Gold with certification

Questions/Comments:
Mr. Dave Lloyd, North County Economic Development Council, inquired if Title 24 standards are the minimal standards and what are the economic costs associated with these standards. He additionally commented that he does not want to impose these standards on struggling businesses if there are no real paybacks.

Mr. Wood asked if ordinance language will be included so that local cities can simply use their existing municipal codes to implement these recommendations.

Brendon Reed, City of Chula Vista, commented that these recommendations should be relative to the 2008 Title 24 standards due to timing considerations. Also, the City of Chula Vista is trying to link its green building standards to the greenhouse gas emissions and the CEQA process so that a project in meeting the green building standards will simultaneously meet the CEQA requirements. Also, in addition to the model ordinance there should be model findings to streamline the intermittent processes.

An inquiry was made if Title 24 superseded local codes. Mr. McAllister responded that Title 24 is a minimum standard. Each new construction must meet the minimum standard set by Title 24, but cities can go beyond it.

Peter Livingston, County of San Diego, commented that LEED certification and the better than Title 24 standard is an apples to oranges comparison. Mr. McAllister agreed with Mr. Livingston that...
indeed LEED discusses cost and Title 24 looks at energy, but a comparison is made possible by using energy rates to translate across the two.

Rebecca Jones, City of San Marcos, asked how ENERGY STAR fits into the recommendation. ENERGY STAR is known as an appliance standard, but not much is known about it being a building standard for energy efficiency.

Mr. McAllister also discussed efforts to meet California's policy toward zero energy buildings. The Energy Commission stated goal requires that all non-residential construction be zero emission buildings by 2030. This long-term point must be taken into consideration when designing an energy strategy and programs for municipalities to exceed current California energy codes. The Cities of Chula Vista, San Diego, Solana Beach, Los Angeles, and the County of Los Angeles were identified in the report as having progressive energy program designs in place. Also, listed in the Appendix of the report are the municipal programs from cities in Northern and Central California that are not quite as relevant for the situation in San Diego but are of interest.

Questions/Comments:
Ms. Frye inquired if the law requires Title 24 compliance, since language in the SANDAG Regional Energy Strategy 2030 uses the words “encourages Title 24 compliance.” Mr. McAllister stated that, yes, compliance is the law. Ms. Frye then suggested that a mandate for compliance is worth noting in the report because encouraging compliance with the law is not sufficient. A better term to use would be “substantially comply” with Title 24.

Mr. Lloyd inquired over the basis of the voluntary 10 percent goal. Mr. McAllister stated that the 10 percent is roughly equivalent to the two points for LEED, which is meant to be the least common denominator that the market has demonstrated to be achievable.

Mr. Lloyd moved to approve the recommendations upon hearing no objections.

Ms. Jones commented that she would like to have the opportunity to take the recommendation back to her city for feedback prior to voting on it.

Susan Freedman, SANDAG, noted that this is the first recommendation out of suite of measures that is going to address energy saving measures for the built environment. With this particular component of the Rebuild America grant, the EWG is asked to make a recommendation to exceed the 2005 Title 24 energy code for non-residential construction. This recommendation will become part of the RES Update and it is the first of several recommendations to come forward. She asked if the EWG could agree that the built environment should be addressed in the RES Update and that new non-residential construction should be built to exceed existing energy codes. Ms Freedman reiterated that these would become SANDAG recommendations and serve as guidance, but it is up to each jurisdiction to adopt them.

Mr. Livingston asked if there is a requirement for LEED Silver equivalency as opposed to better than Title 24 standards. He is concerned about forcing LEED equivalency rather than just a simple exceedance of Title 24. Mr. McAllister responded that this is a good point. He asked if there should be a mandatory measure that is strictly related to Title 24 that would enable compliance if a municipality were to adopt this. He pointed out that in the mandatory measure, a LEED Silver equivalence is required, but not the actual certification.
Questions were raised regarding how this LEED Silver equivalency requirement is going to be enforced, at what level, and the type of verification needed. Mr. McAllister stated that a LEED Accredited Professional would have to provide verification that the requirement has been met. This would be through the design and construction phase to make sure that the building has been constructed to meet the standards.

Ms. Frye asked if building inspectors can do this. Mr. McAllister stated that they can be trained to do so. Ms. Downey noted that the City of Coronado is looking into getting city employees certified because it is the most economical way to get this done.

To address the question of the level of inspection required to determine LEED Silver equivalency, Mr. Reed commented that basically there will be a building review packet prepared that would have to be approved by someone who is knowledgeable about the credits and the credit intent. This packet will not be sent for certification to the U.S. Green Building Council though.

Mr. Scott Anders questioned the benefit of squeezing more out of new buildings when they might be able to go look at existing buildings for energy efficiency. He noted that this is more of a policy question and this point needs to be addressed in the Regional Energy Strategy. Mr. Anders believes that existing buildings is where a lot of pent-up energy efficiency can be found. He commented that the City of Chula Vista has approached this issue more holistically.

Ms. Frye commented that energy efficiency could be addressed with major rehabs. She suggested that the word “major rehabilitation” be clearly defined to produce a real change.

Ms. Downey recommended that the EWG make a motion that in principle the EWG supports the recommendation but reserves the opportunity for additional comments up to December 5, 2008.

Ms. Jones inquired if the recommendation is based on the current Title 24 and not the 2008 Title 24 that is going to be in effect. She said that if the recommendation is based on the then Current Standards, then there will be no way of knowing its effects. Mr. McAllister answered that the recommendation presented is ratcheted with the then current Title 24 standards and said that Ms. Jones is right. There are two imperfect solutions to this problem, one is to base it on the current Title 24, and the other is to base it on the 2005 Standards and review it within three years.

Ms. Freedman reminded the Working Group that if it would like to provide additional comments on the recommendation to please do so by Friday, December 5, 2008.

Questions were asked regarding the relationship between this recommendation and the RES; particularly, if this recommendation will form the built infrastructure component or if this going to be a part of the RES. Ms. Freedman stated that this will be one recommendation, but that the RES also will address existing buildings and different residential and commercial building measures.

Ms. Downey inquired if there is any other entity that is looking at this to send back to the CEC and if this information is accessible. Ms. Freedman replied that there is another metropolitan planning organization (MPO) doing similar tasks and that she will request that information.
5. **REBUILD AMERICA ENERGY MARKETING STRATEGY PLAN**

Jennifer Green, CCSE, presented the EWG a draft of the regional energy marketing strategy plan to assess the availability of energy products and resources and identify marketing strategies. The plan discusses motivators for the sustainable energy practice and what is available in the region in terms of marketing, energy efficiency, and sustainability. Sources for this information include the Lawrence Berkeley National Laboratory, California Center for Sustainable Energy, and the California State University System.

A question was posed regarding public outreach, what is being done to get the public involved here in the region. Ms. Green stated that the marketing strategy plan will address this but asked for input as to its development. The plan is going to be completed within the next couple of weeks and will be sent through the EWG distribution list for feedback prior to CEC submittal.

Ms. Freedman commented that this plan can be used as an implementation component with the next RES if deemed appropriate by the EWG.

A question was posed regarding if there is the latitude and leverage to use social media to disseminate information to make the public aware of energy efficiency and sustainability.

Ms. Downey commented that in her jurisdiction there is an incentive program where local utilities have partnered with schools to reduce water and energy usage. Utility companies are teaching children about energy consumption and tracking usage on their parents’ monthly bills as an energy efficiency marketing strategy.

Mr. McAllister mentioned the San Diego Solar Map has recently become available online at [http://sd.solarmap.org](http://sd.solarmap.org). Currently, work is being done to make this a marketing tool to link people up with energy efficiency resources and measures.

Mr. Wood suggested that any SANDAG energy efficiency marketing strategy plan should supplement and not supplant existing energy education programs.

Ms. Frye noted that identifying self-interests as motivators are vital in understanding what moves people towards energy efficiency.

6. **REGIONAL CLIMATE ACTION PLAN STATUS REPORT**

Ms. Freedman presented an update on the Regional Climate Action Plan development. She noted that the Proposed AB 32 Scoping Plan was released in October 2008 and is expected to be adopted on December 11, 2008. AB 32 set a statewide target for all regional planning organizations, like SANDAG. The 5 million metric ton greenhouse gas (GHG) emissions mark set by AB 32 will be a placeholder until the California Air Resources Board (CARB) determines a regional emission target for San Diego pursuant to Senate Bill 375. She also mentioned that in September 2008, SB 375 was signed into law. This is the first time that regional greenhouse gas planning, regional transportation planning, regional housing needs assessment planning, and CEQA streamlining were brought together. The Regional Climate Action Plan will undergo an update based on these new events.

Ms. Freedman provided a brief review of past work and stated that in subsequent EWG meetings staff will present new GHG reduction measures for on-road transportation in order to expand on
earlier analysis. Ms. Freedman also noted that transportation models are undergoing refinements to better account for Smart Growth.

Additionally, with the Draft Scoping Plan and passage of SB 375, a 2020 test target and milestone will be added to the action plan. The RCAP will serve as a foundation for the newly required Sustainable Community Strategy component of the next regional transportation plan.

Gabriela Munoz-Melendez commented she works for a research institute in Mexico that is developing a regional climatic plan. She is concerned that the plan element discussed here does not consider the atmospheric basis that is shared with Mexico. She stressed the importance of considering the cross-boundary effects of pollution.

Ms. Freedman noted that there have been activities in the SANDAG Borders Committee and COBRO regarding how to collaborate on climate change as a cross-border issue.

7. NEW CALIFORNIA ENERGY LAW
Discussion on this item has been postponed to the next EWG meeting.

8. 2009 EWG MEETING CALENDAR
Information on the 2009 EWG meetings was distributed as an attachment to the Agenda on November 20, 2008.

9. SCHEDULING AGENDA ITEMS FOR FUTURE MEETINGS
The next EWG meeting is scheduled for December 18, 2008, 11:30 a.m. to 1:00 p.m. EWG members were invited to suggest topics for the upcoming meeting.

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Ms. Downey adjourned the meeting.
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Additional Attendees:
- David McIntyre
- Lisa Erb, Sure Grid
- Rich Caputo, SDRES
- Linda Wagner, City of Chula Vista
- Brendon Reed, City of Chula Vista
- Gabriela Munoz-Melendez
- John O’Donnell
- Diane Rosenberg, San Diego Foundation
- Catherine Groves, CCSE
- Brit Coupens, Invenergy LLC
- J.W. Naish, San Diego Unified School
- Don Wood, CCC-3
- Julie Gelfat
- Joe Bessler, Silverwood
- Susan Freedman, SANDAG
- Rob Rundle, SANDAG
- Jennifer Green, CCSE
As part of its Rebuild America grant with the California Energy Commission, SANDAG will provide a recommendation for new non-residential construction to be built to exceed the Title 24 energy code. This recommendation will be included in the RES Update. The Energy Working Group (EWG) reviewed the recommendation at its November 20 meeting and offered feedback. The EWG changes have been included and the updated version is attached for information.

Key Staff Contact: Susan Freedman, (619) 699-7387, sfr@sandag.org

New Non-Residential Construction

Building Energy Efficiency Standards Recommendation

Acknowledgements and Disclaimers

Acknowledgments: This material is based upon work supported by the California Energy Commission and the U.S. Department of Energy under Award Number DE-FG26-06NT42987.

Work products completed under the SANDAG Rebuild America grant with the California Energy Commission have been developed with the assistance of the California Center for Sustainable Energy (CCSE).

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NEW NON-RESIDENTIAL CONSTRUCTION
BUILDING ENERGY EFFICIENCY STANDARDS RECOMMENDATION

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NEW NON-RESIDENTIAL CONSTRUCTION

BUILDING ENERGY EFFICIENCY STANDARDS RECOMMENDATION

Introduction

Existing buildings and the building development industry consume nearly half of the total energy used in the United States. California has been a leader in minimizing energy consumption by buildings through application of stringent energy efficiency standards known as the California Building Energy Efficiency Standards (often referred to as simply Title 24 or T24). California’s current Public Resource Code (PRC) Section 25402.1(h)(2) states that municipalities may adopt energy standards that are more stringent than California’s energy code (T24, Section 6) if they are cost-effective and approved by the California Energy Commission (CEC).

As the region develops strategies for reaching efficiency targets and greenhouse gas reduction mandates, real options must be developed for exceeding T24 as a matter of course. Some non-residential building types are relatively standardized in their construction, and as such represent an attractive target for regional enhancements to T24 applications. To provide additional guidance to local governments, the Regional Energy Strategy (RES) Update in 2009 will include a recommendation that new non-residential buildings be built to exceed current building energy codes. SANDAG’s Energy Working Group was asked to discuss the strategies to meet and exceed current energy codes, and to recommend as part of the RES Update that new non-residential construction be built to exceed current building energy efficiency standards in place at the time of the project submittal. T24 provides a powerful baseline framework for even more aggressive measures that take advantage of effective conservation strategies beyond minimum energy requirements stipulated in T24. An obvious approach for exceeding T24 will be to utilize its performance-based methods to place each new building along a compliance continuum.

At the same time, energy efficiency is only one part of a municipality’s sustainability plans. Indeed, multiple avenues exist for improving the sustainability of new non-residential buildings in California; for any given project, applying an integrated design process that involves many of the key players early on is the best way to ensure optimal results. An integrated, or “whole-building” approach often involves the designer/architect, engineers, building owner (and sometimes tenant/occupant), builder/developer, sub-contractors, and others, depending on the nature of the project. In many cases above-compliance energy efficiency will be a natural byproduct of a byproduct of an integrated approach to green building. Thus an important part of the solution for exceeding T24 standards is to recognize the value and encourage the use of increasingly common integrated approaches, such as recognized green building rating systems.

Recommendation

For non-residential new construction projects, we recommend the following approach for local jurisdictions to reach levels of energy efficiency beyond T24:

1) Mandatory measures for all new non-residential construction and major rehabilitations above 10,000 square feet gross floor area, either:
a. Achieve 10% \(^1\) above current T24 standards; or  
b. Design to the current Leadership in Energy Environmental Design (LEED®)-Certified performance level\(^2\) ("certifiable" level, although no third-party USGBC Certification required); or  
c. For K-12 schools, apply current Collaborative for High Performance Schools (CHPS) Design standard.

2) Voluntary measures, to receive benefits such as expedited permitting, floor area ratio bonuses, City-sponsored recognition and or labeling:

a. Achieve 30% above current T24; or  
b. Achieve current LEED®-Silver performance level with USGBC 3rd-party verification and certification; or  
c. For K-12 schools, apply current CHPS Designed and 3rd-party Verified standards.

3) Incorporating future code changes: Mandatory and voluntary options above will be superseded when the California Green Building Standards Code (CGBSC) reverts from voluntary to mandatory (estimated at Q1/2011).

a. Mandatory measures:  
   i. Require then-current LEED®-Silver instead of LEED®-Certified (no Certification)  
   ii. For K-12 schools, require then-current CHPS Design standard  

b. Voluntary measures:  
   i. 30% above then-current T24, or LEED® Gold (with USGBC Certification  
   ii. For K-12 schools, apply then-current CHPS Designed and 3rd-party Verified standards.

Prior to executing a plan for a municipality to exceed T24, a city must submit a cost analysis to ensure the additional measures will be cost effective over the life of the projects. According to municipal officials, the approval process can be exceedingly long and expensive\(^3\). In conjunction with the preceding recommendations, the CEC could consider a statewide general cost-benefit model for each of the 16 climate zones. Then, any city wishing to exceed T24 can simply reference the data without having to repeat a similar exercise as the adjacent jurisdictions. This will save cities costs and promote acceptance by municipalities to respond to the California’s aggressive conservation and greenhouse gas reduction goals.

Secondly, municipalities that choose to recommend LEED® equivalent practices should keep in mind that non-government programs such as third-party run green building certification programs can be

\(^1\) The term of “above” here is meant in the context of “exceeding” or going above the minimum energy performance requirements of T24, but in absolute terms means lowering the energy use density used for the Performance Method of compliance, such that the proposed design uses “X” % less energy than the base design, expressed as kBtu/sf-yr.

\(^2\) Most jurisdictions do not require projects to seek third-party certification when a green building rating system performance level is stipulated—this is commonly referred to as “meeting” the performance level through “self-certification”. Some municipalities and other entities classify self-certified projects are sometimes classified as a “certifiable” status to convey that there should be no material difference in the two projects as constructed such that they should in essence be able to submit the application for registration/certification without any design changes. However, some are starting to require a Letter of Commitment prior to issuance of a permit and also spot verification that the project was constructed as intended – with penalties if it is found out that they did not meet original intent in regards to a particular level of green performance committed to.

\(^3\) Brad Remp, City of Chula Vista
amended frequently which may affect original assumptions made about performance levels and expectations. Both the CHPS and LEED® programs have and are currently undergoing changes. However, these changes typically clarify the process and make it more manageable, not less. For example, LEED 2009 will use a formal adoption cycle like the energy and building codes have taken—so jurisdictions and other parties have a more predictable understanding of elements.4

**Current California Codes**

The CEC manages both California’s building efficiency standards and energy efficient appliances standards. Together, these standards have saved more than $56 billion in electricity and natural gas costs since 1978. It is estimated the standards will save an additional $23 billion by 2013.

**California T24**

The California Energy Commission (CEC) initiates, develops and operates California’s T24 non-residential buildings standards statewide programs designed to improve the efficient use of energy in the non-residential sector. T24 mandates include a wide range of building types, such as high-rise office complexes, commercial retail stores, schools, hospitals, and government facilities. These standards are codified in the California Code of Regulations and authority is established through the Public Resources Code. These standards are updated in approximately three-year cycles, and are designed to reduce energy use and greenhouse gas emissions.

The 2005 T24 standards (residential and non-residential combined) are expected to reduce electricity use by an additional 8.3 percent and electricity demand by an additional 8.5 percent over the 2001 standards. Recently-developed 2008 T24 standards, effective June 1, 2009, will tighten the current standard by roughly five percent for non-residential sector projects.

T24 permits compliance through a variety of approaches, broadly classified as either performance-based or prescriptive. Demonstrating T24 compliance requires either proof of construction to prescriptive standards, or demonstrating anticipated building performance through utilization of one of three possible building simulation packages approved by the CEC. The specific areas of compliance are: envelope, space conditioning, water heating, indoor lighting, exterior lighting and signage.

In each of these areas there exist technologies and approaches to exceed the T24 standard. Municipalities must determine how they wish to exceed T24 standards; this can be done in two ways. A municipality can seek certification of a building by using a stricter standard that, by virtue of its mandates complies with T24 standards. Alternatively, cities can meet T24 standards and then choose appropriate additional sustainability projects for their jurisdiction, whether they be water, energy, health, or environmental practices.

**Green Building Standards Code (CGBSC)**

On July 17, 2008, the California Building Standards Commission adopted the California Green Building Standards Code (CGBSC). The code, designed to improve energy efficiency, reduce water consumption and diminish the carbon footprint of California’s built environment, will phase-in over two stages

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4 The City of Chula Vista is in the process of preparing a response to the Public Resource Code Sec. 25402.1(h)(2) requirement to adopt a mandate for projects to meet higher requirements for energy performance than the minimums established under T24. They anticipate submitting this documentation to the CEC in Q1 of 2009 and recommend this added step to facilitate the process.
beginning with voluntary compliance effective July 1, 2009, and mandatory compliance in early 2011. This new green building code—the first enacted by any state in the country—sets a floor, not a ceiling and builders, cities and counties are encouraged to exceed its minimum requirements.

According to Section 101.2, the purpose of this new code is to “improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices.” This proposed code will be addressed within the categories of planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency and environmental air quality. The provisions of this code apply to residential as well as non-residential construction, operation and maintenance for both the public sector and private projects.

Section 503.1 states that the code must achieve a 15 percent greater reduction in energy use than the current T24 requires, while Sections 603.2 and 604.2 respectively require reducing potable indoor water use by 20 percent and exterior landscape irrigation by 50 percent.

Defining municipalities’ powers under the new code will be especially important when the new standards become mandatory around January 2011. At that point, all California municipal green building programs less stringent than CGBSC will either need to defer to the CGBSC code or raise their stringency requirements.

**Strategies to Exceed Current California Code**

Exceeding T24 standards can be achieved by leveraging existing energy standards and voluntary programs. When determining what level above T24 to recommend, it should be recognized that each cycle of California’s standards becomes more restrictive and that some state and local performance-based incentive programs have a minimum threshold for participation.

T24 permits compliance through either a prescriptive (simple yet less flexible menu-based) or performance (more complex yet flexible computer modeling) approach. The specific areas of compliance are: envelope, space conditioning, water heating, indoor lighting, exterior lighting and signage. In either case, a set of mandatory measures must be met regardless of the compliance path chosen. In each of these areas there exist technologies and approaches to exceed the T24 standard.

Municipalities can choose to exceed T24 standards through the prescriptive or performance compliance approach (at component system or whole-building basis as applicable) Exceeding T24 this way has the advantage of being within the existing purview of building/planning departments. Voluntary incentives can consist of density bonuses, reduced site parking requirements, expedited permit processing and the like.

Beyond using the T24 process, municipalities must determine how they wish to exceed T24 standards. This can go beyond energy efficiency to address renewable energy, energy use reduction (from energy efficiency and renewable energy, greenhouse gas or CO2-equivalent reduction (which often go beyond the “built environment” realm to transportation, etc.), or a general green/sustainable program using LEED® or similar. Alternatively, cities can meet T24 standards and then choose appropriate sustainability requirements for their unique jurisdiction, whether they be water, energy, health, or environmental practices.

Rating systems can augment the energy efficiency and other sustainable practice actions a municipality can take. Green rating systems typically offer a user-friendly framework that enables builders to achieve third-party “sustainable” verification. Certification usually involves an application and documentation process. Rating systems that require a third-party certifier have the benefit to the relevant jurisdiction that its building and planning officials do not need to become green-building and green-rating-system experts to review and approve submittals and conduct appropriate field
inspections. If approved, the certifier most commonly offers a public declaration of the sustainability of the building through media, public reception, building placard or the website of the organization. Certification of municipal buildings provides an example for owners of private buildings to follow as well.

**LEED® Green Rating System**

The widely recognized and used United States Green Building Council (USGBC) LEED® Green Building Rating System includes an Energy & Atmosphere category to optimize energy efficiency measures. LEED® certification requires a minimum of seven percent greater efficiency than the standards for existing non-residential buildings and 14 percent greater efficiency than the standards for new non-residential buildings (both correlating to two additional points). LEED® certification of a building in itself can demonstrate compliance with California's energy efficiency mandates, including T24; All LEED® projects that seek to be certified by the USGBC, regardless of the particular level achieved, must meet a minimum of 2 points under LEED®'s energy component, called “EAc1.” The following table presents a comparison of LEED®/EAc1 for New Construction (v2.2) with current (2005) T24 standards.

<table>
<thead>
<tr>
<th>LEED® Points</th>
<th>EAc1 to 2005 T24</th>
<th>EAc2 to 2005 T24</th>
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<tbody>
<tr>
<td>2</td>
<td>14.0% lower than T24</td>
<td>7.5% lower than T24</td>
</tr>
<tr>
<td>4</td>
<td>21.0% lower than T24</td>
<td>17.5% lower than T24</td>
</tr>
<tr>
<td>6</td>
<td>28.0% lower than T24</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>35.0% lower than T24</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>42.0% lower than T24</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notes:**
1. T24 looks at energy use intensities and LEED® looks at energy costs. Thus, energy use (kBtu/sf-yr) must be converted to cost ($) in order to calculate LEED® points.
2. EAc1 refers to LEED® Energy & Atmosphere Credit 1, and pertains to onsite energy efficiency optimization.
3. EAc2 refers to LEED® Energy & Atmosphere Credit 2, and pertains to onsite renewable energy use.
4. There are actually 1 LEED® point increments in the range from 1-10, however “even” point values are being shown for brevity and illustrative purposes.

In addition to energy efficiency measures, the LEED® system focuses on a holistic approach to the building, thereby allowing for many sustainability measures to be addressed at once. It provides independent, third-party verification for green building projects specifically focused on conservation of energy and water, lowering operating costs and increasing asset value, reducing waste, providing a healthier and safer environment, reducing harmful greenhouse gas emissions and qualifying for incentives.

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5 Note that the percent improvement values over T24 in each row are a close approximation, not an absolute correlation, since LEED® and T24 do not use the same definition for energy use densities. LEED® accounts for the site energy use beyond the building envelope (as could occur with a lit parking garage onsite), whereas T24 only looks at the energy associated with the building envelope and mounted exterior lighting on that envelope.
To earn a LEED® certification, the applicant must fill out an extensive checklist and earn points that correlate with supporting documents describing efforts in the following areas:

- Site choice, including water, energy, and zoning details
- Water efficiency
- Energy and atmosphere, including points for commissioning, renewable energy, measurement and verification and percentage above baseline energy efficiency measures
- Materials
- Indoor Environment
- Innovation in Design

Note: A key factor not always realized is that there is a significant difference between simply requiring a project to meet the intent of a particular level of LEED®, and actually requiring adherence to the LEED® process through submittal and verification by a third party. In fact, the USGBC forbids owners from calling their projects as “LEED® certified” unless they have gone through this assurance process.

**Movement towards Net-Zero Energy Buildings**

California policy for new construction is gradually moving towards a net-zero-energy (NZE) approach, under which buildings, on an annual basis, would use no more site energy than they can achieve through a combination of onsite energy efficiency and self-generated power and thermal energy. The CEC’s 2007 Integrated Energy Policy Report adopted a goal for all new commercial buildings to be NZE by 2030. The goal is achieving increasingly broad support: the CPUC has adopted an Energy Efficiency Strategic Plan which emphasizes construction of NZE buildings and neighborhoods. The Architecture 2030 Challenge recommends targets and defines a pathway for achieving NZE buildings by 2030. Municipalities should consider explicitly aligning their policies with the state’s medium- to long-term NZE goals, beginning with municipal facilities then expanding coverage more broadly within the jurisdiction.

This method would benefit from performance modeling software used for energy compliance enhanced with a NZE module that takes into account onsite generation options not unlike an approach used for the energy efficiency oriented statewide Savings By Design Program offered by the investor owned utilities via the EnergyPro software program.

**Collaborative for High Performance Schools (CHPS)**

Schools represent an important opportunity for local jurisdictions to implement leading-edge energy efficiency and sustainability projects within the broader non-residential sector. The CHPS criteria precisely define a high performance school. Criteria points can be obtained through a broad range of high-performance building design strategies including daylighting, energy efficiency, indoor air quality, acoustics, building commissioning, sustainable materials, waste reduction, preventative maintenance, site protection, and water conservation. The design team and school district choose a combination of points to create a high performance school. There are three project types that are eligible to participate. 1) New Schools, 2) New Buildings on Existing Campuses and 3) Major Modernizations. Each of these project types and there minimum requirements are defined in the CHPS Criteria.

School districts can use the criteria to clearly communicate their design goals and verify the facility’s final performance. Designers can use the criteria as a tracking tool for including high performance features under budget and timeline constraints.

CHPS recognizes school projects for meeting the CHPS high performance Criteria through the following two options:
Examples from Local Jurisdictions

More can and is being done by a wide variety of municipalities to push the sustainability envelope in their regions beyond California’s basic code. Local jurisdictions can require implementation of broader sustainability goals in conjunction with T24-related energy efficiency mandates, in the process producing the following outcomes:

- Reduce energy and water consumption
- Improve use and recycling of materials, reducing solid waste generated during construction
- Reduce greenhouse gas emissions and other pollutants associated with building materials and energy required for heating and cooling
- Improve indoor air quality and health for building occupants
- Increase a building’s durability and ease of maintenance
- Provide site and building resilience to natural and man-made disasters using passive survivability and dual-mode techniques, enabling true sustainability support to the built environment
- Better integrate buildings and developments with existing and planned local and regional infrastructures, such as transportation, schools, parks, natural features

Following, we present some key local examples of municipal sustainability programs that go beyond T24. The Appendix contains additional examples, to various levels of detail, from further afield.

City of Chula Vista

Chula Vista’s original CO2 reduction plan approved in 2000 was to reduce 20 percent below 1990 levels. Chula Vista also joined the U.S. Mayors agreement, supported AB 32, and joined California Climate Action Registry. Chula Vista has developed a comprehensive carbon-reduction based plan, approved by their city council in July 2008, including the following programs. While the initial scope of the document was to address climate change, Chula Vista is currently investigating the plan’s vision to provide a greater emphasis on energy efficiency as a stand-alone issue.

Business Energy Assessments. Although not mandatory, businesses will be encouraged to participate in a no cost energy assessment of their facilities to help identify opportunities for them to reduce monthly energy costs. The business assessment will be integrated into the existing business licensing process and codified through a new municipal ordinance.

Green Building Standard. Chula Vista will implement a citywide, mandatory green building standard for new construction and major renovations. The new standard will have three main components: (1) a minimum energy efficiency (carbon equivalent) requirement of 15% above T24 - 2005, (2) the early adoption of the new California Green Building Codes for all residential and commercial projects and (3) a Carbon Offset Fee available for projects not meeting the 15% above T24 threshold. The City will re-evaluate its Green Building Standard in late summer 2009 after the revised T24 becomes effective (August 1, 2009).
**Solar & Energy Efficiency Conversion Program.** Chula Vista will create a program to provide residents and businesses a streamlined, cost-effective opportunity to implement energy efficiency improvements and to install solar/renewable energy systems on their properties. The City will develop a funding mechanism to allow program participants to voluntarily choose to place the improvement costs on their property’s tax rolls, thereby avoiding large upfront capital costs. The program will promote vocational training, local manufacturing, and retail sales opportunities for environmental products and services. To help stimulate the private-sector renewable market and lower the cost for installing renewable energy systems on new homes, the City will require all new residential buildings to include pre-wiring and pre-plumbing for solar photovoltaic and solar hot water systems, respectively.

**Turf Lawn Conversion Program.** Chula Vista will create a program to provide residents and businesses a streamlined, cost-effective opportunity to replace their turf lawns with water-saving landscaping and irrigation systems. Some municipal turf lawn areas (such as medians, fire stations and non-recreational park areas) will also be converted to act as public demonstration sites and to reduce monthly water costs. The City will establish the model for water-wise landscaping for new development through an update of its Municipal Landscape Ordinance and Water Conservation Plan Guidelines.

**City of Los Angeles**

The City of Los Angeles adopted an innovative Green Building Ordinance in April of 2008. As of November 1, 2008 (May 1, 2009 for some residential projects), new construction or major rehabilitation projects above 50,000 square feet of gross floor area are required to meet LEED®-Certified standards, though actual certification is not required. Actually certifying the projects (including paying the necessary fees to the USGBC) exempts the project from the requisite City permitting fee. To promote higher levels of efficiency, projects that voluntarily commit to LEED® Certification at the Silver level or above will receive expedited permitting. For larger buildings, then, Los Angeles has chosen to leverage the LEED® standards and processes wholeheartedly.

**County of Los Angeles**

The County of Los Angeles is set to impose a more stringent LEED®-based requirement than the City of LA, in addition to relying explicitly on T24. First, LA County’s Green Building Standards (LAGBS) require all new construction to exceed 2005 T24 by 15%. More recently, at the direction of the Board of Supervisors, the County Planning Department has prepared a Green Building Ordinance for presentation to the California Energy Commission in November 2008. The most recent version of that Ordinance (as yet not adopted) details mandatory standards for all non-residential, hotels/motels, mixed use and first-time tenant improvement projects:

- Less than 10,000 sq ft gross floor area: LAGBS only
- 10,000-25,000 sq ft: LAGBS and LEED®-Certified
- Greater than 25,000 sq ft: LAGBS and LEED®-Silver
- High-rise buildings over 75 feet: LAGBS and LEED®-Silver

These requirements would apply to projects submitted for permitting as of January 1, 2010. The County will also form a Green Building Program Implementation Task Force to further develop, implement and monitor the program; this body will consist of county officials, representatives from key stakeholder groups and five members appointed by the Supervisors.7

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7 [Documents on this program are online at: http://planning.lacounty.gov/spgreenbuildingprogram.htm](http://planning.lacounty.gov/spgreenbuildingprogram.htm)
City of San Diego

The City of San Diego\(^8\) has proposed the following mandates as part as of an expedited permitting process. Each of the prescriptive recommendations exceeds T24 mandates to reward “green” applications for their energy efficiency efforts by moving them to the “expedited permitting” process:

- Projects that perform better than the State of California T24 energy requirements by 30 percent
- Projects that commit to earning U.S. Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED\(^\circ\)\)) rating system certification at the Silver level or higher
- Projects that are seeking GreenPoint\(^9\) Rated certification and are targeting more than 60 points
- Participation in a utility program that addresses comprehensive, cost-effective energy efficiency or onsite renewable energy technologies, such as Savings By Design, Sustainable Communities or the Advanced Home Program. Note: Savings By Design has a better than T24 threshold of 10% for Owner incentives and 15% for design team incentives.

City of Solana Beach

In Solana Beach, the City Manager’s office has taken steps to exceed T24 standards in its efforts to build a sustainable community. Although the majority of their efforts have centered on the residential sector and voluntary Build It Green steps, the City of Solana Beach’s “Build It Green Roadmap” proposes a mandatory LEED\(^\circ\) Silver certification for all municipal buildings as well as promotion of LEED\(^\circ\) Silver certification as a goal for all commercial buildings. Solana Beach’s program was modeled on the voluntary programs already in place in other communities, particularly Petaluma, California.

Program Design Considerations

Phased Implementation

Local jurisdictions can set a powerful example by leading implementation of seemingly aggressive energy efficiency and green building standards. Many municipalities, including Chula Vista and San Diego, have initially instituted energy and/or green requirements for the buildings that they own and manage, and then moved on to consider these same requirements as voluntary for the private sector permit submittals. Strategies include:

1. Public buildings first, followed by private buildings in a later year.
2. Floor Area: Vary requirements based on building size, such as the approach being adopted by the County of LA.
3. As locally-adopted codes and guidelines become familiar to the marketplace and construction practices incorporate them efficiently over time, more diverse new building projects can become subject to the more stringent requirements.

Code Enforcement Issues

Any increment of improvement “on paper” needs to be grounded in the reality of the percentage of these full savings actually achieved in the field. Although the CEC and third parties provide education

\(^8\) The City of San Diego expedite process was created by KEMA and is currently being vetted through the Sustainable Energy Advisory Board of San Diego

\(^9\) GreenPoint Rated is a Build It Green tool for residential construction
and training on the standards, actual savings are highly dependent on the construction accuracy and quality; building official enforcement at the plan-check and field levels is a critical factor. The CEC’s Building Standards Enforcement Unit investigates complaints and provides assistance to Building Officials and energy professionals to increase compliance with the T24. Some investigations are done in conjunction with the Contractors State License Board (CSLB), and/or individual building departments or outside parties.

**Life-Cycle Costing**

Life cycle costs can be helpful for justifying proposed strategies that reach beyond state mandates. Life-cycle costing can be used to compare competing measures objectively, in a way that incorporates first-cost, incentives, operating expenses, and utility savings for proposed technology through its useful lifetime. As such, LCC can assist in decision making by valuing appropriately measures with variable characteristics, and ultimately achieve buy-in for energy efficiency strategies with policy makers and program implementers.

**Regional Energy Strategy 2030**

The SANDAG Regional Energy Strategy 2030 (RES2030) encourages T24 compliance coupled with education and active participation in the process. The RES 2030 includes recommendations to “Develop training programs to ensure that local inspectors are informed about California T24 building code updates” and “Develop a process to participate in the California T24 energy code updates.” The current RES 2030 implementation strategies also emphasize efficiency standards outside the California T24 process; these could be replicated by other agencies throughout the state.

- Encourage (but do not mandate) existing buildings to meet minimum efficiency standards upon resale through public-good programs or government incentives
- Maximize the efficiency of existing public-good funds and assure that these funds are not diverted to other causes
- Encourage public agencies to establish revolving funds to reinvest a portion of energy cost avoidance in further energy project development
- Develop a concerted and comprehensive program of energy efficiency and demand reduction programs to help achieve the long-term energy planning goals of the region
- Complete a comprehensive evaluation of current energy efficiency programs to broaden the input from key stakeholders on program design and to maximize utilization of public goods program funding through continuous improvement
- Develop and implement a regional customer education program focusing on energy efficiency and load shifting

In addition to recommending adequate training on building codes and the preceding energy efficiency plans, the RES Update should identify applicable program(s) for local governments to use that go beyond code.

**Additional Strategies for Municipalities**

**Appliance Standards**

Non-residential T24 applies to the building envelope shell and primary mechanical, thermal and lighting systems. However, a large and increasing percentage of energy is consumed by plug loads—the equipment, appliances and other devices that are used by the tenants and residents of both commercial and residential buildings. California efficiency standards (Title 20) assure consumers that any appliance they purchase in California meets a minimum level of efficiency, and while these
standards are not part of T24’s mandates, they are quite complementary to them within a municipal energy plan. The CEC's appliance database, the most comprehensive collection of appliance efficiency data in one place, contains more than 148,000 appliance models that meet or exceed state and federal efficiency levels. Exceeding Title 20 standards could be accomplished by adopting municipal procurement policies that mandate best-in-class efficiency for common equipment, and by promoting similar decision-making behavior more broadly within the community—for example encouraging purchase of Energy Star appliances, computers and other electronics.

Build It Green Rating System (BIG)

Build It Green (BIG) is a professional non-profit membership organization whose mission is to promote healthy, energy and resource-efficient buildings in California. While their programs are geared to guide the residential building construction arena, the widely-recognized and accepted BIG standards can serve as a guide for municipalities when promoting sustainability with their constituents.

- Passive solar heating, overhangs on south windows, deciduous trees on west and south
- Upgraded insulation, Structural Insulated Panels, advanced air infiltration reduction practices (air sealing), Low-E double-pane windows
- Compact fluorescent lighting, low energy-using major appliances
- High-efficiency furnace or zoned, hydronic radiant heat; tankless water heater
- Whole house fan, solar attic fan
- Solar water heating, photovoltaic system (solar panels), wind turbines

The BIG guidelines are based on the Alameda County New Home Construction Green Building Guidelines, which were first developed in 2000 through a collaborative process and public-private partnership among builders, green building experts, and local government staff in Alameda County. Representatives from major production builders provided input and direction in the development of the original Guidelines. The Guidelines were updated in 2005 to expand its applicability throughout California, address changes in T24, and incorporate measures from other residential green building initiatives such as the California Green Builder program, National Association of Home Builders guidelines, and the LEED® for Homes checklist. This history underscores the synergies between BIG and the existing T24 framework.

The BIG program also works with municipalities in a peripheral role through their Public Agency Council. The PAC is comprised of over 100 participating public agencies that meet quarterly to discuss and create consistent green building standards in their regions, and support each others programs and initiatives. Municipalities interested in building on the successes and constraints of becoming more sustainable are encouraged to join in councils like the PAC.

Build It Green, like LEED®, has a checklist and rating systems that assist project developers and local government in implementing their systems. The BIG certification process also rates buildings (residential) according to the number of sustainable practices used in the construction of the building. Energy efficiency is not a free-standing category, but sustainable practices like attention to renewable energy installation is rated. Buildings are rated on the following criteria, specifically:

- Site disturbance and waste
- Sustainable foundation
- Sustainable landscaping
- Building envelope-use of recycled or earth-friendly materials
- Energy - HVAC and renewable energy systems
- Interior materials
- Exterior finishing materials
ENERGY STAR for Buildings

The U.S. EPA administers the ENERGY STAR program, which not only covers equipment and appliances, but buildings as well.

Non-Residential

Through the “ENERGY STAR for Buildings and Manufacturing Plants,” the energy performance of commercial and industrial facilities is scored on a 1-100 scale and those facilities that achieve a score of 75 or higher are eligible for the ENERGY STAR, indicating that they are among the top 25% of facilities in the country for energy performance. Commercial buildings that have earned the ENERGY STAR use on average 35% less energy than typical similar buildings and generate one-third less carbon dioxide.

Currently, buildings that can earn the ENERGY STAR include offices, bank branches, financial centers, retailers, courthouses, hospitals, hotels, K-12 schools, medical offices, supermarkets, dormitories, and warehouses. Industrial buildings that can earn the ENERGY STAR include auto assembly plants, petroleum refineries, cement plants, and wet corn mills. The Portfolio Manager is used for comparing existing buildings to benchmarks of building performance. Portfolio Manager assists the administrator track and assess energy and water consumption within individual buildings as well as across the entire building portfolio. The administrator enters energy consumption and cost data into the Portfolio Manager account to benchmark building energy performance, assess energy management goals over time, and identify strategic opportunities for savings and recognition opportunities. This also aligns with the ENERGY STAR Challenge, which is the national call-to-action to improve the energy efficiency of America’s commercial and industrial buildings by 10 percent or more.

Residential

To earn the ENERGY STAR, a home must meet guidelines for energy efficiency set by the U.S. Environmental Protection Agency. These homes are at least 15% more energy efficient than homes built to the 2004 International Residential Code (IRC), and include additional energy-saving features that typically make them 20–30% more efficient than standard homes.

Any home three stories or less can earn the ENERGY STAR label if it has been verified to meet EPA's guidelines, including: single family, attached, and low-rise multifamily homes; manufactured homes; systems-built homes (e.g., SIP, ICF, or modular construction); log homes, concrete homes; and even existing retrofitted homes.

In the SDG&E service territory, municipalities should refer to their Advanced Home Program. The Performance-Based Approach provides incentives for building homes that exceed T24 by at least 15 percent. These homes can also qualify for the ENERGY STAR® for Homes label, which is widely recognized for energy efficiency.

There are two levels of participation:

- Tier 1 - Exceed Title 24 compliance by 15% for single or multifamily new construction
- Tier 2 - Exceed Title 24 compliance by 35% and 40% in cooling budget for single or multifamily new construction

Building America’s EnergySmart Home

Another available residential program is Building America’s EnergySmart Home, which uses an inverted scale to align with Net Zero Energy homes. It provides a good example of a (newer) building labeling approach, as the following sample shows:
A 70 on the E-Scale indicates that a home is approximately 30% more energy efficient than a typical new home built to code. A 60 on the E-Scale would be 40% more energy efficient. The goal is to get to 0 – a Net-Zero Energy Home.

Builders may place the E-Scale on or near the home's electric panel to show potential homeowners the energy performance achieved by that particular home or model. Participating builders and partner organizations can also:

- Place their logo on the E-Scale label with program or product names
- Augment the rating with estimates of annual energy cost savings – which may help homebuyers get better mortgage terms
- Include estimates of the carbon footprint associated with the energy rating

The E-Scale is based on the well established Home Energy Rating System (HERS) Index, developed by RESNET, the Residential Energy Services Network. The energy rating for the home will be conducted by RESNET-certified energy raters for the performance pathway. In California, the CEC runs the HERS system, which is undergoing changes for Phase II that will provide a more comprehensive application of the system beyond discrete measure verification for optional compliance credit to whole building energy performance.
Appendix - Other Municipal Sustainability Programs

There are many approaches to not only capture above code energy use reduction opportunities, but broaden green and sustainable development objectives. Some of the examples listed below are representative and contain possible sustainability options to consider.

City of Santa Cruz

The Santa Cruz Green Building Working Group created a program based on non-residential LEED®© 2.0 standards as the basis of a point driven system for obtaining permit issuance. For residential buildings, the Alameda Waste Management Authority’s program was tapped to also generate a point driven program in obtaining compliance for permit issuance. Both programs were designed to be user friendly and easy to comply with. For people interested in going beyond the minimum standards two different levels of points were established for each system, one to generate accelerated processing and one for both accelerated processing and an awards program.

The program was approved by the City Council in October of 2005 and became effective on January 3, 2006. For the first year participation in filling out the Green Building points check list is mandatory, however installation of green building measures is voluntary. Commencing on January 2, 2007, installation of designated green components became mandatory to obtain a building permit and a building final.

Sonoma County

Sonoma County has a goal to reduce greenhouse gas (GHG) emissions from County facilities to 25 percent below 1990 levels by 2015. The majority of electricity use in Sonoma County is related to pumping, conveyance, treatment, and disposal of water and wastewater. The County plan proposes the following solutions.

Solution #1 — Maximize energy efficiency throughout Sonoma County. Complete a full retrofit of existing residential and commercial electricity/natural gas customers to achieve the highest level of energy efficiency available. Efficiency is treated as “virtual energy” that costs less than fossil fuel generated energy and can be funded through municipal revenue bonds, accessed through Sonoma Energy Agency (SEA), and other available bond types.

Solution #2 — Maximize end-user water efficiency throughout Sonoma County. Complete a full retrofit of existing residential and commercial water customers to achieve the highest level of water efficiency available. Energy use, particularly natural gas, will also be reduced by water efficiency measures. Implement the proposed Pay As You Save (PAYS®) system for water utility customers to overcome economic barriers for widespread adoption of water efficiency improvements. Reduce flows throughout the water cycle to reduce the amount of energy used by the water supply and waste-water treatment systems. Use municipal revenue bonds and other available bond types to provide low-cost financing for the program.

Solution #3 — Switch electricity generation from fossil fuel to renewable sources. Using bonds issued by SEA, construct a portfolio of new, local renewable energy. The new portfolio will provide 100 percent of the electricity for Sonoma County’s electric supply from more than 80 percent non-emitting generator types. This gives a carbon efficiency for the electric supply that is approximately half of PG&E’s projected carbon efficiency for 2016. Features of the proposed portfolio:

- Delivers over 300 megawatts of new renewable generation
- Generates power from nearly 70 percent renewable sources and 80 percent non-emitting (including large hydroelectric) (0.16 lb eCO2/kWh).
- Fully supplies Sonoma County electric load, currently supplied by PG&E, with a carbon efficiency 50 percent higher than PG&E's projected 2016 level
- Matches Sonoma County’s load profile while minimizing the use of fossil resources
- Utilizes a phased rollout of new generation resources to minimize risk and take full advantage of emerging technologies
- Minimizes levelized cost of electricity from new resources through municipal revenue bond funding
- Creates incentives for wide adoption of small-scale renewable installations such as photovoltaic, small wind, and small hydro

Solution #4 — Replace natural gas and propane space and water heating with electric heat pumps and solar hot water heaters. Use SEA as a marketing channel for an “opt-up” gas aggregation program to replace 80 percent of residential natural gas furnaces with heat pumps, district heat from cogeneration, or waste-to energy where available. Also, replace 80 percent of natural gas water heaters with solar hot water heaters.

Solution #5 — Institute a mandatory green building ordinance throughout Sonoma County similar to Rohnert Park ordinance; remove barriers to green building; require zero-energy “inclusionary” quotas for multiple building projects.

Build incentives into the regulation to encourage developers to exceed the requirements and take the opportunity to build “zero-energy” homes and buildings. Review all local building codes to look for opportunities to remove barriers to green building projects. Within the new countywide green building regulation, require “inclusionary” projects for developers who build multiple buildings that make a certain number of those buildings zero-energy, such as are done with low-income housing projects.

Solution #6 — Improve efficiency of pumping operations for water and wastewater, and improve distributed generation and energy efficiency at wastewater treatment facilities.

Coordinate pumping schedules between the Sonoma County Water Agency and its contractors to decrease peak flows and overall energy use. For municipal operations, increasing the amount of electricity generated from biogas (e.g., produced at the Laguna Treatment Plant) is the most cost effective option for creating more “carbon-free” electricity. Use the heat created in co-generation to reduce the amount of energy required for wastewater treatment. Augment existing digester capability (if any) with specialized high solids food waste digester.

City of Petaluma

On January 23, 2006, the Petaluma City Council approved the creation of a new, voluntary green building program with the Community Development Department. The Petaluma Green Building Program, called “Petaluma Build It Green” reflects the City’s commitments to responsible development and environmental stewardship, and is seamlessly integrated into the Community Development Department’s operations. Petaluma Build It Green is a voluntary, points-based program designed to stimulate and support green building in Petaluma. The program is designed around the Green Building Guidelines developed by Alameda County Waste Management Authority and Build It Green.

10 The Petaluma plan was developed by Resource Performance Partners, Inc.
City of Culver City

Culver City’s Building Safety Division researched and reviewed the feasibility and cost effectiveness of building permit applicants exceeding the performance requirements of the 2005 Energy Efficiency Standards and concluded that due to their current and projected staffing level of the Culver City Building Safety Division would not be able to support an additional energy efficiency program. Instead, the existing Building Safety Division staff decided that they could implement and manage a proposed solar photovoltaic initiative which would require a mandatory 1kW solar photovoltaic system per 10,000 square feet of new commercial or multifamily construction; with an equivalent solar water heating system as an acceptable alternate, or if the geometry of the proposed project would not permit compliance with the resolution the permit applicant may pay an equivalent amount into a City fund to pay for solar systems on City facilities or other local non-profit entities. Compliance with this resolution may allow for participating buildings to exceed the 2005 California Energy Efficiency Standards by reducing the level of energy consumption of new buildings to 15% less than the time-dependent valuation (TDV) energy allowed for an equivalent building.

City of Los Altos

With the understanding that they will need to submit a new ordinance to the CEC for approval using the 2008 T24 standards, the City of Los Altos developed a Green Building Regulations Ordinance to conserve natural resources through sustainable design and construction practices. The ordinance states that residential and non-residential new construction be 15% more energy efficient than required by T24. In order to further the goals of enforcement, support and training, Los Altos has a building inspector on staff that is a Certified Energy Plans Examiner and a Certified Home Energy Rating System (HERS) rater. This inspector is also an instructor at a local community college teaching the currently adopted Building Energy Efficiency Standards. He provides periodic training to the City of Los Altos staff for enforcement requirements as well as support and training for the local design and construction community.

Marin County

The County of Marin Community Development Agency developed a Single Family Dwelling Energy Efficiency Ordinance to reduce the annual energy consumption and peak electricity and natural gas loads of large homes. The ordinance is currently being revised to maintain the increasingly stringent energy efficiency requirements for larger homes, but also requires that all single family homes greater than 1,500 square feet exceed the 2005 T24 standards by at least 15%.

Residents can meet the current ordinance requirements through one or more design approaches: (a) energy conservation measures, including glazing properties and glazing orientation; (b) installation of a solar photovoltaic (PV) system or other alternative energy systems; and/or (c) reduction of total conditioned floor area. (See Mill Valley for more information on “prototype house” and its EE education value.)

Los Altos Hills

All buildings must meet or exceed the energy efficiency requirements contained in T24 2005 standards, according to an article written by city officials. The building department is the local enforcement agency for the Standards. Buildings covered in the article apply to all new primary dwellings and secondary dwellings, where proposed as part of a primary dwelling, for which a building permit has not been applied for and accepted as complete by the Building Department prior to June 30, 2006. The article does not apply to new construction in existing primary dwellings. Under the article, dwellings must be designed to achieve energy consumption 15% lower than would be required under the otherwise-applicable standards, through energy efficiency measures, achieving performance
comparable to the T24 or by offsetting consumption with photovoltaic power production on site, or through a combination.

**City of Palm Desert**

The City of Palm Desert has put in place plans to upgrade energy savings mandates and bolster cost-savings. The ordinance requires that all buildings are designed to consume no more TDV energy than permitted by T24, Part 6. The main features of the proposed ordinance are that:

- Single family houses less than 4,000 square feet of conditioned floor area, low-rise multifamily buildings, condominium conversions and residential additions equal to or greater than 500 square feet consume at least 10% less TDV energy than the energy use permitted by the 2005 standards.
- Single family houses of 4,000 square feet or more consume 15% less TDV energy than the energy use permitted by the 2005 standards.
- The prescriptive envelope Heat Gain of all non-residential buildings, except additions less than 500 square feet, must be at least 10% less than the standard prescriptive Heat Gain.
- A performance approach be used to demonstrate that the proposed building uses less TDV energy than the standard design, as defined within the ordinance.

**City of Rhonert Park**

Rhonert Park requires that all buildings are designed to consume no more TDV energy than permitted by T24, Part 6. The main features of the proposed ordinance are:

- Single family houses and residential additions equal to or greater than 1,000 square feet consume at least 10% to 15% less TDV energy than the energy use permitted by the 2005 standards, as specified according to conditioned floor area.
- A few mandatory measures not a part of the 2005 standards are added.

**City of Mill Valley**

Mill Valley adopted Marin County’s ordinance and created a prototype house. It was developed with a total conditioned floor area of 3,500 sf. The Prototype House establishes the geometry of a typical large custom house design, without specifying the energy conservation measures or levels of energy components such as fenestration, insulation or HVAC, and domestic hot water system efficiencies.

The Prototype House is a two-story structure, with a raised floor over a crawl space, and 9 ceilings w/attic space. Exactly 60% of the total area is on the 1st floor, and 40% is on the 2nd floor. The aspect ratio (length to width) is 2:1 on 1st floor and 3:2 on 2nd floor. There is 22.0% glazing as vertical sliding windows (7.7% on front & rear elevations, 3.3% on left & right elevations); and 0.5% as horizontal skylight for a grand total of 22.5% glazing. Space heating is provided by two forced-air furnaces, one serving the upstairs and one the downstairs; and no air conditioning is installed. Ducts are in the crawl space for the 1st floor and in the attic for the 2nd floor. A large (75 gal) storage tank water heater serves the whole house.

The same prototype house, with the same relative 1st and 2nd floor areas and aspect ratios has also been developed for 4,000; 5,000; 6,000; 7,000; 8,000; 9,000; 10,000; 11,000; and 12,000 square-foot homes. Each of the prototype houses has been analyzed with the most current state-certified version of EnergyPro v4.0 to establish what the energy budget is for each of these size homes under T24.
REBUILD AMERICA ENERGY MARKETING STRATEGY PLAN

Introduction

As part of its Rebuild America grant with the California Energy Commission, SANDAG is to provide a regional energy marketing strategy plan. The plan is to provide information on available local energy-efficiency products and resources and a marketing plan. As part of its Memorandum of Understanding with the California Center for Sustainable Energy (CCSE), SANDAG requested that CCSE prepare a plan for review by the Energy Working Group.

Background

The focus of the energy marketing strategy plan is on municipalities so that they can expand their use of available energy products in the region to promote exceeding Title 24 standards. It contains details on available local energy-efficiency products and resources. It also identifies a rationale for moving toward sustainable energy new construction projects; e.g., societal benefits, peer pressure, economic and personal inconvenience (or convenience). Third, it details successful efforts by entities in California in marketing energy efficiency to their constituents. Finally, the document provides recommendations for potential actions for California local governments.

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Attachment: 1. San Diego Regional Energy Assessment and Marketing Strategy Plan
San Diego Regional Energy Assessment and Marketing Strategy Plan

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San Diego Regional Energy Assessment and Marketing Strategy Plan

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Appendix: Sustainable Building Life Cycle Cost Analysis
I. Introduction

California has demonstrated its desire to create sustainable communities through policies and programs that set the stage for communities to reach beyond minimum energy efficiency mandates to a more integrated "whole-building" approach. Through adoption of the Regional Energy Strategy 2030 (RES) and longstanding work of the San Diego Association of Governments (SANDAG) Regional Energy Working Group (EWG), the San Diego region has made a commitment to increasing conservation, energy efficiency, renewable resources and other clean distributed generation in San Diego County. This commitment is further realized by the existence and successful work of the California Center for Sustainable Energy (CCSE) (formerly the San Diego Regional Energy Office). CCSE is an independent energy voice that provides education, marketing, tools and technical assistance to bring about a more sustainable energy future for the region.

This localized energy marketing strategy plan ("Plan") serves as one tool to expand the use and availability of energy-saving resources in the San Diego region. The Plan is intended as a resource for local governments and other energy stakeholders.

The Plan provides an assessment of available local energy products and resources and identifies existing marketing avenues to expand their use in San Diego. The Plan identifies additional marketing strategies that could benefit the region, state policy drivers that influence local actions, and various market participants that individually and in partnership play a role. The Plan further addresses barriers to increased infiltration of energy products and resources.

II. Existing Market Conditions

A. Local Energy Products and Resources

Several reference resources exist that can assist local governments and other agencies in expanding the use of local energy products and resources.

1. Building Green

The Building Green website details green products available in the region as well as throughout the country. The following is a partial list of products for which availability, green attribute and contact information is available: Windows, Sitework & Landscaping, Foundations, Footers, and Slabs, Exterior Finish & Trim, Insulation, Flooring, Mechanical Systems/HVAC, Plumbing, Lighting, Electrical, Appliances, Renewable Energy. To see a current list of all energy products, visit the Building Green website at http://www.buildinggreen.com/menus/index.cfm

2. California Center for Sustainable Energy

CCSE, located in the San Diego region, serves as a resource for energy education as well as a source for energy planning documents. The CCSE website is a regional clearinghouse for current energy information, including energy efficiency and renewables policy, education and outreach, technologies and other energy issues. For further information on any of the following CCSE products, visit the website at www.energycenter.org.

- CCSE has aided in various cities' transitions to sustainable practices and purchases. Through a partnership with SANDAG, CCSE has assisted in the realization of significant energy efficiency potential in the cities of Carlsbad, Solana Beach, and Poway. From their work with these local governments, CCSE has developed a set of documents to aid other localities in their sustainability efforts.
• CCSE worked with municipal partners to develop the Regional Energy Strategy 2030 (RES). The RES is a regional energy blueprint for energy products and plans and has guided the decisions of the EWG and San Diego Gas and Electric (SDG&E) on their long term procurement plans.

• Through the Energy Resource Center (ERC), a partnership between CCSE and SDG&E, CCSE hosts and/or facilitates educational workshops almost daily to educate interested stakeholders and the public on energy efficiency and green building, as well as renewable and other energy technologies. The ERC approach focuses on the following efforts to educate and market sustainable energy practices through a four-pronged approach: educate, demonstrate, replicate and facilitate action. By providing workshops, hands-on displays, a tool and book lending library and staff resources related to a wide range of energy topics, the ERC assists key decision-makers to answer questions related to the costs and benefits of sustainable development. The Energy Connection newsletter addresses current energy efficiency policy, regulations, technologies and program updates for the general public.

• Through their administration of both the California Solar Initiative (CSI) and the Self-Generation Incentive Program (SGIP), CCSE has compiled a vendor database that lists potential contractors for distributed generation technologies. The CSI webpage also contains links to training videos, presentations and other valuable energy information.

• The energy efficiency webpage on the CCSE website hosts links to energy efficiency resources and data throughout the US.

3. San Diego Gas and Electric
As the region’s investor-owned utility (IOU), SDG&E serves many functions in the energy field. SDG&E offers energy efficiency and energy conservation incentives and rebates through programs overseen by the California Public Utilities Commission (CPUC). Many of the programs offered through SDG&E and California’s other IOUs provide sizeable rewards for replacing inefficient technologies with newer, cleaner and more efficient technologies. For more information on SDG&E’s energy products, visit their website at http://sdge.com/.

• SDG&E offers rebates for local governments through funds collected on ratepayer electricity bills. For FY 2006-2008, SDG&E is administering $250 million in rebates and incentives for energy efficiency, including both the retrofit and new construction sectors. The most popular programs for whole building energy efficiency approaches have been the Savings By Design and Energy Savings Bid programs.

• The “Go Green, Save Green” Low Income Efficiency Retrofit Program provides 0% financing, and a maximum $30,000 loan to low income housing units and targeted customers.

• Other customer classes are also incentivized through SDG&E rebates programs, which rely heavily on education and outreach programs as well as technical incentives. Educational products include brochures and pamphlets, trainings and workshops (housed at CCSE and other locations throughout San Diego).

4. University of San Diego (USD)
The USD Burnham Moores Center for Real Estate and the Energy Policy Initiative Center (EPIC) are exploring energy issues in the region and producing reports for use by policymakers as well as the building industry. Documents and presentations from USD are available at their website, http://www.sandiego.edu/

• The Burnham Moores Center for Real Estate has explored the financial implications, barriers and solutions to green and sustainable real estate development. In July 2008, the Center released a study of the economic benefits of sustainable buildings, focusing on both nonresidential and
residential construction, as well as their “Guide to Going Green.” They also hosted the “Is It Easy Being Green?” conference on green development and its benefits.

- EPIC is dedicated to studying energy policy and law. The Center recently completed a greenhouse gas inventory for San Diego County, which will aid the development of a regional climate action plan.

5. Other Regional Products
In the San Diego region, stakeholders have created numerous sustainability products and resources that address current issues and potential solutions including:

- USD Environment and Sustainability Initiative, http://esi.ucsd.edu/
- SANDAG Energy Working Group, www.sandag.org
- San Diego State University, http://sustainable.sdsu.edu/
- San Diego Apollo Alliance, http://www.sdapollo.org

B. Statewide Energy Products and Resources
Statewide education and outreach programs exist to spread the word on sustainable energy practices that can assist cities interested in marketing the benefits of sustainability. Developers and owners/occupants should be educated about the long-term benefits of sustainability; but just as important, a concerted effort must engage municipal elected officials and other government officials involved in setting and applying local codes, developing permitting rules, determining permitting cost schedules and enforcing compliance. Use of a model ordinance like the one created for this grant will allow city officials and staff members to use a “plug and play” template.

1. The Lawrence Berkeley National Laboratory (LBNL)
In Berkeley California, the LBNL is the federal Department of Energy’s primary home for building energy efficiency research. Over the last four decades, LBNL scientists and research partners have developed a formidable body of knowledge on high-performance residential and non-residential buildings and numerous tools and analysis techniques useful for identifying efficiency opportunities and assessing policy options. LBNL also has researched and developed strategies to make energy efficiency and other energy-saving mainstream practices.

2. The California Public Utilities Commission (CPUC)
The CPUC oversees the CSI for new commercial construction while the California Energy Commission (CEC) oversees the New Solar Homes Partnership (NSHP) authorized in 2006 by California Senate Bill 1. Each component of the CSI emphasizes education and outreach. The marketing strategy plan for these programs is available online.

3. ICLEI - The Local Governments for Sustainability
ICLEI is teaming with the U.S. Green Building Council (USGBC) and the Center for American Progress (CAP) to develop a national framework for sustainable communities. The STAR Community Index is a national, consensus-based framework for gauging the sustainability and livability of U.S. communities. STAR will be launched by 2010 to help governments set priorities and implement policies to improve sustainable energy performance. Governments can then certify their achievements through the STAR Community Index.
C. Barriers to Sustainable Energy Practice

Two common barriers to the expanded use and availability of energy-saving resources and products in the San Diego region are cost concerns and a lack of information. There has historically been a perception in the market – amongst the private sector, government, and consumers – that energy saving resources and products are more expensive than their conventional counterparts. This is often due to their higher upfront costs and a market focus on short-term results. However, the life-cycle costing approach affords the market a mechanism in which the cost implications of energy saving resources and products are evaluated over a longer time horizon. Despite sometimes higher upfront costs, many energy saving resources and products have lower life-cycle costs than their conventional counterparts.

The complexity of multiple market participants with competing interests navigating a myriad of energy policies, codes, standards and legislation can make understanding and embracing energy saving resources and products difficult. Complexity often leads to confusion in messages to potential consumers and in the facts underlying the messages. This confusion can ultimately lead to aversion from energy saving resources and products and presents an impediment to their growth.

D. Energy Policy and Program Drivers

An understanding of the relevant energy policy drivers is essential to facilitating growth in the availability and use of energy saving products and resources. Most energy legislation and policies enacted in California since 1978 feature an integrated approach to reaching either net zero energy and sustainable materials and methodologies, or achieving maximum energy efficiency prior to pursuing renewable technologies. There is growing consumer interest in sustainable new construction.

1. United States Environmental Protection Agency: Energy Star Rating System
According to the Burnham Moores Center for Real Estate, energy efficient buildings started gaining popularity when the United States Environmental Protection Agency (US EPA) began using its Energy Star rating system to measure energy efficiency. Since then, the USGBC, ICLEI and others have developed building rating systems and tools that aid in the identification and quantification of energy saving attributes.

2. California Public Utilities Commission Energy Efficiency Strategic Plan
The current CPUC Energy Efficiency Strategic Plan (Strategic Plan) sets a state goal to make energy efficiency and sustainability practices standard features in new construction by 2020. The Strategic Plan identifies several areas in which new construction must exceed energy efficiency standards to create zero net energy buildings.

Local Government Goals
- Local governments lead adoption and implementation of “reach” codes stronger than the California Building Energy Efficiency Standards (Title 24 or T24), on both mandatory and voluntary bases.
- Strong support from local governments for energy code compliance enforcement.
- Local governments lead by example with their own facilities and energy usage practices.
- Local governments lead their communities with innovative programs for energy efficiency, sustainability and climate change.
- Local government energy efficiency expertise becomes widespread and typical.

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1 “Market Transformation Lessons Learned from an Automated Demand Response Test in the Summer and Fall of 2003”, August 2004, Chris Shockman, Mary Ann Piette and Laurie ten Hope
2 Dr. Norm Miller, Director of Academic Affairs at University of San Diego’s Burnham-Moores Center for Real Estate
**Commercial Sector Goals**
- New construction will increasingly embrace zero net energy performance (including clean, distributed generation), reaching 100 percent penetration of new projects in 2030.
- Fifty percent of existing buildings will be retrofitted to zero net energy by 2030 through achievement of deep levels of energy efficiency and with the addition of clean distributed generation.
- Transform the commercial lighting market through technological advancement and innovative utility initiatives.

**Codes and Standards Goals**
- Continually strengthen and expand building and appliance codes and standards as market experience reveals greater efficiency opportunities and compelling economic benefits.

3. **California Building Energy Efficiency Standards: Title 24**
California is a leader in minimizing the energy consumption of new buildings through the California Building Energy Efficiency Standards (Title 24 or T24). In 1978, T24 set energy efficiency standards for all new residential and nonresidential construction in the state. These standards are designed to reduce energy consumption by enforcing stringent energy efficient building standards. By requiring such standards as improved duct insulation, cool roofs, fenestration for windows and time switch-controlled outdoor lighting, T24 strives to provide an integrated approach to energy efficiency.

According to the CEC, T24 contributes to the overall goal of “[providing] California with an adequate, reasonably-priced, and environmentally-sound supply of energy” while decreasing GHG emissions and reducing water use. All of these requirements help citizens, business owners and local governments reduce their energy consumption and save money. T24 is updated approximately every three years and sets the tone for energy efficiency in future construction efforts. T24 Section 25402.1(h)(2) states that local governments may adopt energy standards that are more stringent than California’s energy code if they are cost-effective and approved by the CEC. This provision establishes a framework in which local governments can achieve greater-than-T24 requirements for new infrastructure built in their jurisdictions.

4. **California Executive Order S-20-04**
The Governor’s signing of Executive Order S-20-04 in December 2004 established the State of California's priority for energy and resource-efficient high performance buildings. The Executive Order sets a goal of reducing energy use in state-owned buildings by 20 percent by 2015 (from a 2003 baseline) and encourages the private commercial sector to set the same goal. The order also directs compliance with the Green Building Action Plan, which details the measures the state will take to meet this goal. The Executive Order and Green Building Action Plan direct the California Energy Commission to:

- Develop and propose by July 2005, a simple building efficiency benchmarking system for all commercial buildings in the state.
- Develop commissioning and retro-commissioning guidelines for commercial buildings.
- Further develop and refine T24 building energy efficiency standards applicable to commercial building sector to result in 20 percent savings by 2015 using the 2003 standards as the baseline.

5. **Senate Bill 1037**
California Senate Bill 1037 (2005), requires electrical utilities, municipal utilities and the CPUC to make energy efficiency programs a priority before acquiring other sources of electricity or building new transmission lines.

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3 California State Public Resource Code, Title 24, Section 6
E. Market Participants and Motivators

1. Supply-side and Demand-side Parties
Participants in the sustainable construction market can be categorized into supply- and demand-side parties. Supply-side parties, including developers, builders, lenders/investors, building inspectors, utilities and local government staff, are play a role in the implementation of new construction projects. Demand-side parties, such as buyers, lessees, property managers and agents, purchase or lease completed projects. These parties must be persuaded that energy efficient products and integrated sustainable practices are more desirable than the status quo.

For parties that have not embraced energy efficient building yet, a critical step in the marketing process then becomes the need to persuade the supply side parties that the benefits of sustainable construction outweigh the costs. To develop, build, finance and market a sustainable development, those on the supply side need to be persuaded of its importance and benefits. Local governments can play a role by providing education to the supply side partners.

Of equal importance is the need to persuade the demand side participants that sustainable practices and products should be the standard. Supply side parties can use the educational tools at their disposal to persuade lessees and buyers these practices are profitable and beneficial to the environment.

2. Market Motivators
Various motivational factors influence developers, builders, local governments or other stakeholder decisions to embrace energy efficient practices and products. Understanding stakeholder motivations is a key to determining how to market to various audiences. In most cases, the purchase of sustainable products and progress on sustainability projects happen for one or more reasons, or “motivators.” The following are typically most prevalent:

- Societal benefit/Protect the Environment/Health
- Peer pressure/Image
- Economic/Life cycle cost
- Economic/Personal convenience

Societal Benefit/Protect the Environment/Health
Societal needs sometimes create the niche for sustainable development. Through government loans and a nonprofit status, philanthropic endeavors can provide a developer the opportunities to help a community through construction of affordable housing with green practices.

For example, Community Housing Works in San Diego builds new affordable residential communities. Solara, a rental community, was completed in 2007 with all energy efficient appliances, solar and drought tolerant plants; the site is very close to a net-zero consumer of energy.

Peer Pressure/Image
Builders and developers are beginning to experience a pressure from the marketplace to build green developments. Market differentiation is important in the real estate business, and in many respects this imperative is actually heightened by the current downturn in new construction and the economy in general. Developers and builders can be motivated by the positive media attention and image that can be garnered from building sustainable projects.

For example, Christopherson Homes wanted to identify features that would further set its Wisteria community apart in response to a slow housing market. They were eager to differentiate themselves to boost sales. Through market research, they determined that there was a growing concern in California to conserve energy and preserve natural resources. They built energy efficient homes with solar photovoltaic arrays to attract buyers to not only their mid-range priced homes in the Wisteria community, but also
their low- and high-end priced homes. Ultimately, they have become a company interested in injecting sustainable attributes in all their developments.4

**Understanding Cost Issues: Life Cycle Cost**

Life cycle benefits for sustainable building practices can exceed the initial extra cost incurred for energy efficient choices. In October 2008, federal energy efficiency incentives were extended eight years for residential energy efficient buildings and five years for commercial construction.5 Typically a project meets the federal standard for this incentive simply by complying with California’s stricter Title 24 standards. In addition to energy efficiency upgrade incentives, tax credits for residential and nonresidential construction have been extended for eight years. The extension of renewable energy and energy efficiency tax credits should produce an uptick in home buyers’ interest in going green. This interest must be funneled to the home and commercial developers in concrete ways before they will be willing to make the investment in green construction.

Although all of those involved in new construction are sensitive to cost, developers are especially conscious of what the market will bear in terms of additional fees for energy efficiency and sustainability practices. The adder for a development to become LEED certified is often a disincentive to move beyond the current standards. Typically, to certify a home LEED, the cost is approximately $2/square foot more in upfront costs to the developer. To remove this barrier, some local governments have developed mandatory sustainability measures that move beyond T24, but do not require actual LEED certification. One option is to mandate a certain percentage beyond T24 for residential and/or nonresidential new construction. Other options are to adopt broader green building rating systems, such as LEED or Build It Green, but without requiring actual certification. A life cycle cost analysis is further detailed in the Appendix. Some brief examples of recent developments are instructive here.

Shea Homes saw the cost differential to building sustainable communities as both a barrier and a motivator. The company was able to convince home buyers of the value solar provided, despite a higher upfront cost. Life cycle cost assessments played a critical role in convincing the developer, builders, investors and purchasers of the value associated with sustainable development. According to Shea, a mindset shift had to be addressed to make sustainable practices more attractive to the contractors and homebuyers.6 By demonstrating long-term savings, however, buyers of both Shea and Treasure Homes were able to identify and capture the added value of a sustainable home.

**Economic/Personal Convenience**

New construction facilities that meet or exceed Title 24 standards not only provide societal benefits, but save electricity which translates to financial savings as well. For the building purchaser, cost savings are also a critical component of the choices they make. They are apt to choose homes and buildings that will save them money on energy bills, but only if the savings are not overshadowed by a higher upfront cost. Among new home purchasers in California, 96 percent of those surveyed in 20077 stated that they anticipated their energy costs to increase in the coming years and that energy bills were becoming more and more important in their home-buying decisions. However, energy efficiency and costs are not yet at the forefront of their thinking when choosing a new home.

Based on feedback from participants in each market group, we can identify trends in California toward embracing green technology as standard features instead of a luxury or supplemental item. Most interviewees for this marketing assessment and strategy plan said that in their experience, it was preferred to have energy efficiency as a mandate instead of an added amenity in a home to make sustainable practices “business-as usual.” This mindset is in keeping with the recommendations outlined in

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4 Christopherson Homes, Rocklin California Corporate Office  
5 U.S. Congress House Resolution (HR) 6049, 2008  
6 Shea Homes Case Study for New Solar Homes Partnership  
the CPUC Strategic Plan. If all new developments were sustainable as a baseline, those on the demand side would then be forced to adjust to the “new” baseline.

Treasure Homes began in the sustainable home business upon learning that homes could be built to produce as much energy as they would consume. The main questions the developer asked prior to the decision to “go green” were related to cost and convenience (or potential lack thereof) to produce a solar-powered home. In the end, when Treasure Homes realized there were no other similar communities in the market at the time, they decided to move forward. Using renewable energy and other conservation/efficiency features in the development also set them apart, appealing to the “image” motivator as well.8

F. Understanding Marketing Approaches

Push/Pull Marketing: In a “push” system, the product or service, in this case, sustainability is “pushed” out to the end-user through methods like advertising on relevant websites, e-mail marketing refined by search engine optimization and outreach programs. Since energy efficiency and other sustainability opportunities are not well known or understood by all audiences, a municipality or other marketer should develop “push” tactics that will familiarize the target audiences and public with the advantages and benefits of sustainable new construction.

In a “pull” marketing strategy, the customer requests a product to be “pulled” through the delivery channel to them with an easily-managed process. ”Pull” marketing lets a municipality or other marketer focus on development of a brand. While “push” marketing is more concerned with short-term results, “pull” marketing wants to create loyal supporters by setting a certain standard for their brand.9 In this report, the parties who will typically “push” a product like sustainable new construction are supply side parties and the “pull” parties, like buyers and lessee, are those who receive the sustainable product.

1. Cooperative Marketing

Working with selected vendors and influencers develops relationships and marketing approaches to reach potential customers. For example, this could include direct financial assistance to incentivize advertising by the vendor (co-op dollars), sponsored events and “opportunistic” activities that will inevitably arise.

2. Recruiting Program Evangelists/Influencers

Educating key program evangelists and influencers like environmental organizations, business and philanthropic organizations and city council and supervisory aides to promote program benefits within their respective circles of influence on an ongoing basis.

3. Customer Focus Groups and Surveys

Holding public meetings at appropriate times, marketed to relevant audiences, enable the marketer to remain abreast of trends in customer tastes, technology development and the like. This information can be disseminated to the supply-side participants to keep them abreast of these issues. More generalized print or online surveys among affiliate organizations can help identify targets and sectors that are predisposed to purchasing or leasing sustainable properties and what messaging would most help with persuasion.

4. Branding

Local Governments can develop brands for sustainable development in their respective regions. Effective branding can take time to develop and establish, but if applied within a consistent strategy and compelling context, can have tremendous influence and staying power. One notable statewide effort, for example, is Flex Your Power. FYP has created a brand which provides Californians a known product name associated with their product: energy efficiency. FYP is an established energy efficiency brand for the state.

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8 Interviews with Jim Bayless, owner, Treasure Homes
that could potentially be leveraged to create a whole-building focus on sustainability. In addition to FYP, programs like the Green Builder Program, LEED certification and other brands identify minimum requirements for builders to market themselves as “green” builders. These and other statewide branding programs will serve the state as educational marketing tools.

The CEC has created the “California Sun Certified” label for buildings that are both energy efficient and have a solar generation system. Originally created with the New Solar Homes Partnership in mind, the “Sun Certified” label could have broader applicability for efficient existing solar homes, and could be adopted or adapted for use within a local or regional sustainable building initiative.

III. Recommended Marketing Groups and Audiences

For a marketing strategy to be effective, all parties should be engaged in the process from the outset. The municipality should work to achieve buy-in from all parties by introducing and promoting the following marketing goals:

- Make efficient practices and technologies the “default” or “business-as-usual”
- Create and brand so that the definition of sustainable new construction is clear
- Address “first-cost” barrier to renewable/efficient technologies; emphasize life-cycle costs v. first costs
- Address market motivators that outweigh barriers
- Keep consumers, both supply and demand, updated on sustainability issues and their benefits
- Develop Integrated Marketing: Development of marketing messages that offer bundles of demand side management (DSM) programs targeted to specific customer groups and delivery of effective messages using partnerships with a range of energy efficiency participants, including local governments, retailers and manufacturers.
- Use social marketing techniques to create emotional and intellectual drivers for consumers to make a commitment to change and participate in energy efficiency.
- Dedicate Marketing Labor: To facilitate an effective marketing effort, each partner should contribute staff hours, with municipal staff as the lead in the endeavor.

A. Public Outreach

The following includes possible strategies that can first, utilize and enhance existing energy activities and second, get local commercial drivers and community organizations more active in promoting the principles of sustainability. While many of the initiatives are focused on energy conservation and efficiency measures, they can inform residents about the sources of electricity, embodied energy in water and materials, greenhouse gas emissions, and the importance of their consumer choices. These Public Outreach initiatives are designed with the following objectives in mind:

- To increase businesses’ motivation to adopt sustainable operations
- To motivate residents to make sustainable consumer choices, and
- To foster an appreciation and understanding of the link between energy consumption and the protection of the natural environment.

1. Outreach to Community

Local governments can reach out to their constituents through use of community meetings. SANDAG holds monthly working group meetings on relevant topics too. The scope and impacts of the AB32 and a future Climate Action Plan warrants the establishment of a “working group” in which all involved stakeholders are represented and have the ability to voice ideas and concerns. The main purposes of the working group would be to:

- Ensure the active participation of the community in decision-making
• Advocate and advance the measures in the community
• Assist in the dissemination of knowledge about the implemented measures
• Respond to questions of interested parties during regularly-held public forums

Another outreach avenue can be through the Parks and Recreational Department. Partnering with the Parks Department to promote environmental education and ecotourism is essential to connect consumption and environmental challenges. By disseminating information to residents and visitors on the relationship of energy and the environment at parks, different audiences will be reached. By seeking educational opportunities in non-commercial areas, sustainability is likely to be valued and taken to their homes, schools, and work.

2. Outreach to Commercial Sector
San Diego Area Green Business Program
Established in 2002, the goal of the SDAGBP is to promote “green” practices among businesses in the region by assisting businesses to operate in an environmentally efficient manner, and to recognize businesses that meet environmental compliance and conservation criteria.

• The Program has established checklists for Food Facilities, Automotive Repair Facilities, and Commercial Offices.
• After completing the audit and recognition process, businesses receive a sticker and certificate for display, good for three years, after which the businesses must update their application for another audit. [http://www.co.san-diego.ca.us/deh/doing_business/chd_greenbus.html](http://www.co.san-diego.ca.us/deh/doing_business/chd_greenbus.html)
• Local Chambers of Commerce can partner with the Green Port Program to complement City goals and to promote the commercial redevelopment.
• Renovated Building Energy Information and Branding: Create a series of educational materials that Businesses’ “Firm Sustainability Officers” can offer to employees and customers to understand the building-energy system. Participants will learn what it means to build green and its aesthetic, health, and environmental benefits.

B. Local Government Education

The enforcement of AB32 and future Climate Action Plans at the local level will require those implementing the measures to possess a technical knowledge of energy efficiency, mechanical systems, practical skills in the installation of new technologies, as well as advocates for peer- behavioral change. Government employees and commercial business responsible for building maintenance and operations will need to understand the new codes and adapt to emerging techniques and more sustainable practices. The following is a partial list of available training for local government staff.

Certified Building Operator educational opportunities for city and commercial building engineers, building services managers, maintenance supervisors, O&M technicians, electricians, include:

• Building Operator Certification: Energy Efficiency through Operator Training: Building Operator Certification is a nationally recognized training and certification program for building operators offering improved job skills and more comfortable, efficient facilities. Two Levels of certification are offered in an 8-session, 7-month-long program, [www.theboc.info/ca](http://www.theboc.info/ca)
• San Diego Gas and Electric’s Energy Education & Training: SDGE offers free workshops and seminars to improve energy usage at facilities including topics on HVAC from The Institute of Heating and Air Conditioning Industries, Title 24 Standards, Energy modeling, operations, and efficiency.[www.sdge.com/training](http://www.sdge.com/training)
• San Diego Gas and Electric’s Inspector Training: Still in development, SDGE’s curriculum will include equipment identification and compliance, residential and commercial California Energy Code documentation and compliance, building plan verification for energy efficiency standards, and the 2010 California Green Building Code.
California Center for Sustainable Energy Events & Workshops: CCSE offers free public programs, services, information, and forums that facilitate the adoption of renewable and efficient technologies and practices. Their Energy Resource Center offers a library of media and tools that assist making facilities more efficient. Workshops have included trainings in permitting, installation, and inspection of alternative generation technologies. http://www.energycenter.org/index.asp

C. Greenest Employee Competitions “The Biggest Loser”

• Single-firm energy and water saving competitions can facilitate widespread employee participation and cultivate competition between co-workers, reinforce commitments to the environment, and help extend sustainable behaviors at home.
• Administer Pre- (and Post-) Competition Surveys to gauge the prior knowledge of energy in the workplace, the effectiveness of the employee training campaign, and incentive for behavior change from conservation and efficiency themes promoted in the workplace
• Employees could voluntarily compete to be “The Biggest Loser” in carbon emissions at their business or department by reducing at-home consumption of electricity, natural gas, and water
• Bring in monthly residential SDG&E and SD Water Department bills to work to verify reduction for awards including:
  o Highest total reduction
  o Highest percentage reduction
  o Innovative Individual- recognition of exemplary inexpensive energy (or non-energy) practices including: bike or transit to work, created compost, participation in Flex Your Power, cultivated a xeriscape garden, incorporation of recycled materials at home etc.
• Awards to incentivize participation will be designed to educate residents about the connection between energy and environment including public recognition, energy efficient technology, a family trip to local ecotourism destination or sustainable restaurant

D. Developer, Builder, Financer Education

To increase local energy product and resource availability, a local agency can enable behind-the-sales-floor marketing techniques that educate developers, builders, investors and other supply-side parties about the benefits of sustainable development. These groups must be supported through collaboration, outreach materials and targeted training opportunities. Placing these activities in the context of a local policy or branded initiative can help the message carry more sway in the marketplace by clarifying and contextualizing it to members of the target audience. To begin, each municipality should consider conducting additional market research to confirm or adjust proposed tactics. This information can be used to educate the other involved parties, such as developers, builders and investors about the interests of their client base.

E. Forming Partnerships

1. Sustainable Region Program (SRP)

Since 2005, SANDAG has worked in partnership with San Diego Gas and Electric (SDG&E) and the California Center for Sustainable Energy to provide technical assistance and education to our member jurisdictions on energy-saving measures for buildings, land use planning and policy. We call this the Sustainable Region Program (SRP). The SRP has been in pilot phases from 2005-2008. Its expansion will serve as a needed marketing avenue to aid local governments in identifying energy usage, tracking change and realizing savings. Under the SRP, we are preparing energy management plans or “energy roadmaps” for cities in the San Diego region.

This joint effort among SANDAG, SDG&E and CCSE, provides technical assistance and staff support to local governments that either have not participated or have participated minimally in regional energy
efficiency, renewable and green building programs available. The SRP should serve as an avenue to increasing the availability and use of energy products locally.

2. Public and Private Partnerships
Partnerships among supply-side actors are especially important in expanding local energy product use and availability, in particular in marketing sustainable new construction programs. Partnerships lighten the load of each participant and leverage the expertise of each to produce a superior product and consistent messaging. Partners spanning multiple areas of the sustainable energy spectrum can achieve seamless, comprehensive and well-targeted marketing coverage.

Examples of successful collaborations exist between builders and developers (if they are not the same entity), local governments and developers, technology vendors and developers and others. Each partnership produces multiple benefits, including the following:

- Program offerings are vetted by all parties for accuracy
- More partners equates to higher visibility
- Duplication of work can be reduced through better communication between partners

One successful partnership example in California is the New Solar Homes Partnership (NSHP). It combines the strengths of the utility (offering incentive programs), building developers (owning the homes until they are sold to the buyer) and the municipality (creating and upholding sustainable energy policy). Each of these players can market the process to their constituents through co-promotion of the municipality, developer and utility.

Partnerships between developers and their vendors are also critical. Under the NSHP, developer Shea Homes and their solar supplier SunPower formed an alliance through the Madeira development in Del Mar, California. This partnership facilitates a smooth application and installation process sharing the paperwork burden. SunPower handled the rebate paperwork for the Shea project and helped educate home buyers about the benefits of solar. They also trained new homeowners on how to use the solar PV systems and track their daily energy consumption and production online.

A third example of a successful partnership that markets a sustainability platform is that of interested stakeholders at an ongoing regional forum. In San Diego, SANDAG has developed a partnership among multiple parties working toward similar goals in its Regional Energy Working Group (EWG). Each of the parties possess unique strengths that when combined have a great influence and impact in the region and throughout California. SANDAG, along with business, ratepayer, environmental, utility, nonprofit energy advocates and other energy stakeholders have developed an interactive dialogue at the EWG. This body both vets ideas and builds consensus on topics related to energy planning and implementation in the greater San Diego region. Through plans like the Regional Energy Strategy 2030, these partners have collaborated to create recommendations for promoting energy efficiency as the top priority for energy procurement strategies.

IV. Recommended Marketing Tactics

A. Industry Focus Meetings/Presentations

Another marketing strategy is to conduct periodic focus meetings/research or presentations to both educate the supply-side partners (building industry) on the benefits of green approaches to new construction. The concept of a “pod” approach is to introduce a wide range of supply-side parties to stimulate sustainability topic discussions, each consisting of a concise, personal presentation. Pod presentations are repeated in approximately 20-minute intervals so that participants are able to receive.

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succinct information, appropriate for them. These pod meetings will also assist the municipality in
developing appropriate tactics to support their efforts in “selling” sustainability to not only developers
and the building industry, but also the permitting and planning departments within their city. Using
meetings like these to allow for networking through roundtable discussions allows parties to share
successes and failures in a non-competitive environment.

B. **Collateral Materials**

Collateral materials are an effective marketing tool to combine with other strategies. Some examples
include:

- FAQ on the benefits of sustainable buildings, e.g., expedited permitting processes, case studies\(^{11}\),
e.g., CEC’s LEED Certified New Construction Case Studies in the San Diego Region
- Pamphlets to distribute to potential buyers and lessees
- Contact information to promote collaboration between supply-side parties, e.g. developers,
municipal staff, technology vendors

C. **Technology Education**

Local governments and developers should continue to educate end users about sustainable practices at
the most basic levels, e.g., energy efficiency measures, solar water heating, conservation. This is a
significant barrier to program acceptance cities must overcome.

Building a ready-to-use model for implementation of sustainability at every step assists in achieving
widespread buy-in from the public. This makes the product, sustainability, easier to understand from the
motivational standpoint and empowers the audience to take the steps needed to ensure sustainability is
“business as usual.” The following tactics provide not only education but also reminders of why
sustainable building should be the default.

D. **The Internet**

Internet marketing ideas include:

- Internet Mailing Lists & Newsletters
- Web pages which make clear energy programs and products available, planning efforts,
  information on incentives and rebates, all tailored to appropriate audiences.
- Online brochures and fact sheets
- Webinars and related training videos and how-to tutorials produced to reach mass audiences
  within target segments.
- Links to partner websites, including sustainable developers, case studies, regulatory agencies and
  others
- Q&A and online queries to address prospects’ reticence to purchase or lease efficient properties.

E. **Workshops, Special Events & Conferences**

Attending, participating in and hosting conferences and seminars is an important tool for reaching
potential customers and maintaining relationships with regional and national associations that can assist
localized efforts like the American Council for an Energy Efficient Society, Flex Your Power, League of
California Cities and others. Attending conferences, seminars or trade shows relevant to sustainability
practices help to elicit ideas and techniques for localized programs and products.

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\(^{11}\) Case studies should be plotted on a matrix according to benefits of each new construction attribute cross referenced with builder contact information
F. Speakers Bureau

The municipality can maintain the “sustainability as business-as-usual” brand through a Speakers’ Bureau that identifies the following:

- Primary influencers and evangelists on the business, consumer and public agency sectors
- Larger venues where direct decision-makers within those targets can be reached en masse

G. Case Studies

Case studies on energy efficiency, climate change mitigation measures and sustainability practices can be used to support and promote this movement. Case study information can be presented in flyers, posted on the city’s website, distributed at key Speaker’s Bureau venues and merchandized with media throughout the service area.

H. Public Relations

Public relations activities can exploit the positive experience that residential buyers and nonresidential lessees have. Again, the aim is to build awareness and acceptance for green new construction. Public relations can include the following pieces:

- News Releases that reference a partnership between municipality, supply side and demand side participants
- News Conferences
- Check Presentations for energy efficiency improvements at the building site
- Editorial about the positive experience of a green home purchase or green building environment
- Proactive Story Pitches on the benefits of sustainable new construction
- Public Service Announcements

I. Direct Mail

Direct mail can be used to target businesses in regions where new green development is happening. Keeping green vendors abreast of upcoming opportunities with new structures will encourage partnering as well. Similar to the Internet marketing options, developers and builders can collect physical mailing addresses while conducting market research. Those addresses can then be used to mail information about new developments, residential and nonresidential.

J. Videos and Multimedia

Video productions that focus on the benefits of sustainable new construction, replete with testimonials, technology displays, sustainable building samples and other positive marketing pieces can assist the potential buyer or renter in visualizing the product.

V. Next Steps for the San Diego Region

Marketing is an integral component in bringing increased energy efficiency understanding, practices and products to the region. To guarantee that the region stays abreast of efficiency innovations and opportunities, SANDAG will continue its relationships with the local utility and local energy nonprofits,  

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12 The California Energy Commission has developed a list of case studies with their New Solar Homes Partnership partners to demonstrate results of the programs. These case studies are available at [http://www.gosolarcalifornia.ca.gov/](http://www.gosolarcalifornia.ca.gov/)
CCSE and EPIC. These relationships will help the regional government and its member agencies expand our knowledge and actions in promoting energy efficiency in the region.

Through this assessment of existing market conditions including the identification of both barriers and motivators, this Plan outlines methods to expand the use of local energy products and resources. SANDAG and other parties will continue to build on the existing resources and products in the region as part of the Regional Energy Strategy Update and the Sustainable Region Program for local governments.

Regional stakeholders have taken bold steps to market energy efficiency and sustainable new construction. SANDAG, through the Energy Working Group and its participants, will ensure that the approaches identified in this Plan can bring sustainable energy practices and products to the region.
Appendix: Sustainable Building Life Cycle Cost Analysis

The following represents estimated market cost premiums for energy efficiency improvements beyond Title 24 (Part 6) energy code requirements, associated with residential and new nonresidential new construction projects.

Note that Warren Alquist Act, Section 25402 requires these standards to meet cost effectiveness criteria are met before being adopted:

“The Energy Commission is required by law to develop and maintain energy efficiency standards that are “...cost effective, when taken in their entirety, and when amortized over the economic life of the structure when compared with historic practice.”

A. Cost Benefit Analysis of Title 24 Energy Efficiency Standards

1. 2005 vs. 2001 Energy Efficiency Standards

<table>
<thead>
<tr>
<th></th>
<th>Residential</th>
<th>NonResidential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Building Size</td>
<td>1,761 sf</td>
<td>15,000 sf</td>
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<tr>
<td>Total 2005 Building Starts</td>
<td>6048</td>
<td>41</td>
</tr>
<tr>
<td>Total Building Area</td>
<td>10.6 million sf</td>
<td>615 thousand sf</td>
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<td>Incremental Cost - Total</td>
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<td>Incremental Savings - Total</td>
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<td>Incremental Cost - Per sf</td>
<td>$0.26/sf</td>
<td>$0.67/sf</td>
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<tr>
<td>Incremental Savings - Per sf</td>
<td>$1.07/sf</td>
<td>$1.50/sf</td>
</tr>
<tr>
<td>Incremental Cost - %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incremental Savings - %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. 2008 vs. 2005 Energy Efficiency Standards

<table>
<thead>
<tr>
<th></th>
<th>Residential</th>
<th>NonResidential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Building Size</td>
<td>1,761 sf</td>
<td>15,000 sf</td>
</tr>
<tr>
<td>Total 2008 Building Starts</td>
<td>108,021</td>
<td>898</td>
</tr>
<tr>
<td>Total Building Area</td>
<td>4.9 million sf</td>
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<td>Incremental Cost - Total</td>
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<td>Incremental Savings - Total</td>
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<td></td>
</tr>
<tr>
<td>Incremental Savings - %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14 Based on average cost of $500/SFR home for incremental measures of higher performance windows, AC unit refrigerant management, new ventilation requirement for IAQ, and improved lighting controls.
15 Using a 30 year lifecycle period and $690/home average savings.
16 15 year lifecycle savings comprised of $4 million for therm and $153 million for kWh savings.
REGIONAL CLIMATE ACTION PLAN DEVELOPMENT

Introduction

Staff will present an update and seek input on two tasks related to the development of the Regional Climate Action Plan (RCAP).

A. Staff has conducted a literature review of measures with the potential to achieve greenhouse gas (GHG) emissions reductions from the on-road transportation sector, primarily by reducing vehicle miles traveled (VMT) in the San Diego region. The results of the literature review are summarized in the attached list of measures (Attachment 1). EWG members and attendees are asked to discuss and comment on these measures and any potential measures not included in the attached list.

B. Similar to the detailed Regional Energy Strategy outline distributed and discussed at the October Energy Working Group (EWG) meeting, staff has developed an annotated draft outline of the RCAP (Attachment 2). The EWG is asked to discuss and comment on this outline.

Background

SANDAG is preparing the RCAP under a planning contract with the California Energy Commission (CEC). A partial draft of the RCAP presented at the June EWG meeting will be updated in light of the GHG emissions reductions from the on-road transportation sector called for in the approved Assembly Bill 32 Scoping Plan and requirements called for in the recently enacted Senate Bill 375. A draft RCAP is scheduled for submittal to the CEC in May 2009.

Key Staff Contact: Andrew Martin, (619) 699-7319, ama@sandag.org

An Overview of Transportation-Related Greenhouse Gas Reduction Measures

*Previously modeled by SANDAG for the preliminary RCAP findings and presented to the EWG

<table>
<thead>
<tr>
<th>Measure</th>
<th>Brief Description</th>
<th>Level of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land Use and Urban Design Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smart Growth Land Use Scenario* (previously referred to as the Low Carbon Land Use Scenario)</td>
<td>The Smart Growth Land Use Scenario is based on build-out of the SANDAG Smart Growth Concept Map. The Concept Map illustrates the location of existing, planned, and potential smart growth “opportunity areas” in the region. Seven types of smart growth areas (called place types) are depicted on the Concept Map including the Metropolitan Center, Urban Centers, Town Centers, Community Centers, Rural Villages, Mixed Use Transit Corridors, and Special Use Centers. To date, almost 200 smart growth opportunity areas are identified on the Concept Map.</td>
<td>Regional, Local</td>
</tr>
<tr>
<td>Focused Intensity Smart Growth Land Use Scenario</td>
<td>Based on the Smart Growth Concept Map but with future growth further directed within the higher density/intensity smart growth designations.</td>
<td>Regional, Local</td>
</tr>
<tr>
<td>Bicycle Support Facilities</td>
<td>Measures that enhance the built environment for bicycling as an alternative to driving alone.</td>
<td>Regional, Local</td>
</tr>
<tr>
<td>Pedestrian Enhancements</td>
<td>Measures that enhance the safety and pleasantness of walking as an alternative mode of travel.</td>
<td>Regional, Local</td>
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<tr>
<td>Park-and-Ride Facilities</td>
<td>Collection points for individuals in carpools, vanpools, shuttle services or using public transit intended to encourage use of these modes as alternatives to driving alone.</td>
<td>Regional, Local</td>
</tr>
<tr>
<td><strong>Transit Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhanced Transit Scenario*</td>
<td>The scenario includes the roadway network from the adopted 2030 <em>Regional Transportation Plan: Pathways for the Future</em> (2030 RTP), and a transit network that would provide more extensive coverage and frequent service than the 2030 RTP.1</td>
<td>Regional</td>
</tr>
</tbody>
</table>

1 The Enhanced Transit Scenario is based on the 2030 RTP Reasonably Expected Roadway network and the Unconstrained Revenue transit network, with additional transit enhancements.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Brief Description</th>
<th>Level of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pricing Measures</strong></td>
<td></td>
<td></td>
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<tr>
<td>Congestion Pricing</td>
<td>A specific type of roadway pricing in which the charge per trip varies by the time of day, based on changes in the demand for travel and resulting congestion. Usually assessed at one or more points along a road.</td>
<td>Regional, State</td>
</tr>
<tr>
<td>Cordon Pricing (or Area Pricing)</td>
<td>Similar to congestion pricing, cordon pricing is applied to a large area or region (such as a central business district) in which congestion is a problem. Typically, a series of pricing points are established in a ring around the congested area. Motorists are charged as they enter the cordoned area.</td>
<td>Regional, State</td>
</tr>
<tr>
<td>Vehicle Miles Traveled (VMT) Fees</td>
<td>A charge levied on an annual or semi-annual basis based on the number of vehicle miles traveled per year.</td>
<td>Regional or State</td>
</tr>
<tr>
<td>Retail Fuel Tax* (previously described as a Regional Carbon Fee)</td>
<td>An additional 20 cent tax on retail fuel.</td>
<td>Regional, State</td>
</tr>
<tr>
<td><strong>Auto Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pay-as-you-drive (PAYD) Insurance*</td>
<td>Pay-as-you-drive-insurance (PAYD) charges drivers for insurance based on the number of miles they drive, rather than based on an annual, flat-rate premium. SANDAG’s analysis assumes that PAYD insurance would reach 100 percent market saturation. A rate of six cents per mile was developed for preliminary modeling by dividing the 2005 average annual insurance cost in California of $845 by the average annual regional VMT.</td>
<td>State</td>
</tr>
<tr>
<td>Pay-at-the-pump insurance</td>
<td>A type of auto insurance in which costs would be collected through a per gallon premium on gasoline.</td>
<td>State</td>
</tr>
<tr>
<td>Measure</td>
<td>Brief Description</td>
<td>Level of Implementation</td>
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<tr>
<td>----------------------------------------</td>
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<tr>
<td><strong>Parking Measures</strong></td>
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</tr>
<tr>
<td>Smart Growth Parking Fees*</td>
<td>Under this measure, parking zones are established in the smart growth opportunity areas. Parking fees are assessed according to level of density and land use mixture, with prices ranging from $3/hour in the Metropolitan Center to $1/hour in Community Centers and Transit Corridors. Parking is not charged at residential uses.</td>
<td>Local</td>
</tr>
<tr>
<td>Mandatory Parking Cash-Out</td>
<td>Federal tax law currently allows employers the option to offer cash salary in lieu of specified free employer-provided parking benefits. This measure would make this option mandatory.</td>
<td>Tbd.</td>
</tr>
<tr>
<td>Parking Supply Limits</td>
<td>Policies that limit the supply of parking for single occupancy vehicles, such as maximum parking-supply ratios, parking caps, or certain parking restrictions</td>
<td>Local</td>
</tr>
<tr>
<td><strong>Other Measures that Reduce Vehicle Miles Traveled</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Vanpool Program</td>
<td>An ongoing SANDAG program providing long-distance commuters with an alternative to driving alone. This program reduced nearly 114 million vehicle miles traveled in fiscal year 2007.</td>
<td>Regional</td>
</tr>
<tr>
<td>Alternative Work Schedules</td>
<td>Under this scenario, workers would participate in a flexible work schedule or compressed work hours program to limit commuting during peak periods and/or limit the number of home-to-work commuting trips. Typical programs involve employees working 10 hours per day, four days per week, or nine hours per day with one day off every two weeks.</td>
<td>Regional</td>
</tr>
<tr>
<td>Telecommuting*</td>
<td>A substitution of telecommunications for transportation to a conventional workplace. It is assumed that approximately one-third of the region’s jobs will be suitable for telecommuting in 2030. SANDAG’s adopted 2030 RTP assumes a five percent telecommute share for all office work trips in 2030. For the scenario, this figure was increased to 40 percent of all work trips suitable for telecommuting, or two days offsite per work week.</td>
<td>Regional</td>
</tr>
<tr>
<td>Restrictions on Vehicle Use</td>
<td>This strategy refers to programs that restrict use of vehicles on certain days or during specific time periods, on either a voluntary or mandatory basis.</td>
<td>Local, Regional, State</td>
</tr>
<tr>
<td>Measure</td>
<td>Brief Description</td>
<td>Level of Implementation</td>
</tr>
<tr>
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<tr>
<td><strong>Improved Traffic Operations</strong></td>
<td></td>
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<tr>
<td>Lower Speed Limits</td>
<td>This measure would avoid the fuel economy reductions associated with high vehicle speeds (i.e., fuel economy generally decreases at speeds above 55 miles per hour) by lowering speed limits for certain areas or facilities, such as highways.</td>
<td>State, Federal</td>
</tr>
<tr>
<td>Driver Education</td>
<td>This strategy would promote fuel-efficient driving practices, such as reduced idling, gentle accelerations, and the like. This strategy could be implemented as a new driver education program or added to existing ones.</td>
<td>Regional, State</td>
</tr>
<tr>
<td><strong>Measures that Change Vehicle Ownership Decisions</strong></td>
<td></td>
<td></td>
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<tr>
<td>Vehicle Efficiency Tax or Feebates</td>
<td>This measure would involve a tax on the purchase of fuel-inefficient vehicles and a rebate for the purchase of fuel-efficient vehicles. As described in the Proposed AB32 Scoping Plan, ARB is currently evaluating the use of a feebate program as complement to, or substitute for, the Pavley regulations.</td>
<td>State</td>
</tr>
<tr>
<td>Emissions-based Vehicle Registration Fees</td>
<td>Under this measure, a surcharge would be added to vehicle registration of license fees based on vehicle fuel economy</td>
<td>State</td>
</tr>
<tr>
<td>Vehicle Retirement Buyback Programs</td>
<td>This strategy would offer financial incentives to voluntarily remove a vehicle from use.</td>
<td>State, Regional, Local</td>
</tr>
</tbody>
</table>

Sources: SANDAG; Online TDM Encyclopedia; FHWA.
DRAFT REGIONAL CLIMATE ACTION PLAN OUTLINE

i. Executive Summary

I. Introduction
   a. Purpose – Outline a plan of action for the region to achieve a low-carbon future and adapt to a warming world. Describe a vision of this future below.
   b. Vision Statement – Describe the future regional vision that implementation of the RCAP will achieve.
   c. Guiding Principles – Outline the principles that will guide regional climate policy-making (examples might include economic prosperity, social equity, public health, environmental co-benefits, etc.)
   d. Relationship with Existing and Future Planning Efforts – Describe connection to the Regional Comprehensive Plan, Regional Energy Strategy Update, and other relevant planning efforts. Describe efforts related to the passage of SB 375 and the 2011 RTP Update and their relationship with this RCAP.

II. Projected Impacts to the San Diego Region and California
   a. The San Diego Region
      *Summarize/refer to the Focus 2050 climate adaptation report prepared by the San Diego Foundation.*
   b. California
      *Briefly refer to the Our Changing Climate report prepared by CalEPA and the CEC.*
   c. Key Limitations and Uncertainties

III. Baseline Greenhouse Gas Emissions Inventory and Projections, 1990-2030
     *Summarize/refer to the San Diego County Greenhouse Gas Inventory prepared by EPIC*
     a. Regional GHG Emissions: Sources and Trends
     b. Regional GHG Emissions Projections
     c. A Closer Look at the Major Sources: Transportation, Electricity, and Natural Gas
     d. Key Limitations and Uncertainties

IV. Recommendations: Reduction Targets and Measures for the On-Road Transportation Sector, 2020 and 2030
    a. Development of the Reduction Targets for 2020 and 2030
    b. Recommended Measures to Reduce Transportation-Related GHG Emissions
    c. Key Limitations and Uncertainties

V. Recommendations: Reduction Targets and Measures for the Electricity and Natural Gas Sectors, (year(s) to be determined)
   a. Development of the Reduction Targets
   b. Recommended Measures to Reduce GHG Emissions from the Electricity and Natural Gas Sectors
   c. Key Limitations and Uncertainties
VI. **Recommendations: Adaptation Measures** – *Based on Focus 2050 report by the San Diego Foundation*

a. Sea Level Rise  
b. Water Supply  
c. Warmer Temperatures  
d. Wildfires  
e. Public Health  
f. Plants, Animals, and Habitat  
g. Increased Electricity Demand

VII. **The Role of Offsets and Sequestration**

*Refer to Scoping Plan discussion of the proposed role for offsets within the proposed cap-and-trade program. The role of sequestration will also be described.*

VIII. **Performance Monitoring**

*Track key indicators such as VMT, GHG emissions, electricity and natural gas consumption; monitor science on reduction targets and regional impacts; follow federal and state energy and climate policy; stay current on latest emissions reduction policies and measures.*

**Appendices** – *Staff anticipates that this list will be expanded and modified as the RCAP is developed*

A. On-Road Transportation – detailed description and analysis of targets and reduction measures  
B. Electricity and Natural Gas – detailed description and analysis of targets and reduction measures  
C. San Diego Greenhouse Gas Inventory (University of San Diego Energy Policy Initiatives Center)  
D. Focus 2050: A Regional Wake-Up Call (San Diego Foundation)
REGional DISTRibuted GENERATION (DG) UPDATE

Introduction

The California Center for Sustainable Energy (CCSE) is the administrator of the Self-Generation Incentive Program (SGIP) and the California Solar Initiative for the San Diego Gas and Electric territory. Jon Fortune, CCSE, will discuss the state of the industry as it relates to distributed generation (DG) resources, policy, and plans. Staff will provide an overview of how DG currently fits within the Regional Energy Strategy 2030 and SDG&E’s long-term procurement plan. The EWG will be asked to discuss DG issues for consideration in the Regional Energy Strategy (RES) Update.

Background

The RES 2030 includes specific recommendations for increased DG resource penetration in the region. Goal #3 states “Increase the total electricity supply from renewable resources to 15 percent by 2010, 25 percent by 2020, and 40 percent by 2030.” Goal #4 states “Increase the total contribution of clean DG resources (non-renewable) to 12 percent of peak demand by 2010, 18 percent by 2020, and 30 percent by 2030.”

As part of the RES Update, the Energy Working Group (EWG) will assess the progress toward this goal to date, the impact of the EWG’s letter to San Diego Gas and Electric about its Long-Term Procurement Proceeding related to DG, and potential plans for additional penetration. This update will ultimately encompass changes to California’s SGIP, the adoption of Senate Bill 1, and the Renewable Portfolio Standard.

Key Staff Contact: Susan Freedman, (619) 699-7387, sfr@sandag.org

Attachment: 1. SANDAG letter to Bill Reed on SDG&E’s 2006 Long-Term Procurement Plan, September 8, 2006
September 8, 2006

Mr. William Reed
Senior Vice President, Regulatory and Strategic Planning
San Diego Gas and Electric Company
8306 Century Park Court, Suite 41D
San Diego, CA 92123-1530

Dear Mr. Reed:

SUBJECT: SANDAG Recommendations on SDG&E’s Long-Term Procurement Plan

The San Diego Association of Governments Energy Working Group (SANDAG EWG), in cooperation with SDG&E, has had the opportunity to raise questions about and collaborate on future SDG&E energy resource planning and procurement policies. Following an extensive fact-finding project with stakeholders from businesses, environmental groups, and local governments, SANDAG has developed policy guidelines and recommendations for SDG&E to use in moving toward the goals of the San Diego Regional Energy Strategy 2030 (RES), which favors a balanced approach to energy policy issues. These recommendations are to offer guidance to SDG&E in its mandated Long-Term Procurement Plan (LTPP) submittal to the state.

The RES was written by a regional stakeholder group formed as a product of the Regional Energy Infrastructure Study (REIS), prepared in 2002. For over a year, these stakeholders held meetings and reached consensus on the goals for the San Diego region’s energy policy. The RES’s short-term quantitative assumptions were ultimately voted on and adopted by the SANDAG Board of Directors in 2003 as an energy planning tool for the region. The SANDAG Board also voiced its commitment to revisit the longer-term goals of the RES as needed.

The SDG&E LTPP serves as a roadmap for how the utility plans to address San Diego’s resource needs for the next 10 years. In SDG&E’s LTPP filing, SANDAG looks for carefully thought out, long-term goals that satisfy a number of concerns, rather than offering quick fixes for the region’s energy shortfalls. With respect to renewables and distributed generation procurement goals, SDG&E’s goals should be aggressive in the short-term, building up to more aggressive goals in subsequent years.

The following are SANDAG’s policy recommendations for SDG&E to consider and implement in its long-term planning, including its upcoming LTPP filing to the California Public Utilities Commission (CPUC).
• Focus on California’s preferred loading order
• Evaluate technologies’ costs and benefits
• Support renewable energy technologies
• Support distributed generation technologies
• Support in-region generation

Focus on California’s Preferred Loading Order

One of the RES Guiding Principles states that, “Energy efficiency and demand management programs will be preferred over the development of new fossil fuel generation resources.” In its procurement activities, SDG&E must follow the state-approved loading order, which gives highest priority to energy efficiency and demand response when planning for the state's energy future. These energy-saving measures are followed in priority order by renewable energy and distributed generation, conventional large-scale generation and transmission respectively.

The state’s top priorities must also be SDG&E’s. The LTPP submittal should clearly demonstrate how the utility is meeting or exceeding the state-mandated energy-saving targets for energy efficiency and demand response followed by renewables and distributed generation. Information imparted to the public should be as accurate, complete, and understandable as possible.

Evaluation of Technologies’ Costs and Benefits

Other RES Guiding Principles emphasize an energy supply portfolio that is diversified, cost efficient, environmentally sound, self sustaining, secure, and reliable. A planned approach for procurement should involve developing metrics for evaluation of prospective conventional and renewable technologies. Scoring criteria for each technology should include, but not be confined to, the following:

• Cost-effectiveness to ratepayers-All technologies that are selected by SDG&E for their long-term plans need to ensure the costs incurred by ratepayers on a project do not increase their bills unduly or unreasonably, if at all.

• Cost-effectiveness to systems-Projects that are selected by SDG&E should not propose higher than reasonable costs to be expended to develop needed technologies.

• Role in global warming-Projects should advance the state toward baseline GHG emission standards, e.g. the Governor’s Executive Order S-3-05, which states specific reduction goals for California and Assembly Bill 32, which passed the legislature in August 2006.

• Community economic impact-A broader set of guidelines reviewing costs related to pollution mitigation, health risks, aesthetic impacts, jobs, etc.

• Sensitivity to gas supply risk-When determining the cost of a project, SDG&E should take the cost and projected price volatility of natural gas into consideration as a component of the total cost for the project.

In project evaluation, SDG&E has noted that it already favors those projects that have the least environmental impact, that have the ability to meet specific reliability timelines, and that are the most cost-effective. SANDAG’s goal is to recommend enhancements to this procurement procedure to ensure a more open and transparent process. The utility’s request for proposals (RFP) should
provide prospective developers with the information they need to submit relevant projects to meet San Diego’s resource needs. After completion of each bid process, SDG&E could alert all bidders as to why their proposals were accepted or rejected. This could continually improve the solicitation process and quality of bids.

Support for Renewable Energy Technologies

- The RES goal #3 states, “Increase the total electricity supply from renewable resources with an emphasis on in-region installations,” \(^1\) and includes a target of 50 percent of those renewables from in-region. Therefore, it is imperative that SDG&E supports all economically and technically feasible renewable energy technologies. This is especially true for rooftop photovoltaic systems and central plant solar, wind, and geothermal systems as mentioned in the 2005 study: Potential for Renewable Energy in the San Diego Region.

- In order to achieve the state’s Renewable Portfolio Standard (RPS) goals, SANDAG supports the establishment of in-region “renewable energy parks” and the streamlining of the permitting and transmission process for access to these parks. This measure could effectively intensify interest in renewables in the region. In addition to large-scale projects, this could promote research, development and demonstration (RD&D) projects by greatly expanding the amount of renewable technologies available to study within the San Diego region. RD&D could include next generation renewable technologies as well as studies on the maturity of existing technologies, like fuel cells and combined heat and power (CHP) systems utilizing renewable fuel. These measures will produce vital information for SDG&E and other decision-making bodies that shape energy policy, and will reflect an accurate picture of the energy sources available and their associated costs.

- In addition to this goal, locally placed renewables within and outside of renewable energy parks should be incentivized prior to providing incentives for out-of-region renewables. As part of any RFP bid evaluation, SDG&E should include significant weighting for renewable projects.

- Another issue gaining importance for renewable energy development is ownership of credits that contribute to the state’s RPS goals. The CPUC is currently addressing this complex issue for the entire state. Once the CPUC establishes which resources can be counted toward the utilities’ RPS goals with Renewable Energy Credits (RECs) and which cannot, SANDAG can revisit how this may or may not impact our regional renewable goals.

Support for Distributed Generation Technologies

RES goal #4 addresses the desire to increase the amount of distributed generation in the San Diego region. This is an area where there has not been significant progress toward the RES goal. SANDAG supports efforts to more aggressively reach the distributed generation target of 12 percent of peak demand by 2010, and recommends that SDG&E also take additional steps to reach this goal. Measures can include supporting the continuation of the Self Generation Incentive Program (SGIP), which provides incentives for distributed generation (DG) projects. (This program is currently scheduled to sunset December 31, 2007.)

Another measure can be an assessment of any barriers in the utility’s rate and tariff structures available for end-users who are interested in taking advantage of distributed generation. For

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\(^1\) Energy 2030: The San Diego Regional Energy Strategy, May 2003, [www.sdenergy.org](http://www.sdenergy.org)
instance, the noncoincident peak demand tariff may be cost prohibitive for clean onsite DG use. Although these measures may not directly correlate to the long-term procurement plan filing, SANDAG would appreciate added attention to be given to enhancing the role of distributed generation in the San Diego region. SANDAG, through its Energy Planning program and the EWG, is poised to work with SDG&E and regional stakeholders in this area, both on technology development and on regulatory efforts.

**Support In-Region Generation**

With regard to renewable and nonrenewable electric generation in the region, SANDAG requests that all cost-effective and viable large-scale in-region generation projects be considered in SDG&E’s procurement plans. RES goal #2 calls for achieving and maintaining capacity to generate 65 percent of summer peak demand with in-county generation by 2010.

**Sunrise Transmission Project to be Addressed Separate from these Recommendations**

RES goal #5 calls for an increase in the transmission system capacity as necessary to maintain required reliability and to promote better access to renewable resources and competitively priced supply. The transmission grid provides for a number of functions, including providing access to out of region power, improving fuel diversity (in particular, renewables), providing access to broader supplies in the market that can help lower and stabilize electric prices, and improving system stability and reliability. These benefits need to be balanced with the fact that siting issues for new transmission lines are often contentious and difficult to achieve due to the large number of parties that are affected by such projects (e.g. visual impacts, potential impacts on property values, concerns for the impacts of electric and magnetic fields). Subsequent to this letter, SANDAG will review the Sunrise Powerlink as it correlates to all aspects of the RES, including the impact on in-region renewable and nonrenewable generation.

We look forward to reviewing your draft submittal of the LTPP prior to your filing with the Public Utilities Commission. We also would like to thank you for the occasion to participate in the LTPP process as a planning partner, and look forward to an ongoing collaborative relationship in this realm.

Sincerely,

MICKEY CAFAGNA
Chair, SANDAG Board of Directors

MC:RR:dd

cc: Commissioner Michael Peevey, CPUC
    Administrative Law Judge Carol Brown, CPUC
    Senator Christine Kehoe, Chair, Senate Energy, Utilities and Communications Committee