

Monterey Bay Regional Energy Plan

2008 Update



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¹ Rebuild America is a network of community-driven voluntary partnerships that foster energy efficiency and renewable energy in commercial, government and public-housing buildings. The program's goals are to: conserve energy, accelerate use of the best energy technologies, save money, reduce air pollution, lower U.S. reliance on energy imports, help revitalize aging city and town neighborhoods, and create "smart energy" jobs. In addition, Rebuild America works to overcome market barriers that inhibit use of the best technologies. These barriers include the lack of knowledge of building owners and managers in both the public and private sectors of the best technologies, financing mechanisms, savings potential and other benefits of energy efficiency. Rebuild America seeks to spread knowledge, develop projects to stimulate market change, provides analyses and advice in support of the best technologies and create proactive networks between state and local governments and the private sector. See <http://www.rebuild.org/>.

1 Background and Introduction

Since the original AMBAG Regional Energy Plan was developed and adopted in 2006, much change has occurred. Most notably, broad consensus has been reached on the need to address climate change impacts due to greenhouse gas emissions through the enactment of the California Global Warming Solutions Act of 2006, (AB 32; Stats. 2006, chapter 488). Many local jurisdictions are “getting out ahead” of AB 32, anticipating the significant impacts the law will have on the role of local governments. Additionally, the California Public Utilities Commission and the investor-owned utilities have embarked on a long-term strategic planning process that is unprecedented in the history of state energy planning.

Other factors which continue to keep energy at the forefront of leaders’ minds include:

- Continued significant increases in fossil fuel, electricity and natural gas prices;
- Expanded concerns over the future availability of fossil resources from foreign sources;
- Rapid advances in emerging energy efficiency and renewable energy technologies.

In the near term, AB 32 will present local governments with various challenges, such as conducting the development of greenhouse gas emissions inventories and compliance reporting². The California Air Resources Board (CARB) is currently working with stakeholders to develop the protocols that will eventually establish the baseline California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit and the protocols that would be put in place for mandatory reporting and verification of greenhouse gas emissions.

As was the original Plan’s objective in 2006, the current update of AMBAG’s Regional Energy Plan is intended to lay out the Region’s joint approach to establishing an energy vision through objectives, goals and action plans that will mitigate future energy impacts on the region. This cooperative approach can be leveraged to reduce the overall costs and challenges of compliance with AB 32 requirements.

Also, as in 2006, the update of the Energy Plan is being reviewed by AMBAG’s Energy Advisory Committee (EAC). The EAC met on several occasions to discuss the various issues and recommendations in the current Plan and to make recommendations on what should be the priorities for the near future.

² An example of early actions by jurisdictions include the Santa Cruz County Commission for the Environment joining a Bay Area-based Climate Action Compact.

At the suggestion of the EAC, several concepts will be amplified in this update, as follows:

1. Expanding the overall vision of the plan to be further reaching. Several elements of statewide and utility planning incorporate elements of “zero net energy³ design.” The EAC saw a potential value in expressing the region’s long-term vision in these more aggressive terms.
2. Focusing on areas that could enable the region to better position itself for future energy actions, such as requiring new construction to pre-wire and pre-plumb all new homes for the possible future use of solar electricity production and solar hot water heating.
3. Evaluating time-of-sale intervention strategies that encourage energy efficiency improvements at the time of sale (or during remodeling) of existing homes.
4. Consideration of implementation of a “Special Energy Financing District,” which would enable the implementation of many more of the costly energy efficiency and renewable projects, but collect the necessary revenues to pay for these upgrades over the life of the improvements.
5. Expanded implementation of Transportation-Oriented Development
6. Leveraging regional actions to promote and encourage “green collar” jobs that support the burgeoning green economy
7. Working with PG&E to benchmark the region’s present energy use (by jurisdiction) and to assist in developing a baseline of electricity and natural gas use back to 2000 in support of AB 32 baseline development.

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³ “Zero net energy” is a term used for electricity and natural gas use whereby a building is first designed and constructed to be as energy efficient as possible. Once all cost-effective energy use measures are implemented, an element of renewable energy production is added to offset the facility’s remaining energy use over time (e.g. solar, wind, landfill gas, etc.) “Regional zero net energy planning” would encompass the same concept, but for an entire region. A region such as AMBAG with significant wind energy resources may have the technical potential to achieve “zero net energy” in the long term.

2 Regional Energy Plan Objectives, Goals and Action Plan

The 2006 Energy Plan laid out a set of four Plan objectives, goals and action steps for the region. The region has made significant progress toward the original plan's objectives. In each of the following sections, we will present a summary of progress to date, as well as areas that need some additional resources (based on the input received from Energy Advisory Committee members).

2.1 Energy Information, Education and Local Capacity Building

Objective

The objective of this section was to increase the availability of energy education in the region to empower consumers to make more informed decisions regarding conservation, energy efficiency, distributed generation, renewables and other alternatives and build local capacity for energy services professionals to serve consumers' needs.

Original Proposed Action Steps and 2008 Updates

1. Conduct an annual assessment of the local information and training needs of the region, possibly to include regional energy excellence awards, K-12 education, local workshops and training sessions, etc. Based on the identified needs, develop information and training activities to target these needs.

2008 Update: The formation of the AMBAG Energy Watch Program, a regional local government partnership with PG&E, has enabled a significant increase in energy training that is conducted in the region and made available to regional consumers.

2. Conduct an assessment of local availability of energy products. Develop an action plan to expand their availability.

2008 Update: AMBAG is working under its CEC grant with several local constituents to develop a "Green Business Directory" that provides a list of locally available products.

Additional Considerations in the Area

Although more energy training is conducted in-region today than in 2006, the overall availability of the wealth of training funded and conducted by PG&E is limited. PG&E should consider implementing an online "training-on-demand" system that enables the recording and playback of any training conducted by PG&E. Registration and use could require a valid PG&E account number. This would enable training to occur at the time of need, rather than relying on consumers to be available when the training is scheduled.

2.2 Energy Conservation and Efficiency

Objective

The objective of this section was to decrease per capita electricity and natural gas use through increased energy conservation and efficiency measures, to minimize the need for new generation, reduce emissions of toxic and criteria pollutants and greenhouse gases, improve energy reliability and contribute to price stability.

Original Proposed Action Steps and 2008 Updates

1. Conduct an assessment of local capacity and availability for energy products. Develop an action plan to expand their availability.

2008 UPDATE: This action step is being completed by AMBAG under CEC grant funding. Existing Green Business directories also list locally available products.

2. AMBAG agencies should maximize all opportunities to take advantage of existing funding and technical resources to pursue energy efficiency, including participation in programs such as the ABAG/AMBAG Local Government Energy Partnership Program⁴.

2008 UPDATE: AMBAG has partnered with Pacific Gas & Electric (PG&E) to form the AMBAG Energy Watch Program, which helps reduce energy use in the tri-county area by providing free resources to eligible PG&E customers, which include residential and hospitality business customers as well as the city and county governments located within Monterey, San Benito and Santa Cruz counties. These free resources include energy assessments and audits, direct installation of energy efficient equipment, technical assistance and financial incentives for energy efficient retrofits in municipal buildings, energy efficiency seminars and information on other PG&E energy efficiency programs and services. http://ambag.org/programs/EnergyWatch/energy_watch.html

3. Establish a mechanism to accurately account for energy savings that are achieved in the region through accounting for energy efficiency program activity.

2008 UPDATE: Energy Watch Program has been tracking its own program metrics for savings in the municipal, hospitality business and residential sectors in terms of kilowatt hours and therms.

Figures as of March 15, 2008:

Municipal: 5,201,582 kWh; 198,352 therms (includes energy savings completed and committed)

Hospitality: 17,697,292 kWh

Residential: 1,293,653 kWh

4. Work to develop and promote a comprehensive portfolio of energy efficiency, demand reduction, renewable and distributed generation programs targeting all sectors to help realize the region's long-term potential.

⁴ www.abag.ca.gov/lgep

2008 UPDATE: See AMBAG Energy Watch 2009-2011 program proposal.

Also, work under CEC Rebuild America Grant to promote green building and energy efficiency.

5. Evaluate various implementation and financing mechanisms to promote energy efficiency and demand reduction projects in all sectors, including:
 - a. Evaluate implementing a Special Energy Financing District that provides on-tax bill financing (see Part II, Section 5.3);
 - b. Work through AMBAG's existing Joint Powers Authority (JPA) mechanism to pursue joint project development and implementation;

2008 UPDATE: AMBAG Energy Watch Program.

- c. Evaluate the formation of a Community Energy Authority (CEA)⁵ to issue bonds to fund projects;
 - d. Form revolving funds for public projects to reinvest a portion of energy savings into future energy savings project development.
6. Consider establishing a higher standard for public buildings to serve as an example for others throughout the community and to use these projects as case studies to support regional energy outreach and education. For example, public agencies may design, construct and operate all new and renovated publicly-owned facilities as Energy Star, Leadership in Energy and Environmental Design (LEED)⁶-Certified, or an equivalent rating.

2008 UPDATE: The City of Monterey is in the process of forming green building/energy efficiency policy for the city and its public facilities. Additionally, the following cities have incorporated energy efficiency into recent or planned public construction: City of Marina, City of Monterey, City of Salinas, City of Santa Cruz and the City of Watsonville. Lastly, AMBAG's goal is to LEED certify its new office building.

7. Evaluate energy retrofits and design options using life-cycle cost analysis that considers all costs of the building including first costs as well as future operational costs.
8. Encourage purchase of Energy Star products whenever cost-effective (considering life-cycle costs).

2008 UPDATE: AMBAG Energy Watch Program is working to promote awareness of Energy Star products.

9. Encourage new commercial and residential buildings to exceed minimum efficiency standards through public-good programs or local government incentives (e.g. plan check fee reduction or expedite).

⁵ AB 1659, passed in 1984 [California Government Code (52030-52190)], enables cities and counties to establish a CEA, similar to a housing authority. CEAs can plan and enact programs and projects for low-income, energy efficiency or renewable energy development, and can issue tax-exempt bonds and access other tax-exempt financing or state and federal sources to fund them. Recently, several CEAs have been formed in Humboldt and Ventura Counties.

⁶ LEED is Leadership in Energy and Environmental Design, the certification program of the U.S. Green Building Council, see <http://www.usgbc.org/>.

2008 UPDATE: Promoting under CEC Rebuild America Grant.

The following jurisdictions are considering or implementing government green building/energy efficiency programs for commercial and residential buildings: City of Capitola, City of Monterey, City of Santa Cruz, City of Scotts Valley, City of Watsonville and the County of Santa Cruz.

10. Encourage the upgrade of older, existing buildings to meet energy codes upon resale through the consideration of a time-of-sale energy efficiency rating and certification process similar to Monterey County Water Resources Agency Ordinance No. 3932.
11. Encourage public agencies to conduct assessments of all facilities (and electric and mechanical equipment) in the next three years to identify potential energy savings opportunities. Establish a plan to accomplish all projects identified in the next 10 years.

2008 UPDATE: Through AMBAG Energy Watch Program, assessments for any public facility are available to all member jurisdictions. At least one facility has been assessed in each jurisdiction. The goal of the 2006-2008 AMBAG Energy Watch Program is to complete energy assessments of all public facilities.

12. Consider solar hot water heating where appropriate to reduce natural gas consumption in public facilities.

Additional Considerations in the Area

1. There was significant interest at the recent EAC Meeting to pursue the concept a region-wide Special Energy Financing District concept that provides on-tax bill financing of energy efficiency and renewable energy projects. AMBAG should form a special task force to evaluate this concept and its feasibility.
2. The recent EAC Meeting suggested that the Low Interest Loan Program⁷ available through the CEC would be a good option for local government agencies to fund additional projects that are identified by Energy Watch assessments but might not be pursued due to lack of funding.
3. Although the region has good data available regarding energy projects and savings being generated through the Energy Watch Program, there are projects that are implemented in-region outside this program. AMBAG should work with PG&E to track all projects implemented in region, including those that occur in other PG&E and third-party programs.
4. PG&E is currently developing a Strategic Plan for energy efficiency programs through 2020. This strategic plan will reflect changes in program offerings in the next program cycle (2009-2011). When these programs are approved by the CPUC (expected late 2008), the EAC should reconvene to evaluate strategies to ensure that all PG&E and third party programs achieve maximum penetration in the region (as is currently the case with the Energy Watch Program).

⁷ <http://www.energy.ca.gov/efficiency/financing/index.html>

2.3 Clean Renewable and Distributed Generation Resources

Objective

Increase the use of renewable and clean distributed generation resources in the region to support the state Renewable Portfolio Standard, increase the fuel diversity of the region, reduce the reliance on the stressed transmission infrastructure and reduce overall environmental impacts of regional energy production and consumption.

Goal

For renewable and distributed generation resources, to the extent that it is practical, provide local capacity to make a positive contribution to the goals of PG&E and the state. When possible, continue to exceed the proportionate share of the region's contribution toward these goals.

Original Proposed Action Steps and 2008 Updates

1. Complete an assessment of potential renewable and distributed generation resources, including but not limited to wind, solar and potentially municipal waste energy production capacity from landfill gas that is not yet productive.

2008 UPDATE: The magnitude and scope of this action step exceeds the scope and funding of the current CEC Rebuild America Grant funding.

2. Evaluate various implementation and financing mechanisms to promote and encourage renewable and distributed generation resources in all sectors, including:
 - a. Implement a Special Energy Financing District that provides on-tax bill financing (see Part 2);
 - b. Work through AMBAG's existing Joint Powers Authority (JPA) mechanism to pursue joint project development and implementation;
 - c. Form a Community Energy Authority (CEA)⁸ to issue bonds to fund projects;
 - d. Form revolving funds for public projects to reinvest a portion of energy savings into future energy savings project development.
3. Evaluate the potential for a Request for Proposals for public and public-private joint ventures to develop renewable and distributed generation projects in the region.
4. Consider adopting local ordinances to encourage or mandate that new homes be pre-wired and pre-plumbed for solar photovoltaic and solar hot water heating installations providing a target level of distributed generation and renewables.
5. Work with PG&E to leverage the existing Self-Generation Program to promote and maximize the utilization of clean, distributed generation resources in the region (e.g. through local workshops, case studies, etc).

⁸ AB 1659, passed in 1984 [California Government Code (52030-52190)], enables cities and counties to establish a CEA, similar to a housing authority. CEAs can plan and enact programs and projects for low-income, energy efficiency or renewable energy development, and can issue tax-exempt bonds and access other tax-exempt financing or state and federal sources to fund them. Recently, several CEAs have been formed in Humboldt and Ventura Counties.

6. Support and promote demonstrations of renewable and distributed generation technologies in public and private projects and leverage these demonstrations to promote the achievement of the goals.

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2.4 Transportation Energy⁹

Objective

Reduce the region's growing demand for fossil fuels for transportation uses.

Original Proposed Action Steps and 2008 Updates

1. Seek funding to complete a more comprehensive transportation energy study that better defines the potential fuel and cost savings through more efficient use of transportation technologies including, but not limited to, land-use planning strategies and measures that could be implemented as part of the Regional Transportation Plan.

2008 UPDATE: The region has a long-range Metropolitan Transportation Plan (2010-2035), which incorporates all planned projects in the region—all are eligible for federal funding. Additionally, each county has a long-range plan; updating now (2005) <http://www.sccrtc.org/pdf/2005_rtp_eir_nop.pdf> Also, Regional Transportation Plans (RTPs) exist for each region/county.

2. Seek funding to support the development of a public information program on transportation energy conservation and efficiency, which may include informing consumers of the fuel saving benefits of efficient tires, proper tire inflation, vehicle maintenance and alternative fuel and hybrid vehicles.

2008 UPDATE: AMBAG Rideshare program/public outreach.

Tri-county rideshares: SCCRT and SB County COG quantify the amount of money spent, the number of participants and the economic/environmental benefits.

3. Work through AMBAG member agencies to encourage greater use of fuel-efficient and less polluting vehicles in public fleets, including school buses and refuse collection vehicles, leveraging incentives available through the Monterey Bay Unified Air Pollution Control District¹⁰.
4. Support any efforts to influence Congress and the Department of Transportation (if appropriate) to begin to increase the fuel economy of new passenger cars and light trucks (CAFE standards).

⁹This Transportation Section was added after the final Energy Advisory Committee meeting at the suggestion of the Committee.

¹⁰ <http://www.mbuapcd.org/>.

Attachment 1: Building Efficiency Standards

The Association of Monterey Bay Area Governments (AMBAG)¹¹ was awarded a U.S. Department of Energy grant by the California Energy Commission under the Rebuild America Program¹². The purpose of this grant was to expand their existing Regional Energy Plan¹³ and to implement the first action steps in each section of the plan. In particular, the grant calls for the modification of its regional energy plan so that all new nonresidential construction exceeds the current Title 24 Nonresidential Building Efficiency Standards.

The current Regional Energy Plan, adopted by AMBAG in April 2006, contains several recommendations regarding new construction of public and commercial facilities. Specifically, the plan contains the following two action steps:

“Consider establishing a higher standard for public buildings to serve as an example for others throughout the community and to use these projects as case studies to support regional energy outreach and education. For example, public agencies may design, construct and operate all new and renovated publicly-owned facilities as Energy Star, Leadership in Energy and Environmental Design (LEED)¹⁴ Certified, its equivalent (or higher).”

“Encourage new commercial and residential buildings to exceed minimum efficiency standards through public-good programs or local government incentives (e.g. plan check fee reduction or expedite).”

The purpose of this report is to inform stakeholders and decision-makers about building standards in the context of state and regional energy planning and the required process for establishing local building codes, and also to highlight various jurisdictions that have established local energy code ordinances.

2.5.1 Background: Building Standards in the Context of State Energy Planning

In determining how the region should address new construction standards or “above code ordinances,” it is worth considering several statewide energy planning activities that impact new construction codes and standards.

In the few short years since AMBAG adopted its Regional Energy Plan, significant changes in state energy policy have taken place. The State of California first adopted an Energy Action Plan in 2003 “to ensure that adequate, reliable, and reasonably-priced electrical power and natural gas supplies are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California’s consumers and taxpayers.” Since that time, the plan has undergone several updates including the release of the *2007 Integrated Energy Policy Report (IEPR)*¹⁵ and the recent release of the *2008 Update to the Energy Action Plan*¹⁶. Additionally, the passage of Senate Bill 1 (Murray, Chapter 132, Statutes of 2006) enacted Governor Schwarzenegger’s “Million Solar Roofs”

11 The Association of Monterey Bay Area Governments (AMBAG) is a regional planning organization for Monterey, San Benito and Santa Cruz counties.

12 http://www.eere.energy.gov/buildings/program_areas/rebuild.html

13 http://ambag.org/EnergyWatch/regional_plan.html

14 LEED® is the acronym used for the “Leadership in Energy and Environmental Design Green Building Rating System™, the certification program of the U.S. Green building Council, see <http://www.usgbc.org/>.

15 <http://www.energy.ca.gov/2007publications/CEC-100-2007-008/CEC-100-2007-008-CMF.PDF>

16 <http://www.energy.ca.gov/2008publications/CEC-100-2008-001/CEC-100-2008-001.PDF>

initiative. This ensures that building projects that apply for ratepayer-funded incentives for solar photovoltaic (PV) systems meet minimum energy efficiency levels and that recommended PV system components and installations meet rating standards and specific performance requirements.

The Building Energy Efficiency Standards (California Title 24, Part 6)¹⁷ that were first adopted in 1976 are currently undergoing an update that would go into effect in 2009. This update would not only improve the energy efficiency of new buildings but also reduce demand during critical peak periods.

Title 24 Building Energy Efficiency Standards play a very important role in the state's overall strategy for energy use. Recent state policy is moving in the direction that all new homes be "zero net energy" by 2020. New commercial buildings would need to meet the same standard by 2030. Public policy is looking to drive major "market transformation" rather than incremental efficiency increases.

The California Public Utilities Commission and California Energy Commission recently issued an update of the state's *Energy Action Plan*. This plan sets goals for meeting electricity and natural gas needs in California, emphasizing that greater energy efficiency and demand-response efforts are needed to help comply with the state's landmark greenhouse gas (GHG) laws, AB 32¹⁸ and SB 1368 (the emissions performance standard for all retail providers of electricity in California). The update reaffirms that efficiency is the most important tool for GHG reduction in the energy and gas sectors, and that "meeting our AB 32 goals will require, under any scenario, unprecedented levels of energy efficiency investment."

Lastly, the California investor-owned utilities recently published a draft *Strategic Plan for Energy Efficiency*¹⁹ pursuant to California Public Utilities Commission Rulemaking (D.07-10-032). This plan places a strong emphasis on green buildings and enhanced code and standard enforcement. Specifically, the plan calls for the coordination of emerging "green" or sustainability standards and "beyond code" programs to achieve "zero net energy"²⁰. It recognizes the unique role of local governments to serve as "test beds" to determine what works best in moving toward more efficient building standards. In particular, a key focus would be to determine which efficiency measures integrate well with other dimensions of "green" or sustainable buildings and developments.

Each of these policy statements takes into consideration the evolution of state energy policy, recognizing the human impacts on climate change and the need for assertive action to reduce the state's carbon footprint as mandated by Assembly Bill 32, the California Global Warming Solutions Act of 2006.

2.5.2 Are Current Building Standards Good Enough?

For several decades, the State of California has led the nation with its emphasis on energy efficiency in its Title 24 Building Energy Efficiency Standards. According to the California Energy Commission, California's building efficiency standards (along with those for energy efficient appliances) 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.

17 <http://www.energy.ca.gov/title24/>

18 Assembly Bill 32 (Nuñez, Chapter 488, Statutes of 2006), the Global Warming Solutions Act of 2006, mandated that California must reduce its greenhouse gas emissions to 2000 levels by 2010 and to 1990 levels by 2020.

19 <http://www.californiaenergyefficiency.com/>

20 A "zero net energy" building is a building that has sufficient electricity production (e.g. solar electricity) to offset its energy use. Typically, zero net energy buildings are first designed to be highly energy efficient in order to minimize the size and cost of the required energy production system necessary to offset annual energy use.

New homes built today are far more efficient than those built 30 years ago. Homes built in the 1950s averaged 1,500 sq ft in size. Today, it is not uncommon for homes to be 3,000 to 4,000 sq ft. As a result, per capita energy consumption has remained relatively constant, but our overall energy consumption has increased significantly. Technologies exist today that can begin to reduce our per capita energy consumption without sacrificing function or comfort, and as time passes and energy costs increase, these technologies become increasingly cost-effective. With growing concern for the impacts of energy production and use on climate change and supply constraints driving significant increases in costs for energy, some are questioning whether enough is being done.

Recent energy policy suggests that considerably more aggressive steps need to be taken.

Statewide renewable energy portfolio standards have been adopted, and concepts such as “zero net energy buildings²¹” are becoming common terms.

2.5.3 The Process for Enhanced Standards

California Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards establish a process allowing local adoption of energy standards that are more stringent than statewide standards. This process allows local governments to either 1) adopt and enforce energy standards prior to the date that statewide standards take effect, 2) require additional energy conservation measures, and/or 3) set more stringent energy budgets. In order to implement stricter energy standards, local governments are required to apply to the California Energy Commission for approval, providing supportive analysis of the cost-effectiveness of their proposed standards vis-à-vis current statewide standards. Once the Energy Commission staff has verified that the local standards will require buildings to use no more energy than the current statewide standards and that the documentation requirements are met, the application is brought before the full Energy Commission for approval.

To date, several local agencies have adopted energy ordinances requiring more stringent building energy standards, including Culver City, La Quinta, Los Altos Hills, Marin County, Mill Valley, Palm Desert, Rohnert Park, Santa Barbara, Santa Monica and Santa Rosa. Table 1 summarizes these ordinances (copies of these ordinances are found in Appendices A through K, respectively).

Table 1: Summary of Local Ordinances for Enhanced Building Energy Standards

City Date	Ordinance Attributes
Culver City (Pending CEC Approval)	Establishes a mandatory 1-kw solar photovoltaic system (or an equivalent solar water heating system) for new commercial construction of 10,000 sq ft or greater and new multifamily construction of 10,000 sq ft or greater.
La Quinta March 2005	Adopted the 2005 revision to the Building Energy Efficiency Standards earlier than required (on the same date as 2004 California Electrical Code).
Los Altos Hills	Requires new homes meet the EPA Energy Star Homes criteria (or the utility sponsored Energy Star New Homes Program), which provides that they be 15% more efficient than current standards. Allows for solar photovoltaic credit to meet this standard.

²¹ A “zero net energy building” is a building that has sufficient electricity production (e.g. solar electricity) to offset its energy use. Typically, zero net energy buildings are first designed to be highly energy efficient in order to minimize the size and cost of the required energy production system necessary to offset annual energy use.

Marin County	Ensures residential single-family buildings over 3,500 sq ft of total conditioned area consume less energy than the 2005 Building Energy Efficiency Standards. Offers credit for solar photovoltaic (PV) electricity generation installed at the building site.
Mill Valley	Same as Marin County. Ensures residential single-family buildings over 3,500 sq ft of total conditioned area will consume less energy than the 2005 Building Energy Efficiency Standards. Offers credit for solar photovoltaic (PV) electricity generation installed at the building site.
Palm Desert	<p>Ordinance ensures that single family houses (including low-rise multi-family buildings, condominium conversions and residential additions) less than 4,000 sq ft exceed standards by 10%; if greater than 4,000 sq ft, must exceed standard by 15%. Ordinance offers credit for solar photovoltaic (PV) electricity generation installed at the building site. Ordinance also mandates use of certain measures, such as 1) requiring use of fluorescent lighting and lighting controls (automatic shut-off) for laundry rooms, utility rooms, mechanical rooms, closets and garages and fluorescent lighting in all common area landscape; 2) requiring that all fan and pump motors be “premium efficiency” motors (based on National Electrical Manufacturers Association); 3) requiring that all swimming pools and spas have high efficiency gas heaters (minimum AFUE of 90% or higher), and that all circulating pump motors and filtration pump motors be two-speed or variable speed motors; and 4) providing a 1-inch diameter conduit for future solar PV energy systems. This conduit shall extend from a point on the exterior wall located under the southern roof exposure to the exterior wall adjacent to the main electrical service panel.</p> <p><u>Requirements for Production Homes in Residential Developments.</u> Model homes must be equipped with a solar PV energy system with a minimum nominal output of 2.0 kW and the seller shall offer a solar PV energy system option to all customers. Also, if the developer provides appliances, they must be Energy Star–rated, including dishwashers, refrigerators, clothes washers, clothes dryers (Natural Gas only), ceiling and exhaust fans.</p>
Rohnert Park	Single-family houses and residential additions equal to or greater than 1,000 sq ft must exceed standards by between 10% and 15%. Ordinance also mandates the use of certain measures for residential buildings, including Energy Star exhaust fans and mastic on all joints and seams of air conditioning ducts. Lastly, requires that all swimming pools and spas have high efficiency gas heaters (minimum AFUE of 90% or higher), and that all circulating pump motors and filtration pump motors be two-speed or variable speed motors.
Santa Cruz	In October 2005, the City Council approved a green building ordinance, effective January 3, 2006. For non-residential buildings, the ordinance provides a point-based system based on the U.S. Green Building Council’s LEED criteria. Another residential building point system was developed based on an Alameda Waste Management Authority program. As of January 2007, installation of designated green components became mandatory to obtain a building permit and a building final.
Santa Monica	http://greenbuildings.santa-monica.org/mainpages/ord2.html
Santa Rosa	<p>New single-family homes and new multi-family low-rise residential buildings must consume at least 15% less TDV energy than is permitted by the 2005 standards, and new high-rise residential buildings (i.e., four-story or higher residential apartments) must consume at least 15% less TDV energy than the energy use permitted by the 2005 standards.</p> <p>In considering how the region should address new construction standards and/or mandates, it is worth considering several statewide energy planning activities that impact new construction codes and standards.</p> <p>A California Public Utilities Commission (CPUC) Proposed Decision released on September 17, 2007 would require all new homes to be “zero net energy” by 2020. New commercial buildings would need to meet the same standard by 2030. The 148-page decision, written by Commissioner Dian Grueneich and Administrative Law Judge Kim Malcolm, seeks a “market transformation” rather than incremental efficiency increases. That decision has been driving an ongoing Strategic Planning process resulting in the release of a draft Energy Efficiency Strategic Plan in March 2008.</p> <p>The California Public Utilities Commission and the California Energy Commission recently issued an update of the state’s <i>Energy Action Plan</i>. This plan sets goals for meeting electricity and natural gas</p>

	<p>needs in California and emphasizes that greater energy efficiency and demand-response efforts are needed to help comply with the state’s landmark greenhouse gas (GHG) laws, AB 32²² and SB 1368 (the emissions performance standard for all retail providers of electricity in California). The update reaffirms that that efficiency is the most important tool for GHG reduction in the energy and gas sectors and that “meeting our AB 32 goals will require, under any scenario, unprecedented levels of energy efficiency investment.”</p> <p>Building Energy Efficiency Standards (Title 24, Part 6)²³ were first adopted in 1976 and have been updated periodically since then as directed by statute. Currently, there is an update to the standards underway that would improve the energy efficiency of new buildings and also include requirements that will reduce demand during critical peak periods.</p>
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2.5.4 Limitations to Above Code Standards

Development of the above code standards address only a very small number of new buildings being built throughout California. Nearly 99% of energy consumption takes place in existing structures. Additional emphasis needs to be placed on encouraging the improvement of energy efficiency in existing buildings that were not subject to California Energy Efficiency Building Code.

2.5.5 Recommendations for AMBAG Jurisdictions

It is recommended that the AMBAG jurisdictions consider pursuing an application to the CEC for above code standards as a single entity in order to achieve economies of scale. The examples of ordinances previously adopted by jurisdictions throughout California provide some ideas for elements of these ordinances. It is recommended that the following elements be considered:

1. Consider incentivizing or requiring that all new commercial and residential projects qualify for applicable new home energy efficiency incentive programs (e.g. “Savings By Design” for commercial, “California New Homes Program” for residential).
2. Consider incentivizing or requiring that all public facilities be designed and constructed to a minimum LEED certification (or equivalent). If practical, facilities should meet LEED gold or platinum standard (assuming incremental costs do not exceed a 10-year payback).
3. Consider incentivizing or requiring that new commercial and residential construction incorporate a certain level of solar photovoltaic systems. The number and size of these systems should be commensurate with the number of units per development and the size of the homes. For example, large production home developments may be required to install solar systems in 30% of their homes; homes in excess of 2,000 sq ft would have a 1 kW system, homes in excess of 3,000 sq ft would have a 2 kW system, homes in excess of 4,000 sq ft would have a 3 kW system, etc.

Additionally, AMBAG should evaluate various strategies in addressing the more significant challenge of improving the energy efficiency of existing buildings. Various incentives or other programs could support this, such as a Special Energy Finance District that provides on-tax bill financing for energy improvements, or an adjustment in the home’s tax base based on

²² Assembly Bill 32 (Nuñez, Chapter 488, Statutes of 2006), the Global Warming Solutions Act of 2006, mandated that California must reduce its greenhouse gas emissions to 2000 levels by 2010 and to 1990 levels by 2020.

²³ <http://www.energy.ca.gov/title24/>

energy efficiency investments (for example, an investment of \$50,000 in insulation, new windows, and a solar photovoltaic system would reduce the home's tax base by \$50,000).

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