

DATE ISSUED: October 5, 2001

REPORT NO. 01-212

ATTENTION: Rules, Finance & Intergovernmental Relations Committee  
Agenda of October 10, 2001

SUBJECT: Energy Conservation Regulations for New and Existing Buildings

### SUMMARY

THIS IS AN INFORMATION ITEM ONLY. NO ACTION IS REQUIRED ON THE PART OF THE COMMITTEE OR THE CITY COUNCIL.

### BACKGROUND

This report is prepared in response to the Rules Committee discussion of energy conservation efforts at the July 11, 2001 meeting. The body of the report covers current energy conservation regulations for new and existing buildings. Attachment 1 identifies the energy conservation elements contained in the draft Strategic Framework Plan.

**Energy Conservation Regulations** - The California Energy Commission promulgates regulations for energy conservation that apply to both residential and nonresidential buildings throughout California. The Commission was formed in 1974 and adopted the first energy conservation regulations in 1978. The first regulations required insulation in walls and ceilings of residential buildings, set maximums for lighting in certain types of occupancies and established energy budgets for buildings. By 1990, these regulations were expanded into a comprehensive set of requirements that cover all aspects of new construction. The current energy conservation regulations are found in Part 6 of Title 24. The Administrative Regulations, which define the responsibilities for enforcement are found in Part 1 of Title 24. The California Energy Commission recently adopted additional requirements on an emergency basis to address the electricity crisis.

The local jurisdiction has the primary responsibility for enforcing the energy conservation regulations and may not issue building permits until it has determined that any proposed construction complies with the requirements of Part 6. Local jurisdictions are prohibited from adopting any energy conservation regulations without the approval of the California Energy Commission. Approval is contingent on the local regulations providing for at least the same level of energy conservation as Part 6.

The Development Services Department enforces the energy conservation regulations through the plan review and inspection process. Permits are not issued until the plans show that the proposed

work will comply with the state requirements. Construction does not receive final approval until it has been determined by inspection that the installation complies with these requirements.

**New Construction - Current Regulations** - The state energy conservation regulations include requirements for appliances, equipment and building materials used in all new construction.

**Appliances** - Every appliance must be certified as high energy efficient. This requirement has had a significant and positive impact on the manufacture of appliances such as water heaters, gas furnaces, air conditioners and lighting fixtures. As an example, gas furnaces are now 80% efficient where models before 1980 operated at a 35 to 40% efficiency.

**Lighting and Lighting Equipment** - Lighting is restricted to a maximum wattage-per-square-foot by type of occupancy. Time clocks and dual switching are required for lighting in large areas. Occupancy sensors are required in offices and small areas. Daylight sensors are required in areas adjacent to windows. An office building constructed under these standards uses about 50% of the energy for lighting as one constructed before 1980.

**Heating and Cooling Equipment** - Heating and cooling equipment is limited to maximum size by type of occupancy. Heating and cooling ducts are required to be sealed and insulated. Setback thermostats are required on all heating and cooling systems. A home constructed today uses about 60% less energy for heating than one constructed before 1980.

**Building Materials** - Walls are required to be insulated with a minimum R-11 rating and ceilings with a minimum R-30 rating. Double glazed windows are a common application. All openings in the building envelope are required to be sealed. These requirements add to the efficiency of heating and cooling systems.

In relation to the climatic conditions of the San Diego area, these regulations are among the most stringent in the nation. Further, in a recent response to the electricity crisis, the Energy Commission adopted emergency regulations requiring an additional 15% improvement in energy efficiency for commercial buildings and an additional 20% improvement in residential buildings. Builders have noted that these higher efficiency requirements will add significant costs to buildings for an very small reduction in operating costs.

**New Construction - Recommendations** - Additional regulations on new construction are not recommended at this time. It is recommended that incentives be investigated to encourage the use of renewable energy sources in new construction. Photo-voltaic systems and solar water heating, with the subsidies presently offered, provide reasonable payback and support the goal of energy independence. Some builders of new homes are currently offering these installations as an available option for purchasers.

Possible incentives include:

Expedited plan check for projects where renewable energy sources provide 10% or more of the buildings total energy needs.

Given a source of funding, the permit fees for these installations could be subsidized.

It is also recommended that the City actively support the builder's incentive programs provided by the state and S DG&E. In these programs, builders are assisted with designing high energy efficient buildings and are rewarded with financial incentives. As the representative of the California Energy Commission responsible for reviewing and approving building plans, the City should participate actively in these programs, providing information and encouraging builders to take advantage of this design assistance.

**Existing Construction - Regulations** - The 2000 Census documents a total 469,689 dwellings (including duplexes and condos) in the City of San Diego. The 1990 Census notes that 317,485 dwellings were constructed prior to 1979. These older dwellings, representing over two-thirds (67.7%) of the total dwellings in the City, were built without insulation in the walls and ceilings, with single pane windows and older, inefficient appliances. There are no present state or local regulations that would require existing buildings to comply with the energy conservation regulations or to take any action to reduce their energy use. This is an area where significant and meaningful reductions in gas and electric use are possible. These older dwellings use from 2.5 to nearly 4 times the kBtu per year as newer homes. If these older dwellings were retrofitted to comply with the current energy regulations, the kBtu's consumed in homes would be reduced from 33,394,295 to 12,916,455 per year. See Attachments 2 & 3 for documentation. Both the state and S DG&E have programs that are aimed at gaining these reductions. As an example, some of the current S DG&E rebate programs for existing residences include:

<b><u><sup>1</sup>Program</u></b>	<b><u>Rebate Amount</u></b>	<b><u>Annual Savings</u></b>
Purchase Energy Star qualified Clothes Washer	\$75	\$155
Purchase Energy Star qualified Dishwasher	\$50	\$40
Purchase Energy Star qualified Refrigerator	\$100-\$125	\$70
Install Insulation - Wall or Ceiling	\$0.15 per sq ft	
Install High Performance Windows	\$1 per sq ft	\$90
Install High Efficiency Gas Water Heater	\$75	\$35
Install Energy Star qualified Air Conditioner	\$50-\$225	\$60
Install Energy Star qualified Gas Furnace	\$200-\$300	\$35
Install Whole House Fan	\$150.00	\$100

**Existing Construction - Recommendations** - The City should strongly support the rebate and incentive programs offered by SDG&E. These programs provide for significant reductions in gas and electricity use in existing buildings that are unlikely to be achieved in any other manner. The City's active endorsement and support could encourage more participation in these programs where the benefit is meaningful and immediate.

The City's new Energy Conservation and Management Group has initiated discussions with SDG&E in this area. The City should publicize the availability of these programs and provide information and application forms at service centers, in it's publications and on it's web page.

With an agreement or partnership with SDG&E, the Development Services Department could take an active role in supporting these programs. The department deals daily with owners of older homes who are applying for permits to add a room or remodel their home. The department could assist these owners in using the rebates available to reduce energy use in their homes, saving on the installation itself and on their ongoing utility costs.

It seems likely that additional savings would encourage more owners of older buildings to participate in the rebate programs and in the use of renewal energy sources. The County of San Diego recently waived the permit fee for photo-voltaic installations although they still provide plan check and inspection. It is recommended that funding be pursued to allow the Development Services Department to subsidize permit fees for work done under the rebate programs and for new photo-voltaic and solar water heating systems. Some funding may be available through the Public Benefit Charges currently being collected by the State. \$100,000 in grant funds would subsidize permit fees for approximately 2000 of these installations.

**Summary** - Existing Energy Conservation Regulations for new construction are comprehensive and stringent. The opportunities to gain additional reductions in the use of gas and electricity are minimal. New regulations are not recommended. Incentives for the use of renewable energy resources are recommended.

Dwellings constructed before 1978 represent over two thirds of total dwellings in the City and the area where significant and immediate reductions in the use of gas and electricity are possible. Both state and S DG&E programs exist that focus on this goal. Support of these programs and other incentives for the upgrading of existing buildings is recommended as well as the pursuit of state funds to support local energy conservation programs.

Respectfully submitted,

Tina P.

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Approved: George I. Loveland  
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CHRISTIANSEN/TET

- Attachments: 1. Energy Conservation Elements Contained in the Draft Strategic Framework Plan
2. Impact of Title 24 Energy Efficiency Standards Related to Heating, Cooling and Water Heating in Single-Family Dwellings
  3. Estimated Energy Savings Through the Retrofit of Pre-1978 Dwellings