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ATTENTION: Committee on Rules, Finance and Intergovernmental Relations
Agenda of June 5, 2002

SUBJECT: Energy Conservation and Management Status Report No. 11

SUMMARY:

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

BACKGROUND

On February 21, 2001, the Rules Committee directed the Environmental Services Department to provide regular reports on the status of the City's energy conservation and management efforts. Issues requiring Council action are submitted as separate reports in addition to the regular status reports. This is the eleventh status report in response to the Committee's direction.

In the January 8, 2001, State of the City Address, Mayor Murphy outlined ten goals for the City to pursue during his term in office. Goal #9, Pursue Energy Independence, addressed the energy issues facing the City and proposed establishing a City Energy Administrator position and making San Diego a model city in terms of energy conservation and the use of renewable energy resources. On February 12, 2001, Council adopted a comprehensive resolution, directing the City Manager to implement the Mayor's energy recommendations. An Interim Energy Administrator was appointed on February 13, 2001, and the Energy Conservation and Management Division was established in the Environmental Services Department on July 1, 2001.

DISCUSSION

The City's strategy to address the energy emergency and pursue energy independence involves five major focus areas and significant activity has taken place in each area as described below, to implement Goal # 9:

1. Manage City Energy Use. The City has over 3,000 gas and electric energy accounts with San Diego Gas & Electric and in calendar year 2000, the base year for energy management purposes, purchased 217,617,044 kilowatt hours (kWh) of electricity at a cost of $25.4 million. For calendar 2001, energy purchases totaled 196,097,005 kWh or a reduction of 21 million kWh or 12%. For the first three months of 2002, energy consumption continues to be 15% lower than for the same period in 2000.

   The Energy Conservation and Management Division is in the process of converting the City's energy billing process from a manual system using paper bills to an automated paperless system. This will shift the focus of Energy Division staff from entering consumption data from energy bills into the City's database to analyzing consumption trends to better manage the City's energy usage. To date three complete Electronic Data Interchange files of billing data have been received from SDG&E. Ongoing EDI data testing will validate appropriate funding and usage information for all meters and facilitate staff's analysis of usage profiles. Recent data review by EC&M staff discovered 228 billing accounts that were not valid and indicated zero usage. These accounts have been purged from City databases.

   As the next step in enhancing management of the City's energy use, energy management systems and software interacting with time of use meters could provide a far greater ability to analyze and manage energy use than is currently possible. Recommendations regarding the creation of an energy management system standard to allow real time remote meter analysis will be submitted for the Committee's consideration in future reports.

2. Conserve Energy. Through the City's Summer Action Plan and broad based energy conservation efforts by City departments, calendar 2001 energy consumption was reduced by almost 21 million kWh compared to the prior year's energy usage. While year-to-date consumption for 2002 is 15.2 million kWh below the base year of 2000, conservation efforts will need to be a continuing priority in the City's energy management strategy.

3. Enhance Energy Efficiency in Existing City Facilities. The majority of the City's future energy consumption will be in or by existing facilities rather than in new facilities. The City has been upgrading the energy efficiency of existing facilities on an on-going basis and needs to continue to replace less efficient energy consuming equipment with new state-of the-art, higher energy efficiency equipment as rapidly as can be afforded. Examples of energy efficiency upgrades include: replacing the chillers in the City Administration Building; changing T-12 florescent lamps with mechanical ballasts to T-8 bulbs with electronic ballasts; replacing incandescent traffic signal bulbs with LED bulbs which use 90% less energy and have a 5 to 7 year life compared to 18 months for incandescent bulbs; and installing active daylighting systems in City buildings to virtually eliminate the use of artificial lighting for most daylight hours.

Up-grading the energy efficiency of existing facilities has the greatest potential to cost effectively and significantly reduce total City energy consumption and will continue as a high priority on-going strategy in pursuing Goal #9. The largest barrier to improving energy efficiency in existing buildings is the lack of a funding source for projects to proceed. The City and County of San Francisco recently created a $100 million revenue bond to fund improved efficiency and installation of renewable energy projects in both public and private facilities. Energy Conservation and Management Division staff is reviewing a variety of alternatives, including the use of one time funds, to create an in-house "Energy Project Fund" to pay the initial costs of energy efficiency projects at General Fund facilities. Recommendations will be presented for the Committee's consideration in future reports.

However, there are continuing opportunities for relatively low cost energy efficiency projects that can be undertaken within existing department budgets based on the projected energy savings that can be achieved. An example of such projects is the contract issued last week to install 32 So-Luminaire Active Daylighting Systems at Equipment Division's motive equipment maintenance shops at the Chollas Operations Station. Installation of these daylighting systems will virtually eliminate the need for artificial lighting during daylight hours, resulting in sufficient energy savings to repay the project's costs in less than three years.

4. Ensure Energy Efficiency in New Facilities and Major Remodels. On April 16, 2002, Council adopted the USGBC LEED "Silver" Level as the design goal for new construction and major remodels of City facilities. This will incrementally improve the overall energy efficiency of the City's buildings. Recent staff meetings to review the downtown Library and Fire Station remodel projects created the groundwork for incorporating LEED standards into the design development process.

   A significant energy remodel project in support of Goal #9 is being proposed for the Downtown Police Headquarters as a coordinated partnership between the Police Department, Facilities Maintenance Division, Energy Conservation and Management Division, and the City's contracted Energy Services Contractor (Onsite Energy). The facility is the second largest General Fund energy consumer with an annual cost for energy of almost $1 million per year. The proposed project would reduce energy costs by approximately 50%, and make the Headquarters building energy self sufficient.

   The proposed $3.8 million project will provide complete electric independence for the Downtown Police Headquarters by using an on-site natural gas powered cogeneration plant. The project will also provide renewable energy produced by a 30 KW photovoltaic array. Improvements in building energy efficiency, combined with the cogeneration system, will provide contractor guaranteed annual General Fund energy savings of at least $500,000 each year that would be used to fully fund the project's cost without the City increasing its annual energy budget. The project is proposed to be implemented as a "full service project" with Onsite Energy providing project design, construction and financing. A combination of energy

incentives will offset approximately $650,000 of the anticipated $3.8 million project cost.

The Police Department's Executive Committee supports the proposed plan which will be presented to Council for consideration as a design/build project when detailed cost estimates and design documents are complete.

5. Pursue Energy Independence in City Facilities Through Self-Generation of Electrical Energy using Renewable Resources. Three of the City's wastewater facilities, Point Loma Treatment Plant, Metropolitan Biosolids Center and the North City Water Reclamation Facility, are energy independent because they generate more power than they use. By utilizing a combination of methane gas from the wastewater treatment process and landfill gas from the Miramar Landfill as a renewable resource fuel source, these facilities generate approximately 15 MW of power. Additionally, in 2001, the City commissioned a 1.3 MW hydroelectric generation unit at the Point Loma Treatment Plant that uses treated water entering the offshore discharge pipe as its "fuel." The power generated in excess of what is needed for facility operations is sold to the grid to reduce overall energy costs.

   In June, Council will be asked to approve the first two City photovoltaic (PV) energy generation systems totaling 130KW of generating capacity for the Environmental Services Department's Ridgehaven Green Building and its Miramar Place Operations Center Administration Building. The Miramar Place project will make the Administration Building energy self sufficient and the Ridgehaven Building project will significantly reduce the amount of purchased energy required as well as provide a demonstration and education component in support of Goal #9. Additional renewable resource energy projects will be brought forward as funding is secured.

   The Energy Conservation and Management Division is preparing additional public information material supporting energy conservation, developing cooperative projects to enhance energy efficiency and generate additional electrical energy using renewable resources. This strategy is having positive results as reflected by the 21 million kWh savings in fiscal year 2001 and 15.2 million kWh savings in fiscal year to date as of March 2002, when compared to base year 2000 consumption. It is recommended that the City remain committed, on a long-term basis, to its comprehensive energy conservation and management strategy in the pursuit of energy independence.

Summer 2002 Outlook

As the City entered into 2002, the energy situation was greatly improved with sufficient energy supplies during the first quarter due to conservation, new generating facilities and long-term energy supply contracts. Energy supplies are projected to be adequate for Summer 2002 unless conservation wanes and sustained high temperatures are experienced simultaneously in Northern and Southern California. Recent information from Cal-ISO revealed 62 power plants, with a capacity of 4600 MW, have been deferred

or cancelled in the construction process. Cal-ISO also indicated "significant transmission constraints still exist on Path 15, in San Francisco, and the San Diego basin.

On May 23, 2002, Governor Davis issued Executive Order D-56-02 to implement a limited-term rate reward program for conservation efforts by residential energy consumers during the peak energy demand months of July through October 2002. SDG&E residential customers that reduce energy consumption by 15%, compared to the same period in 2000, will receive a 20% reduction in the energy portion of their total energy bill. This program is based on last year's 20/20 Energy Rebate Program. However, since it will be limited to residential energy users, it will not be as effective as last year's program that included commercial energy customers. Summer time peak energy demand periods are from approximately 10 AM through 4 PM while residential peak use periods are after 5 PM. Last year the City received almost $200,000 in 20/20 energy rebates, but will not be eligible for any rebates as the program is structured this year.

Regional Baseline Energy Rate Structure

The California Public Utilities Commission (CPUC), on May 2, 2002, authorized climate zone changes for residential gas and electric users in California. As directed by the Rules Committee, Assistant Environmental Services Director Robert Epler went before the CPUC on September 10, 2001 requesting modifications to the regional baseline climate zone map initially proposed by SDG&E. The SDG&E proposed map creating four climate zones, (Coastal, Inland, Mountain, Desert) each allowing increasing kWh baseline usage before higher cost per marginal kWh is applied. The SDG&E map, while improving current zones, did not reflect inland conditions existing within large areas of the City. The City's proposed, modified map with new boundaries following Interstate 15 to its intersection with Interstate 805 and then I-805 to the border with Mexico was adopted by SDG&E and approved by the CPUC. Approximately 42 percent of the City's population resides in the newly adopted inland zone and will benefit from the increased baseline and zone changes. The new baseline allowance of 309 kWh, an increase from the previous baseline of 244 kWh, became effective June 1, 2002 for both Coastal and Inland customers to reflect revised average consumption in the region. The Inland zone's baseline will increase further to 359 kWh effective July 1, 2002. The increased baseline usage allowance is important for residential energy users because for Summer 2002 energy rates will increase based on usage with incrementally increased rates for consumption over 130% of baseline allowance, 200% of baseline, and in excess of 300% of baseline.

Whole House Energy Retrofit Program

City Managers Report 02-023 of January 2002, provided information concerning public education and incentive programs submitted by the Energy Conservation and Management Division to the CPUC for funding consideration. The CPUC allocated a total of $110 million of energy efficiency funds, on a state-wide basis, for competitive solicitation for local programs and statewide marketing and outreach programs to reduce long term energy consumption.

The Whole House Energy Retrofit Program will provide a monetary incentive to homeowners of pre-1978 constructed dwellings who retrofit their homes with energy efficient materials and equipment. It provides a sliding scale of incentive payments based on income to boost the participation in the program by hard-to-reach low-income homeowners. The goal is to reduce the overall energy use in older homes in San Diego to offset the energy needed to accommodate the 50,000 new homes expected in San Diego by the year 2020. The program is designed to be completely grant funded with no requirement for City funding.

The City's application was successful, and the CPUC awarded $1.45 million dollars to fund the Whole House Retrofit Program's first two years of operation. Additional funding will be requested from the CPUC after initial program performance is validated. The money allocated by the CPUC for this process is a portion of the public purpose funds paid by each ratepayer. The Investor Owned Utilities (SDG&E) previously administered these funds for the region as a regulated utility until the CPUC decided to seek third party administration for these types of programs. The Energy Conservation and Management Division will develop new program proposals to assist City residents and businesses in dealing with the energy crisis for Council consideration when additional CPUC funding is available and the application process is reopened.

Regional Energy Infrastructure Study

The Regional Energy Infrastructure Study is a six month study undertaken by SAIC to review the electric and gas infrastructures existing and proposed for the San Diego region between today and 2030. The study was funded as a cooperative effort by the City of San Diego, County of San Diego, Port of San Diego, San Diego County Water Authority, SANDAG, UCAN, and the San Diego Regional Energy Office. The study covers electric and gas supply and demand scenarios for the period 2002 – 2030, including an extensive review of regulatory, technical, and economic conditions that impact San Diego's energy future.

The entire Western States Coordinating Council (WSCC) power supply market was modeled based on three growth and natural gas scenarios. The study is expected to be concluded in June and will provide significant information for regional consideration. The study is expected to recommend formation of a regional planning agency to deal with future energy needs in a consolidated manner. Issues very similar to those discussed in a newspaper article authored by Councilman Wear, published in the Union Tribune on May 5, 2002, discussing the Regional Governmental Planning Structure, will need to be confronted. The Council's guidance will be requested concerning the City's and Energy Division's role in developing future energy policy for the region as SANDAG undertakes updating the San Diego Regional Energy Plan in the next year to eighteen months.

Distributed Generation

Distributed generation and renewable energy exhibit great potential as a method to create marginal energy production and establish a reliable local reserve energy capacity to hold down energy market price spikes. The technology that seems to make the most sense for

our region (photovoltaics or PV) is also the most expensive to install. At an installed cost of nine dollars per watt of power production, and only 10 watts of power generated by each square foot of panel, the cost proforma is rarely attractive for overall building electric load offset. These costs do not include battery backup systems that allow solar energy production if the SDG&E power fails (blackouts), so PV is not effective as a power backup system but very effective as a means to reduce peak electrical energy consumption.

Current State legislation allows "Net Metering" of one distributed generation system per electric meter without "exit fees" or "qualifying facility" requirements. This legislation allowing "Net Metering" ends without further action December 31, 2002. Legislative effort to extend "Net Metering" for all distributed generation projects, up to at least 1 MW capacity, would improve project paybacks by reducing costs paid to SDG&E in meeting requirements as a "Qualifying Facility".

Excess power produced by a "Net Metered" generation system "spins the meter backward" and reduces electric cost. Annually, the net of energy consumption and production is zeroed by a balancing payment between the customer and the utility. Power produced on one meter cannot offset any use on any other meter even if the second meter is at the same physical location. Distributed generation systems must sell power into the grid at designated prices and/or meet all the requirements as a Qualifying Facility that is eligible to sell power to the grid (exit fees, interconnection studies, etc. are required).

Typical distributed generation projects range in cost from $2500 to $8000 per KW ($2.50 to $8.00 per watt) of power produced. Significant project financing will be required to install distributed generation as even a small fraction of total City energy usage. Project funding continues to be a significant barrier to rapid progress in pursuing energy efficiency and energy independence.

USGBC LEED – EB

The US Green Building Council LEED program continues to evolve with a new rating system being established for "Existing Buildings". The new standard will evaluate continuing maintenance and operation effectiveness for existing structures. Three City buildings were submitted as candidate pilot program structures to validate the scoring system created by USGBC. All three buildings (Ridgehaven Green Building, Miramar Operations Center, and Carmel Mountain Library) were among the 50 sites selected nationwide for the pilot program. These structures will be evaluated over the next twelve months to establish the US Green Building Council standards for this program.

Environmental Protection Agency

On Earth Day 2002, the U.S. Environmental Protection Agency (EPA) released a list of the 729 most energy efficient buildings in the United States. The City's Ridgehaven Green Building was listed and highlighted, in significant detail, as the first "Energy Star" building in the United States.

CONCLUSION

Energy reliability and cost continues to be a critical issue for the City and State. The City's five point strategy for pursuing Goal #9 (manage City use, conserve energy, enhance energy efficiency in existing facilities, ensure energy efficiency in new facilities and develop self-generation of energy using renewable resources) is working as demonstrated by the 15% reduction in energy consumption this year compared to 2000. Continuing and increasing these efforts in energy conservation and energy efficiency will further improve the City's pursuit of Goal #9. Energy conservation still remains the most cost effective method to control the City's cost of electric energy and will be aggressively pursued during Summer 2002.

Respectfully submitted,

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Approved:

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