County of Santa Clara

General Services Agency
Administration

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Date: September 18, 2002

To: Supervisor Pete McHugh, Chairperson
Supervisor Jim Beall, Vice-Chairperson
Finance and Government Operations Committee

From: G. Kevin Carruth, Director
General Services Agency

SUBJECT: Energy Task Force Status Report and Recommendations (FGOC Agenda Item 12.)

RECOMMENDED ACTION

1. It is recommended that: Finance and Government Operations Committee (FGOC) accept the following reports and recommendations:

- Santa Clara County Cool Roof Program
- Pacific Gas & Electric Energy Audits
- Chevron Energy Audits
- Santa Clara County Energy Conservation Program
- Power Meters and Enterprise Energy Management System
- VMC-Co-Generation Plant – Peer Review (Also see FGOC Agenda Item 10.)
- Solar and Alternate Energy Sources
- Green Building Standards
- Heat Island Reduction
- Potential Legislative Initiatives Related to Energy-Efficient Office Equipment
- Energy Efficiency Standards for County Building Designs and Equipment Purchases
- General Plan Policies and Zoning Regulations Regarding Power Plant Siting and Impact of New Power Plants on Specific Neighborhoods
- Implementation of Long-term Public Educational Strategies

2. Require GSA to report on energy conservation annually, in the spring, prior to the annual budget hearing presentations.

FISCAL IMPLICATIONS

There is no impact on the General Fund as a result of this action.

CONTRACT HISTORY

None.

REASONS FOR RECOMMENDATIONS

The General Services Agency (GSA) was directed to provide semi-annual updates to the Board of Supervisors relating to the implementation of the Enterprise Energy Management System (EEMS); County energy conservation and additional methodologies for conserving energy and obtaining rebates.

Recent forecasts of energy supply and demand generated by a growing economy over the next decade indicate that conservation efforts will continue to be required. In order to achieve this conservation, it appears that grant and rebate programs will continue to be an important inducement for conservation actions in both the private and public sector. Continued aggressive efforts on the part of the County, as indicated in this report, will be required in order to identify applicable projects and programs and to achieve successful reimbursements to offset some project costs.

Due to budget cuts, GSA is reducing staff in Building Operations, Procurement and the GSA Administration – Energy Unit. Producing this report annually for the budget rather than bi-annually which will reduce administrative workload, and provide important information at a time when it can be acted upon by the Board.

BACKGROUND

The final report of the Board's Emergency Energy Task Force (EETF) was accepted by the Board of Supervisors on December 4, 2001.

The General Service Agency (GSA) was assigned the broad task to identify policy recommendations for the Board to consider relating to conservation and generation of renewable and non-renewable energy resources for the County and for County facilities.

Energy Conservation Focus in 2001

In Santa Clara County, strong initiatives were taken by the Board of Supervisors and the Board's Emergency Energy Task Force (EETF) to address the energy crisis from a number of perspectives -- short-term actions which would implement a 20% reduction in power consumed by County facilities; long-term policy initiatives which would lead to reduced need for energy through construction, retrofit and procurement decisions, and employee and public education campaigns to reduce energy consumption and provide information about assistance programs.

Many energy efficiency projects had been undertaken as part of prior-year maintenance and retrofit plans funded through the GSA Facilities Department Building Operations Division operating budget or Backlog Program capital funds, or through the Approved Capital Budget as major renovations. For FY02, GSA created 533 individual work orders to correct lighting controls, 423 of which are completed and 110 are in the process of being completed.

A total of $291,201 in rebates has been received to date.

As a result of the County's conservation efforts in 2001, GSA submitted nominations for the County of Santa Clara for the following two awards: Flex Your Power Energy Award and the 2002 Governor's Environmental and Economic Leadership Award.

The Flex Your Power Award program is a program developed by the California Power Authority to recognize energy conservation and efficiency measures taken by businesses, professional and trade associations, state, regional and local governmental entities as well as community-based organizations operating in California. The program submitted recommended by the EETF and endorsed by the Board of Supervisors with its broad goal to identify policy recommendations relating to conservation and generation of renewable and non-renewable energy resources of the County and for County facilities. The County of Santa Clara did receive recognition for the conservation efforts made. (See Attachments 9 and 10.)

The 2002 Governor's Environmental and Economic Leadership Awards honor individuals, organizations, and companies whose achievements are outstanding examples of environmental protection, resource conservation and economic progress. The selection committee will evaluate applications for strength in six areas: results, transferability, environmental impact, resource conservation impact, economic progress and innovation/uniqueness. As of this report, notification of recipient(s) has not been received.

Both of these award applications were submitted for achievements either undertaken and/or completed in FY02.

Energy Conservation Activities in 2002 and Funding Sources

The outlook for continued energy efficiency program incentives is positive. As PG&E is the largest holder of County accounts, that is the focus of this report; however, the County is actively working with representatives from various utilities to ensure that any new rebate or grant programs are evaluated for applicability in FY02 and beyond. Proposals by utilities have been submitted to the California Public Utilities Commission (PUC) for review and approval. Because the total authorization proposed for utilities was decreased in order to implement a new series of local programs, which would mirror utility programs, the PUC program has been challenged by the larger utilities. The County will look to identify ongoing projects that can be claimed under any new programs offered in FY03. Among various programs offered, the four that appear to be promising for County action are Energy Audits, Savings by Design, Express Efficiency, Express SPC programs and the Small Commercial and Industrial (SC&I) Demand Responsiveness Program.

Energy Audits - As previously authorized by the Board of Supervisors, the GSA Building Operations Division concluded negotiations with Chevron Energy Solutions for energy audit and engineering solutions. This contract is expected to provide more significant energy savings recommendations. The focus of work under this contract will be the larger energy-consuming facilities maintained by GSA.

Savings by Design - This program has been proposed to continue in FY03. The program encourages energy efficient design that exceeds the minimum Title 24 Building Code requirement by 10% or more. The savings may be calculated either by building systems (which will offer design assistance and owner incentives based on annual savings up to $75,000) or a whole building approach (which will offer owner incentive up to $150,000 and design team incentive of $50,000 maximum).

Express Efficiency - This program has been extended through October 15, 2002. Because this program is based on reimbursement for approved costs (subject to verification by PG&E that the improvements have been made), it is one of the simplest of the rebate programs to use. Other projects will be investigated for funding under this program, as the FY03 and FY04 levels of funding are approved.

Express SPC (Standard Performance Contract) - This program is a pre-approval, performance-based program. The new program is touted as having been streamlined and designed to encourage additional energy efficiency for retrofits.

The Small Commercial and Industrial (SC&I) Demand Responsiveness Program is a peak load reduction program, which requires that energy users be able to commit to peak load reductions and to verify curtailments when requested to limit consumption. This program is limited to customers with peak electric demand between 50kW and 200kW during the most recent 12 months. There appears to be some flexibility in this, as a set of facilities at a common location may define eligibility for this peak demand. Power metering will be necessary to track compliance and to ensure that the contractual reductions can be met.

STATUS REPORTS

Santa Clara County Cool Roof Program

On June 8, 2001, the EETF requested information from GSA regarding the installation of cool roofs in the County facilities. (Attachment 1 is the report on the Cool Roof Program and contains spreadsheets that show what cool roofs have been installed and what cool roofs are scheduled.)

For FY02, GSA installed six (6) cool roofs and is in the process of completing the remaining building. For FY03, GSA has scheduled seven (7) cool roofs to be installed and for FY04, GSA has scheduled an additional seven (7). Over the past seven years, GSA has installed over 25 cool roofs. The multi-year cool roof installation program is currently on schedule, but future budget cuts may impact that plan.

Pacific Gas & Electric Energy Audits

On May 1, 2002, GSA requested that PG&E conduct energy audits on nine (9) County leased facilities. These audits are being performed by PG&E at no charge and will give the County valuable energy savings information for these facilities (see Attachment 2 for the listing of facilities included).

PG&E has audited four of these facilities, and has identified potential energy savings projects with estimated energy savings. GSA is in the process of evaluating PG&E's audit results to estimate implementation costs. If energy savings and return on investment are acceptable, GSA Property Management will then proceed to consult with property owners regarding project implementation.

Chevron Energy Audits

On February 27, 2002, the County of Santa Clara entered into an Energy Audit Agreement with Chevron Energy Solutions (CES) to provide energy audit services for County owned facilities. This was done as the result of the energy crisis that impacted the State of California in 2001, and at the recommendation of the EETF.

The County selected CES through a Request For Proposal (RFP) process, which included several energy solutions providers. A contract was established with CES to address Phase One of a two-phase energy conservation program.

Phase One: Phase One of this program covers the performance of energy audits on selected County facilities and identifying feasible energy conservation measures. The identified conservation measures are in the form of energy conservation projects, mostly related to alteration or replacement of energy inefficient facilities' systems, and include preliminary and detailed analysis (i.e., project costs, energy savings, payback, etc.) for each proposed measure. The detailed analysis is a second, more in depth analysis of the measures selected by GSA from the preliminary list of CES proposed measures.

GSA, in conjunction with CES, has developed a list of facilities to be audited and has categorized them into six groups. These groups are listed on Attachment 3. The total square footage to be audited is over 3.6 million square feet and covers approximately 145 buildings.

CES has completed the preliminary audits on Groups One and Two, and has developed and presented a detailed analysis for the GSA selected Group One measures. Group Two detailed analysis for the GSA selected measures are in the process of being finalized by CES.

Phase Two: Phase Two of the energy audits program involves the implementation of the GSA selected energy conservation measures resulting from the energy audits performed by CES. Building Operations will complete some of these conservation measures, and others will be completed via contract work. Funding for the identified measures will come from various sources; part from the Capital Budget Energy funding, and a part from Building Operations' Backlog Program funding. It is expected that some measures will not be funded during the current fiscal year; these will be put in queue for future funding as it becomes available.

It is important to know that thus far, proposed measures by CES include capital improvements, not covered under the Backlog Program funding. One example of such a measure would be the addition of self-contained power generation micro-turbines ranging from 100KW to 300KW. These units are intended to shave down the power demand baseline thus reducing the peak demand. These types of energy projects will need to be funded through programs such as the Energy fund established by the Board for the first time in the FY2003 Capital Budget.

CES is in the process of developing a proposal to be submitted to the County, which would allow them to perform a "design/build" for the contracted work. CES's proposal will be based on the California Government Code section 4217.10 through 4217.18, which allows for "design/build" of energy conservation related projects. Building Operations is currently working with County Counsel in developing the contract documents for this design/build concept. The contract will be brought to the Board of Supervisors for review and approval prior to the initiation of the projects.

Santa Clara County Energy Conservation Program

On June 8, 2001, the EETF requested that GSA establish and manage the County Energy Conservation Program that consists of managing energy conservation projects and work orders. (Attachment 4 is the report of all the affected buildings in the County where the return on investment is favorable.)

For FY02, GSA created 542 individual work orders to correct lighting controls, 430 of which are completed and 112 are in the process of being completed.

Included in the above report are 31 work orders where the GSA's janitorial staff have identified locations where they have observed lighting fixtures that needed attention, e.g., lights that are on 24 hours a day without an on/off switch and opportunities to better manage lighting with motion detectors. Building Operations has completed 19, and 12 are in the process of being completed.

The cost to date to accomplish the 430 work orders was $2,784,866.

The projected at completion savings in energy per year is in excess of 5,141,584 kWh.

Assuming a cost of $0.12 per kWh the County of Santa Clara will save $616,990 per year.

Power Meters & Enterprise Energy Management System

On June 25, 2002, the Board of Supervisors approved the Power Meter Installation project by awarding the contract to Control Manufacturing Company (CMC). This project was approved as Phase One of a Two Phase program, which would complete the County's Enterprise Energy Management System (EEMS). The EEMS is the overall system that will give the County the ability to properly manage and control its electrical utilities, and the potential to participate in energy rebate incentive programs.

Phase One: GSA, in coordination with CMC has identified 69 power meter installation locations. Originally, the County had identified the need for 73 power meters, but further investigation with CMC concluded that only 69 power meters would be required to accomplish Phase One (see Attachment 5 for a list of power meter installation locations). Phase One covers the installation of these meters and their integration to an existing front-end Meter Management software system.) This Meter Management system allows the County to track and record power demand and consumption, but is limited as to load curtailment functions, and data analysis functions that facilitate utilities management – these later functions will be addressed in Phase Two with the installation of the EEMS software package. Curtailment functions would include such operations as turning off preprogrammed lighting, or turning off or reducing usage on other building systems like HVAC.

Phase Two: EEMS, which is planned as part of Phase Two, will integrate the Real Time Power Meters currently being installed, into a front-end energy management software system that will allow the County to monitor and trend its power consumption on a real time basis and analyze the data for quality and utility management purposes. A third component that will be integrated to the EEMS will be computerized building systems (e.g., programmable lighting, HVAC); these systems will be automatically or manually (part of the system configuration selectable by the user) curtailed upon demand in the event of a Stage 2 or 3, and the results will be recorded by the power meters. This Phase will also include the installation of additional power meters in some of the County's smaller facilities not included in Phase One.

The EEMS will give the County the ability to potentially tap into "Demand Reduction" programs currently being offered by various state and local utility agencies (e.g., California Energy Commission, California Power Authority, PG&E). Demand Reduction programs provide energy rebates to businesses, including public agencies, for reducing peak load demand during peak demand time periods or during Stage 2 or Stage 3 CAISO alerts.

Integrating the power meters, the energy management system, and the computerized building systems will give the County the ability to curtail its electrical consumption on demand. However, there will be some initial EEMS limitations because the majority of the County facilities do not have computerized lighting controls or HVAC control systems that allow for easy integration. These building systems however, are being installed, and will continue to be, as part of GSA's Backlog Program and Capital Improvement projects. As new computerized building systems are installed, they can be integrated to the EEMS providing the County with yet more opportunities to save energy and participate in the energy conservation rebate programs.

<u>Valley Medical Center – Co-Generation Plant Peer Review</u>

FGOC directed GSA to manage and fund the Engineering Peer Review of the feasibility study for the Co-Generation Plant being proposed by VMC for the hospital campus. GSA retained the engineering firm of Kuhn & Kuhn and they have completed their peer review of the VMC Co-Generation feasibility study (Attachment 7).

The peer review by Kuhn & Kuhn recommends that the County should accept Cupertino Electric (CEI's) addendum to the VMC Co-Generation Study as a realistic estimate of the costs and savings from the proposed systems under the assumptions detailed in their report.

The VMC Co-generation report will be presented by VMC.

<u>Solar and Alternate Energy Sources</u>

At the direction of the EETF, GSA hired Kuhn and Kuhn to develop a report on alternative energy sources. The report (see Attachment 6) contains descriptions of alternative energy sources, the pros and cons, and whether incentives are available for the application.

This Kuhn and Kuhn report includes solar electric, solar thermal, co-generation, wind, geothermal, hydroelectric, biomass - bioenergy, and fuel cells as alternative energy sources. GSA will evaluate the possible use of such alternative energy sources in new County facilities.

It is recommended that the County of Santa Clara accept the Kuhn and Kuhn Solar and Alternative Energy Resources Report and direct GSA Capital Programs to incorporate an analysis of alternative energy measures in the performance-based approach to establish energy efficient standards for construction of new facilities and new leased facilities (such as the recent Social Services Agency Office buildings on Julian Street), when feasible, for the leasing of built facilities.

Green Building Standards

The Administration was directed to study and make recommendations on the implementation of "Green Building" standards for private developments in unincorporated County, as well as construction or improvement of buildings owned or leased by the County. The revised (December 1992) California Building Code for Energy Conservation, which incorporates many of these concepts, is applicable to private development and was published in 2001, will be presented to HLUET by the County's Environmental Resources Agency (ERA) in September, 2002 and subsequently to the Board for review and adoption as part of a larger set of Building, Fire and related Code amendments.

Heat Island Reduction

The Administration was directed to study and make recommendations on Heat Island Reduction that primarily focuses on street pavement and identifies gaps in County regulations and policies covering private developments in unincorporated County, as well as construction or improvement of buildings owned or leased by the County.

Certain street applications, particularly portland cement concrete (PCC) pavements, have the potential to reduce the effect of heat islands. For example, in the case of the City of San Jose's street maintenance program cited by Dr. Hashem Akbari from the Lawrence Berkeley National Laboratory in the December 4, 2001 EETF report to the Board, the City does not apply a topcoat (either a fog seal or a slurry seal) over a chipseal, which results in a finished surface that is light gray (the color of the crushed granite aggregate used for a chipseal) and not black. However, the selection of a particular road maintenance treatment is influenced by a number of technical and other factors and those factors often outweigh the heat island considerations.

For example, PCC pavements are not justified from a technical and financial perspective on most County roads, the heat island considerations notwithstanding. Virtually the entire County road system consists of asphalt concrete (AC) pavements. The Roads and Airports Department is moving towards the greater application of slurry seals on top of chipseals in residential areas in response to demands from residents for a smoother surface texture as well as to provide a more durable and cost-effective surface treatment.

Potential Legislative Initiatives Related to Energy-Efficient Office Equipment

The Administration was directed to explore the concept of two related State legislative initiatives: a) establish a Statewide process whereby specific categories of equipment and supplies would receive energy efficiency ratings: and, b) provide either rebates and/or subsidies to the higher rated energy efficient equipment and supplies.

Energy Star was introduced by the US Environmental Protection Agency (EPA) in 1992 as a voluntary labeling program designed to identify and promote energy-efficient products, in order to reduce carbon dioxide emissions. EPA partnered with the US Department of Energy in 1996 to promote the Energy Star label, with each agency taking responsibility for particular product categories. Energy Star has expanded to cover new homes, some commercial equipment, residential heating and cooling equipment, major appliances, office equipment, lighting, consumer electronics, and more product areas.

Through use of the EPA Energy Star program, local governments can identify energy efficient equipment and can also obtain information on potential subsidies and financing options available when purchasing new, higher rated energy efficient equipment. Currently, there are Energy Star-compliant products available for almost any type of office equipment. Examples of available products and the typical amount of energy they save are attached (see Attachments 11 and 12).

The Energy Star program also establishes fiscal incentives for government agencies. Purchase of higher rated energy efficient office products can be subsidized through various financing mechanisms. The two most common public sector subsidy mechanisms are tax-exempt lease purchase agreements and performance contracts. Information on subsidy options is also attached to this memo.

Energy Efficiency Standards for County Building Designs and Equipment Purchases

As directed by the Board of Supervisors, the following Energy Efficient Standards continue to be explored for the future benefit of the County (see Attachment 8).

Savings by Design: A program sponsored by a consortium of energy providers through out California. Participants include: PG&E, San Diego Gas and Electric, Southern California Edison, and Southern California Gas Company under the auspices of the PUC.

"Savings by Design" offers design assistance to building owners, owner incentives to offset the cost of energy efficient buildings, and incentives to design teams who meet energy efficient targets.

A consultant is assigned at the initial design phase of a project to assist and evaluate the design efficiency. Targets are set and compensations are encumbered for a period not to exceed three (3) years. The project is monitored though out the duration and then evaluated when complete. The incentives are then distributed based on the performance targets of the design.

The program is funded again this year and is being discussed for possible opportunities.

Energy Efficiency Standards for County Building Designs and Equipment Purchases: The attached report (see Attachment 8) is to establish energy efficiency standards for building designs, and to consider the direct energy use impact as a formal criterion in purchasing decisions relating to buildings, facility space leases, equipment and supplies that use energy.

This report includes performance-based energy standards for facilities acquisition, when building or leasing facilities. The County goal, when acquiring new facilities, would be to meet and exceed the California Title 24 Building Code energy standards reduction in facility energy consumption.

The report is a three-pronged approach to facilities acquisition: 1) Making energy efficiency expertise a key criteria in selecting design consultants for building projects; 2) Incorporating a design goal for new facilities to meet and exceed Title 24 energy consumption; 3) Conducting independent energy analysis, and performing peer-review, when designing new County buildings, as well as when leasing buildings, when feasible. This caveat is applied to leasing buildings, because some buildings that are leased by the County are already fully constructed, with all utility and energy-consuming systems in place. Therefore there would be limited, or no opportunity, to implement upgraded energy features in the building. Lease decisions are generally driven primarily by programmatic needs--location and space requirements—and by other important considerations such as cost, but GSA will also factor the energy conservation potential into the selection process wherever possible.

General Plan Policies and Zoning Regulations Regarding Power Plant Siting and Impact of New Power Plants on Specific Neighborhoods

The ERA Planning Office has not received any requests for power plants and therefore has had no opportunity to review for the potential impact on neighborhoods. Due to the volatile energy market no new power plants are being requested to be built at this time. Should that need arise, the Planning Department will provide a report regarding a review of the proposal and its impact on the proposed locale.

Implementation of Long-term Public Educational Strategies

In concert with other organizations, the County Executive's Office of Public Communication will plan Energy Awareness and Conservation Days in Santa Clara County; prepare periodic Energy Updates for ComLine; and provide updated information for the County's Energy Update web page.

CONSEQUENCES OF NEGATIVE ACTION

There will be no operational impact on energy conservation programs if the FGOC does not accept this report.

STEPS FOLLOWING APPROVAL

The Clerk of the Board of Supervisors will forward one conformed copy of this transmittal to the :

General Services Agency, Administrative Services Division, 701 Miller Street, San Jose CA.
Health and Hospital System, Duane Oberquell
Environmental Resources Agency, Tim Chow
Roads and Airports Department, Michael Murdter
County Executive's Office, Intergovernmental Relations, Katie Brown
County Executive's Office of Public Communications, Gwen Mitchell

ATTACHMENTS

Attachment 1: Cool Roof Program Memo
Attachment 1a: Completed Cool Roof Projects
Attachment 2: PG&E Leased Building Energy Audits
Attachment 3: Chevron Energy Audits
Attachment 4: Potential Energy-Related Projects for 2002 and Subsequent Years
Attachment 4a: Energy Work Order Report
Attachment 5: Power Meter Installations
Attachment 6: Solar and Alternative Energy Resources Report
Attachment 7: VMC – Central Energy Delivery System Study Addendum
Attachment 8: Energy Efficiency Standards for County Building Designs and Equipment Purchases Memo
Attachment 9: Flex Your Power Letter
Attachment 10: Flex Your Power Certificate of Recognition
Attachment 11: Energy Star Products
Attachment 12: Energy Star Subsidy Options