



ad hoc
Alternative Energy Committee
Report

January 29, 2009

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Executive Summary

Committee Mission

The Golden Rain Foundation Trust (GRF) Board of Directors authorized the establishment of the ad hoc Alternative Energy Committee to investigate and research opportunities for use of alternative energy for GRF properties.

“It is the mission of the ad hoc Alternative Energy Committee to conduct research about alternative energy options and opportunities which may be applicable to GRF Operations. Furthermore, it is the mission of the ad hoc Alternative Energy Committee to make recommendations to the GRF Board of Directors as to alternative energy projects which, in the Committee’s view, should be considered by the GRF Board of Directors for implementation in order for the GRF to cost effectively reduce its dependence on traditional energy resources. The committee will invite the Mutual Boards to participate in this effort to maximize the potential benefits to the members.”

Thanks to the participants

The Committee wishes to acknowledge the people that have provided time, effort and information to the committee during this research effort.

Committee Members:

Art Dreshfield	Frances Tittman	Ed Addison
Tom Martin	Joe Stadum	Walter Moeller
Stuart Bolinger		

Sub-committee Members:

Ken Haley	Bob Hanson	Jack McVicar
Peter Cortessis	Cy Harshman	

Liaison Personnel:

GRF: Phoebe Cortessis
Mutuals: Pauline Kelzer

Rossmoor Residents:

Thanks to the residents that provided information and articles

Rossmoor Employees:

Thanks for the information and support provided

Our Approach

- Conducted walk-around inspections of GRF properties and fact findings
- Compilation of potential energy savings opportunities
- Met with GRF employees (obtained usage info, maps, advice)
- Conducted internet research of alternative energy options
- Contacted UC Berkeley & UC Davis
- Contacted Walnut Creek and Contra Costa County officials
- Contacted State Senators and Congresswoman
- Contacted PG&E
- Contacted Contractors & Vendors
 - Borrego
 - BP
 - Chevron Energy Solutions
 - ECO Friendly Energy Company
 - Honeywell
 - Moore Mechanical
 - RECurrent Energy
 - Snow Solar Systems
 - Solar City
 - SunPower
 - Ultra Lighting

Alternative Energy vs. Energy Savings

Our mission was to research possibilities for alternative energy. We have done this. We have researched the possibility of solar heating for the swimming pools, the possibility of using wind turbines to generate electricity and the possibility of constructing a photovoltaic (solar farm) installation to generate electricity. None of these three alternatives seem viable for Rossmoor at this time. We have provided details of our findings in the ‘Challenges’ section of this report.

What we did find was that there are some immediate actions that can be taken that will help us reduce the amount of electricity that we use for the GRF Trust properties and lower our annual electric bill.

Recommendations & Benefits Summary

Immediate Savings

1) GRF Lighting Upgrade & Motion Detector Project

The most significant impact that we found would be to upgrade the GRF buildings lighting. This project will save \$34,321.86 per year.

2) PG&E Rate Changes

PG&E has proposed the change of rates for two of the electric meters. This would amount to about \$5,800 per year savings.

3) Other projects that will reduce our energy consumption include:

Regular servicing of HVAC units,

Replacing worn or broken seals on refrigerators and freezers,

Increase attic insulation and ventilation in the Gateway craft rooms and multipurpose rooms, and

Instituting policy and procedure changes for use of GRF facilities.

Potential Long Term Savings

The ad hoc Alternative Energy Committee found during our research that there are several potential alternative energy projects that may provide energy savings for GRF; however, we do not possess the necessary technical expertise to properly evaluate the alternatives.

We have worked with Honeywell Corporation and Chevron Energy Solutions during our study of energy alternatives and have received a high-level report from Chevron Energy Solutions that identifies projects that the GRF Board of Directors may want to pursue. In order to do this Chevron Energy Solutions has proposed to do a Detailed Energy Study for GRF. Chevron has proposed that this study will cost \$50,000. If they do not identify energy savings of at least \$ 50,000, this fee would be waved. Some of the projects that they will research will include:

Installation of Variable Speed Controllers for Pool Pumps

Install CO2 Sensors in Large Meeting Rooms Control HVAC

Determine Alternatives for Heating Swimming Pools (CoGen?)

Assess HVAC Requirement for Dollar Pool Dressing Rooms

Evaluate Replacing Pilot Lights vs. Replacement of Gas Stoves

Evaluate Possibility of Photovoltaic Systems for Electricity Generation

Assess Upgrade of Existing Old HVAC Systems

Installation of Energy Management Systems

Identify Other Energy Savings Opportunities

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The ad hoc Alternative Energy Committee recommends that the GRF Board approves this recommendation and directs the GRF management to meet with Chevron to determine whether GRF Management believes this is a worthwhile endeavor.

Recommendations for Energy Cost Savings Actions

Lighting Upgrade and Motion Sensor Installation

Ultra Lighting has conducted a detailed inventory of the existing interior lighting in the GRF buildings and put this inventory information into the PG&E energy rebate computer program. Based upon the estimates for that program it would cost about \$60,000 to upgrade the lighting and install motion detectors to shut off the lights when rooms are not occupied. It is estimated that the PG&E rebate would be about \$39,000 leaving a cost to GRF of about \$20,000. This would provide an annual energy savings of \$34,000. The return on investment based upon these estimates would be just over one-half of one year.

The process for doing this would involve PG&E funding the Business Energy Services Team (BEST) Program for 2009. Then the Kema Consulting Company would come out and audit the inventory that Ultra Lighting has documented to confirm the estimated energy savings. They would confirm this to PG&E and then PG&E would authorize the project rebate. PG&E would pay the rebate amount directly to the lighting contractor when Kema confirms that the work has been completed.

This rebate is based upon a set of assumptions. The major assumptions are:

- At least 103 of the 114 GRF interior lighting locations will be upgraded.
- The current four tube T12 florescent units will be replaced by two tube T8 florescent units with reflector devices that provide more lumens of light than the older T12 lighting units and consume less energy.
- Some lights may be removed and not replaced (such as those over the hood in the lapidary shop).
- The replacement of the T12 lights will also include the replacement of the older technology magnetic ballasts. The T8 units light units have more efficient electronic ballasts that consume less energy.

It is important to understand that GRF should not be replacing current lighting in a piecemeal fashion, since this will erode the energy savings rebates to be earned by completing the entire project.

Change Selected Electric Meter Rates For Better Pricing

The PG&E representative has run a PG&E computer program to compare electricity rates and has recommended that we change two of the meters to different rates to lower our energy costs.

Meter 84P275 – Golf Store, 1010 Stanley Dollar Drive - Savings \$5,212.

Meter 9T5597 – News Paper Office, 1006 Rossmoor Parkway – Savings \$656.

Regular Maintenance Improves Efficiency

Replace old calcified and detached evaporation pads on Del Valle HVAC System

The unit that feeds fresh air into the heating, ventilation and air conditioning (HVAC) System at the Del Valle Complex has vertical evaporation pads on three sides of the intake unit that have water flowing through them. Air is sucked through the wet pads and the evaporation cools the air. This system is compromised because all three pads are heavily calcified and are detached at the top of the unit. This significantly affects the efficiency of the unit.

Replacing these pads and ensuring proper attachment will increase the efficiency of the unit and reduce the electricity consumed to cool the Del Valle Complex.

Replace old calcified water pads on swamp coolers at vehicle repair shop

The evaporation coolers at the MOD vehicle repair building need to be maintained properly. The vehicle repair bay at MOD has four old 'swamp coolers.' The evaporation pads on these units are very heavily calcified. In order to improve the efficiency of these units these pads should be replaced. We recommend that a qualified HVAC contractor provide an estimate of the cost / benefit to replace these units with more modern and more efficient cooling systems.

Ensure on going preventive maintenance

A regular maintenance schedule should be followed in which all air conditioners and heat pumps get regular inspection and maintenance to ensure maximum operational efficiency.

Add Attic Insulation and Attic Ventilation

The multipurpose meeting rooms and craft shops at Gateway have minimal insulation in the ceilings. Install sufficient insulation to bring these rooms up to current energy efficiency levels. Ensure that all attics have proper ventilation.

Installation of Device for Controlling Energy Usage in Vending Machines

Installation of energy usage controllers for the vending machines will reduce energy consumption by about 25%, depending upon usage patterns. This device reduces the energy consumption during the off-peak hours. The 'VendorMiser' has been recommended for the vending machines.

Improve Efficiency of Refrigerators and Freezers

- Several of the refrigerators and freezers have worn or broken seals. These seals should be replaced.
- Some of the very old and seldom used refrigerators may be considered for removal or replacement. One example is the refrigerator in the back hallway of the Fireside Room kitchen.
- Investigate the options for installation of energy usage controllers for refrigerators and freezers that are not used on a daily basis. Perhaps a 'CoolerMiser.' This device is like the 'VendorMiser' that we have recommended for the vending machines.

- Provide set up and clean up procedures for kitchens to include cleaning and turning down Refrigerators & Freezers when empty and not in use.

Immediate Cost Savings or Cost Avoidance Findings

Basic things we can all do!

- Turn off lights when leaving empty rooms
- Adjust the temperature of heating and AC in empty rooms
- Close doors and windows when A/C or heating is running
- Do not leave outside lights on during the daylight hours
(Dollar Clubhouse, Dollar Jr, Gateway Utility Room)

Recommend a Procedure to Conserve Vehicle Fuel

We recommend a procedure that requires vehicles to be turned off (No Idling Procedure) when vehicles are unattended. Studies have shown that anytime that a vehicle will be idling for 30 seconds or more it is worthwhile to shut off the engine. This procedure would apply to empty vehicles (i.e., buses waiting to begin bus routes, trucks performing maintenance tasks, etc), not buses waiting with passengers.

Mandate All Future GRF Building Construction or Renovation Projects Include 'Alternative Energy' Solutions

We recommend that the Board require all future construction or renovation projects to include “alternative energy” and energy conservation alternatives and solutions.

Create a Permanent Alternative Energy Committee

Our research has indicated that alternative energy technology continues to be improved and that new techniques for energy efficiency and cost savings are coming to the market place. We encourage the Rossmoor Board of Directors to make the Alternative Energy Committee a permanent committee to continue to investigate alternatives for conserving energy and reducing costs for GRF energy.

Authorize on going publications in Rossmoor news to increase energy conservation

A permanent Alternative Energy Committee could routinely publish information for the Rossmoor community in which we encourage them to become energy conscious and adopt energy saving practices.

Consider the Walnut Creek City Municipal and Community Actions

Rossmoor is part of Walnut Creek and the City has initiated and or completed many actions regarding energy and energy conservation. We recommend that these be considered as part of the Golden Rain Foundation Energy Policies and Procedures. These actions are included in the appendix.

Larger Investments May Provide Worthwhile Payback

Hire A Professional Firm To Develop Specific Details For Long-Term Energy Savings Alternatives

The ad hoc Alternative Energy Committee has invested time and energy in the research of alternatives for GRF, however, we do not have the technical expertise required to make accurate assessments and recommendations on some of the more complex energy projects. Therefore, it is our recommendation that GRF engage a professional energy management firm, such as, Chevron Energy Solutions, to investigate and recommend actions for these major projects.

The Chevron team has recently completed the three campus Photovoltaic System implementation of a 3.2-megawatt solar system and energy efficiency improvements expected to save Contra Costa Community College District (Diablo Valley College, \$70 million over 25 years.

The Chevron team includes staff members that are LEED[®] Certified. LEED[®] is The Leadership in Energy and Environmental Design (LEED) Green Building Rating System[™]. It encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

Some of the projects that Chevron could evaluate include:

Installation of CO2 Sensors in HVAC System to Manage Airflow & Temperatures

This system will monitor the CO2 level in the large meeting rooms and activate the heating or air conditioning systems only when required to maintain the designated temperature. This would reduce heating and cooling costs when the room is not occupied.

Investigate Implementation of 'Energy Management System' For All GRF Facilities

This system will monitor the electrical systems and allow predefined heating and air conditioning settings based upon time of day and day of the week.

Photovoltaic (PV) Electric Generation to Offset All GRF Electricity Usage

This system could produce electricity to partially offset the electricity purchased from PG&E. There are some significant issues to be resolved before a decision can be made regarding a PV system for GRF. System size and cost are factors. Determination of the proper size system and the placement (such as Gateway Plaza

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parking lot) requires expert technical assessment. Chevron Energy Solutions has initially studied this and proposed that GRF continue the investigation into the installation of 250-kilowatt system in the Gateway Plaza parking lot and a 400-kilowatt system north of Rockview for MOD electricity.

A major issue concerning the construction of a photovoltaic generation system in Rossmoor is the concept of 'Net Metering.' The current PG&E policy of Net Metering only allows for alternative energy production to offset the power consumed from one meter. GRF has 22 electric meters and it is not practical to build a PV system for each meter. Recent legislation has been proposed that would allow 'virtual consolidation' of electric meters owned by one PG&E customer and then the PV System could be used to offset the combined electricity usage of all consolidated meters. Our understanding of this new legislation is that this option is only available to a 'municipality.' Therefore, we recommend that legal advice be obtained to determine whether for the purpose of Net Metering, Rossmoor could be classified as a municipality.

Photovoltaic electric generation to offset Golf Cart Recharging Costs

The Creekside project includes a golf cart storage and repair area. It is our recommendation that serious consideration be given to inclusion of a PV system to offset the costs for recharging the electric golf carts.

Solar or Co-Gen Heating for Pools

We have investigated the possibility of constructing solar water heating systems for the three Rossmoor swimming pools. Preliminary research indicates that Hillside and Dollar pools do not have adequate open sunny area to allow a solar water heating system.

Del Valle has adequate space on the roof of the Sierra Room; however, preliminary assessments indicate that the building is not structurally strong enough for the additional weight of a solar water heating system. Please review our detailed narrative about solar water heating in the appendix.

Another option for heating the pools would be a 'CoGen System.' The assessment of the viability of such a system for any of our pools will require specialized expertise.

Possible Variable Frequency Controllers for Pool Pumps

These systems will monitor the requirements of the pumps that circulate the water in the swimming pools and only run the pumps at the speed required, thereby saving energy and extending the life of the pumps.

Investigate Possibility of Converting Gas Pilot Lights to Spark Igniters

The commercial stoves in Hillside, Del Valle and Fireside Kitchen all use pilot lights. The pilot lights are burning 24 hours per day every day. Del Valle kitchen stove has

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eight burners that use a triple flame, plus two grilles and three ovens each with pilot lights. This is a waste of gas and equally important is the added burden that this places on the air conditioning system during the warmer time of the year. We recommend investigating the possibility of retrofitting the ovens, grills and burners of these three stoves with spark igniters instead of the outdated pilot lights.

If it is not possible to provide retrofit kits to these stoves, we recommend a technical analysis be performed to see if we can justify replacement of the stoves in order to obtain long-term savings on our gas consumption.

Potential Hurdles to Major Reduction in Energy Usage

The PG&E 'Net Metering' limitation for Photovoltaic (PV) generation

Current 'net metering' only allows the reduction of the cost of electricity consumed at a single electric meter. GRF has 22 electric meters. It is not viable to consider building a PV system for each of these meters. It would be beneficial to be able to build one large efficient PV System and offset much of the usage at all GRF electric meters with the electricity generated with that one PV System.

Dispersion of electric meters limits physical meter consolidation

One method to get around the 'Net Metering' limitation is to physically consolidate all GRF electric meters. PG&E is not supportive of this action. It would be very expensive to do this physical consolidation. The physically dispersed location of the current GRF electric meters makes physical consolidation of the meters impractical.

Location of PG&E Sub-station opposite from potential photovoltaic installation

The possibility of connecting a PV System into the GRF electric feeder lines is not practical because the PG&E sub-station is on the west ridge and the highest potential PV System site is on the east side of the valley.

Limitation caused by trees shading areas in which PV systems could be beneficial

The use of PV or Solar water heating systems is limited by the existence of large trees in many locations, such as around the Hillside and Dollar pools and around the Del Valle and Gateway parking lots.

There are severe limitations on the removal of large trees.

Structural limitations for Del Valle roof will not hold solar water heater

The installation of a Solar Water Heating System for the Del Valle pools seems viable, however, the question of whether the roof of the Sierra Room can hold the weight of the water heating system has put a hold on further research about this option. Chevron Energy Solutions has recommended that the possibility of a 'Co-Gen power system' for each of the pools be investigated.

Cost of Photovoltaic Systems

Increased demand for PV Systems over the last few years has driven the cost of PV panels substantially higher. Some estimates are that within 12 to 24 months the cost of these panels will come down substantially as the manufacturing capacity increases to meet the increased demand.

Resources & Websites

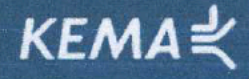
- <http://www.energysavers.gov>
- PG&E – Solar Energy Center (Solar Department) – 877-743-4112
- Websites of Interest
 - California Solar Initiative Website
<http://www.gosolarcalifornia.ca.gov/index.html>
 - California Solar Initiative Handbook
http://www.gosolarcalifornia.ca.gov/documents/CSI_HANDBOOK.PDF
- Other Information of Interest
 - PG&E's book – *30 Simple Energy Things You Can Do To Save The Earth*

Appendix

Lighting Upgrade Explanation

The following document is the first page of the proposal from Ultra Lighting for the estimated cost, rebate and annual savings for the implementation of the Lighting Upgrade And Motion Detector Installation Project. This is followed by an explanation of the process as provided by Ultra Lighting.

Business Energy Services Team



Inventory Summary

Proposal ID: 4445-1; Facility: Golden Rain Foundation; Address: 1001 Golden Rain Road

Select version: v Create New Version

Total kW reduced:	61.28	Total annual Dollars Saved:	\$34321.86
Total annual kWh Saved:	264014.30	Total Project Cost:	\$60476.65
Total annual Therms Saved:	0.00	Total Rebates:	\$39710.77
Total lighting inventory items:	114	Total Customer Payment:	\$20765.88
Total lighting inventory items w/o Replacements Selected:	11	Payback (yr):	0.61
Total other measure items:	0		

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The PG&E 'Business Energy Services Team (BEST) Program' is designed to promote energy efficiency in small businesses. The program is funded by California ratepayers when they pay their monthly PG&E bill, and is overseen at the state level by the California Public Utilities Commission (CPUC). The BEST program is implemented at the local level by Kema, whose offices are in downtown Oakland. The program is designed to promote the installation of energy-efficient lighting, refrigeration, and other measures for small commercial and industrial businesses. Eligible clients must be PG&E customers in East Bay cities, including Walnut Creek.

Businesses participating in the BEST Program receive a no-charge energy assessment to:

- 1) identify potential energy saving opportunities,
- 2) estimate the cost of the project,
- 3) identify the amount of rebate from PG&E,
- 4) calculate the time needed for the client to recover their co-pay via the expected monthly savings on their PG&E bill.

Energy savings retrofit projects can only be performed by a local pre-qualified contractor. Ultra Lighting is a Program approved lighting contractor in the BEST Program, and has access to the Proposal Generation Software that was used to prepare the preliminary retrofit proposal that you now have.

The current retrofit proposal is preliminary only. Several lighting fixtures at Rossmoor are still being reviewed for potential retrofitting, and these additions to the project may change the project numbers. These remaining items consist of the metal halide lights above the Del Valle indoor pool, as well as the Rossmoor owned streetlights. In addition, additional occupancy sensors will likely be needed beyond those that are already noted in the retrofit project. Not including the streetlights, it is possible the project could increase by 10-15% before a work order is created by Kema to allow the retrofit to begin. Please note that it is expected that the instant rebate from PG&E will also increase, and that the payback time should remain relatively the same as it is now.

Though the Rossmoor governing body may find the current project numbers acceptable, and wish to approve of the project in its present form, a pre-installation audit of all items noted in the retrofit proposal must be performed by a Kema in-house auditor before any work can begin. The governing body at Rossmoor must then be notified of any changes to the retrofit project made by the Kema auditor. The new project numbers must then be accepted by Rossmoor before the installation contractor is allowed to begin any work on site. It is also possible to delete individual line items in the project before accepting the rest of the retrofit.

For accounting purposes, only the amount shown as the Total Customer Payment is due at the completion of the project. The Rebate amount is an instant rebate taken off the Total Project Cost, and is paid to the installation contractor by Kema after the client has signed a Project Completion Form and the project passes a post-installation audit performed by a Kema auditor.

Terry Freeman
Ultra Lighting
30093 Ahern Ave.
Union City, CA 94587
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fax: (510)441-8007
www.ultralighting.net

Attic Insulation and Attic Ventilation

We inspected the ceilings of the older Gateway buildings, Dollar Senior House, and Hillside Club Rooms for evidence of insulation.

Our findings indicate that insulation in these buildings varies from zero to six inches, generally roll or bat fiberglass insulation. Many rooms have obviously either inoperable or inadequate attic venting and in many cases displaced or poorly distributed insulation. We believe that low effort maintenance in these buildings will substantially improve ceiling/attic insulation and recommend that it be done as a high priority energy saving effort.

We carried out a systematic inspection of the ceiling/attic spaces of the older Gateway buildings, Senior Dollar House, and Hillside Club Rooms assisted by Mr. Bill Hilt, a maintenance technician, who was made available to us courtesy of Mr. Dan Schrantz. We found Mr. Hilt to be most helpful, very knowledgeable, and cooperative in this effort, and, in fact, the major factor in carrying out and successfully completing this assignment. The work was carried out on September 24, 2008 between the hours of 11 A.M. to 12:30 P.M., on a fairly warm day with temperature ranging in the 90 to 95 degrees F.

Detailed findings are as follows.

SEWING ROOMS: No insulation; some evidence of a lightweight Kraft paper above the ceiling. Some ducts insulated; some (mostly return ducts) not insulated.

CERAMICS STUDIO: four-inch fiberglass insulation; needs to be better distributed for coverage that is more effective. No insulation on ducts.

LAPIDARY SHOP: Insulation similar to that in the Ceramics studio (four inch fiberglass insulation), some missing. Some ducts insulated; some not; again, insulation needs to be better distributed/installed for better coverage.

WOOD SHOP: About 90% coverage with four-inch fiberglass insulation. Needs to be fully covered. Ducts need to be insulated.

ART STUDIO: Open beam ceilings. No insulation. Many single pane windows. Small areas of dropped ceilings could not be accessed (no readily evident access). Dropped ceilings constitute a small part of the overall building.

MULTIPURPOSE ROOMS: MP - 1 and MP - 2: No readily available access evident; therefore, no inspection was attempted.

MULTIPURPOSE ROOM; MP - 3: Four-inch insulation throughout ceiling. Obviously elevated temperature in ceiling to roof plenum (attic). We suspect poor or no ventilation in the space openings seem to be at the base of periphery of the ceiling and they may be blocked by insulation piled against the vents. Roof ventilators may be inadequate or nonexistent. Improved ventilation will considerably reduce the temperature in this space and reduce air conditioning requirements.

We surmised that MP - 1 and MP - 2 ceiling insulation/ventilation conditions are similar to MP - 3 and did not pursue extensive efforts to identify possibly existing access to these spaces.

BILLIARD ROOM: The ceiling of this room has the best insulation with six-inch fiberglass, well distributed over the entire area. This attic; however, again exhibits elevated temperature in spite the existence of a mechanically driven exhaust fan, which is presently, apparently inoperable; it should be promptly serviced.

SENIOR DOLLAR HOUSE: Approximately 30 to 40% of the building ceiling is open beam construction with no insulation. Sixty to seventy percent (two areas of approximately 30 to 35% each) are insulated with three-inch fiberglass insulation. The insulation seems compressed, it is uneven, and needs to be spread and positioned better. Approximately one third of the insulation seems to be one-inch thick fiberglass. Minimal venting is evident and elevated temperatures were observed in the

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ceiling/attic spaces. The ceilings above the Channel 28 and model railroad rooms could not be inspected because these areas were locked and we did not have the appropriate key to access them; we suspect; however, that ceiling insulation in these areas is most likely the same as the ones we were able to inspect.

HILLSIDE CLUB HOUSE: We did a cursory inspection of the ceilings in this area. The Vista, Las Trampas, and Diablo Rooms have cathedral ceilings that are obviously not insulated.

Polystyrene block type insulation may exist below the composition shingle roofing, but such must be determined from actual drawings and/or roof construction specifications. Small areas (kitchen, storage rooms and bathrooms) have dropped ceilings that may or may not be insulated. We did not attempt to enter the ceiling spaces in these areas, mostly because access was either non-existent, difficult to access, or only accessible through rooms with locked doors, the keys to which were not available to us. Since dropped ceiling only constituted only 20 to 30% of the ceiling space, we did not deem them significant enough to merit detailed investigation at this time.

CONCLUSION:

Insulation in the ceilings that we inspected varied from nonexistent (no insulation at all) to very well insulated (six inches fiberglass insulation). In various instances, the insulation has been disturbed, probably due to maintenance activities and needs to be redistributed or replaced. Ventilation in the attic spaces can be improved to reduce air conditioning requirements during the hot summer months. Thermostatically actuated power driven fans in gable type roofs would be most beneficial. Cathedral type ceilings could be internally insulated with block styrofoam type insulation that could subsequently be covered with wallboard to maintain the esthetics of the ceiling. Generally, the cathedral beams are wide enough to allow such installation; this especially true in the Hillside clubhouse rooms that have exceptionally wide overhead beams.

We wish to express our gratitude to Mr. Schrantz for expeditiously addressing our request for assistance for this effort and Mr. Hilt for his helpful, cooperative, and down right pleasant assistance in doing the work.

Solar heating of swimming pool water

Summary

The Del Valle, Dollar and Hillside pools were evaluated by two reputable local solar contractors and Chevron Energy. A roof-mounted system at Del Valle would be very attractive financially. However, concerns regarding the effect of its added weight on building stability and safety preclude us from recommending it.

The Dollar and Hillside pools are not good candidates because of shading and lack of sufficient suitable space for the solar collection system.

.....

Discussion

Solar heating of swimming pools is common in this area because the climate is well suited to it. For pools in year-round use, it is feasible to obtain 25%-35% of the annual heating requirement from a solar system. It is this low because most of the solar heat comes in the warm months when the pool requires the least heat. Very little solar heat is available in the winter when the demand is greatest, even with costly sophisticated systems.

Consistent with the charge from the GRF Board to our ad hoc committee, the pool subcommittee set out to find reliable proven systems that had the best financial return on the required investment, and that would provide an immediate positive cash flow if financed .

Two prior proposals were reviewed:

* One for the Del Valle pools in 2005, done by C&B Consulting Engineers, commissioned by GRF,

* One for the Hillside pool in 2007, done by Snow Solar Systems, unsolicited. The owners' father is a Rossmoor resident.

Both of these proposals were for very efficient, durable, sophisticated and expensive collection systems. Each had a very low return on investment. The estimated cost and annual savings for the Del Valle pools were \$240,000 and \$15,000. The estimates for Hillside were \$43,000 and \$2,500.

Both proposals were also contingent upon verifying that the building structures could safely support the systems.

After screening and making preliminary contacts with several potential solar heating contractors, we chose to start with Snow Solar and Skypower Systems of San Ramon, and to seek and evaluate less costly systems that would be more financially attractive.

Both contractors looked at our three pool sites and concluded that a rooftop installation at Del Valle had the best potential.

Snow proposed a widely used type system that circulates the water from all three pools thru hollow core black plastic panels. The preliminary installed cost estimate was \$85,000. The estimated initial gas savings was \$16,000/yr.

Skypower proposed a system based on circulating water from the lap and exercise pools thru assemblies of coils of exterior grade irrigation pipe. These have been used for over 15 years and seem particularly well suited to a flat roof building like Del Valle. They quoted an installed cost of \$61,000 and gas savings of \$15,000/yr.

These financial figures are rounded, not firm, and may not be directly comparable, but they seemed attractive enough to warrant further consideration.

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The next step was to determine whether the Del Valle clubhouse could support the equipment that we propose putting on the roof. Only a qualified structural engineer with the necessary information on the building can do this.

Dan Schrantz contacted the engineer at Dahlin who had previously evaluated the Del Valle building and roof for other reasons. He ran some calculations and told Dan that could not endorse adding any significant additional weight. The concerns go to the basic building design and construction, and cannot be remedied by any simple or inexpensive reinforcement.

Because of this, we dropped our plans to look at actual installations, and to investigate durability, reliability, control, maintenance, and other issues that should be considered before the equipment and vendors are vetted.

ACD 10/28/08

Chevron Energy Solutions' – Feasibility Energy Analysis

This document has been provided to the GRF Board of Directors as a separate printed document. A copy has been provided to each of the GRF Board of Directors and to the GRF CEO, Warren Salmons.

This document provides the findings of the Chevron Energy Solutions team during the Feasibility Energy Analysis.

Chevron Energy Solutions has proposed that GRF retain them to perform a Comprehensive Energy Analysis (CEA) during which several alternative energy option listed earlier in this report would be investigated in detail.

Walnut Creek Municipal and Community Actions

Provided by Renee Zeimer, Ass't to the City Manager

The City has long been at the forefront of what is now referred to as sustainability and its efforts in that regard are embodied in its vision statement: “A balanced community meeting tomorrow’s needs while protecting the quality and character we value today.” The City’s vision statement mirrors the widely accepted definition of sustainable development coined by the World Commission on Environment and Development (WCED). In the WCED’s 1987 report, commonly referred to as the Brundtland Report after the Commission’s chairwoman, ***sustainable development*** is referred to as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

As far back as the mid-1950’s, Walnut Creek leaders embraced sustainable values and decision-making practices to protect the environment and managed growth to assure a high quality of community life. In 1956, the City adopted the “Little Master Plan” to manage traffic congestion by creating transportation corridors in the downtown. Some 15 years later, City leaders rejected a proposal to build the Sunvalley Mall in what is now the Shadelands Business Park. Instead, they opted to invest in the City’s historic downtown located along state Highway 24 and I-680, the main transportation corridors of the city.

The Walnut Creek community took a stand for the environment in 1974, when residents passed a bond measure to purchase and protect the undeveloped ridgelines and hillsides that surround the City on three sides.

In the 1990’s, City leaders again embraced sustainable policies by adopting “smart growth” approaches to new growth and development. These approaches accommodate new growth and take advantage of existing infrastructure without disrupting the balance of built and natural landscapes. Walnut Creek’s walkable downtown and attractive street-level storefronts with parking, offices, and housing above are examples of smart growth and sustainable practices.

The City has been implementing energy efficiency and sustainable practices in its business operations since the late 1990s. Most of these steps were taken to increase energy efficiency and costs savings. Reducing GHG emissions was simply an added benefit.

More recently, in April 2006, the City adopted General Plan 2025 with 23 green policies and 58 action items. These green policies and actions are the City’s environmental blueprint for the next 20 years. As such, the local government and community actions to reduce metric tons of CO₂e emissions, identified in Table 4, have been evaluated against the General Plan to ensure they support the goals, policies, and actions of the General Plan.

Local government actions already implemented include the following: Converting to light emitting diode (LED) traffic signals, energy efficient landscaping, green building certification for six buildings, a 2008 energy assessment of select facilities, and the implementation of a paperless police records management system. Projects that are underway include the commissioning of City Hall for Leadership in Energy and

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Environmental Design for Existing Buildings (LEED-EB) certification, exploration of trip reduction programs, and the implementation of a green procurement policy. There are also ongoing efforts to upgrade lighting, better synchronize traffic signals, enhance office reuse and recycling practices, increase the number of hybrid vehicles in the City fleet, reduce idling times, and enhance the City website to allow more transactions to be conducted online.

In the community, projects underway include the development of green building standards, an effort to help small businesses and residents become more energy efficient, a Bicycle Master Plan, and an effort to place recycling cans in the downtown to make recycling more convenient for restaurants and small businesses. There are ongoing efforts to maintain the pedestrian-friendly nature of the downtown area, provide the Free Ride Trolley, and promote sustainability at City events and in City publications.

Sector	Category	Description	Status
Local Government	Buildings	6 Facilities - Green Building Certified	Complete
		Lighting upgrades – garages/facilities	Ongoing
		Energy efficient landscaping e.g. climate controlled solar irrigation systems	Complete
		2008 energy assessment of facilities	Complete
		Commissioning City Hall for LEED-EB	In progress
		Solar feasibility study	Proposed
		Installation of computer management power software to reduce energy consumption	In progress
	Streetlights/ Traffic Signals Transportation Demand Management (TDM)	LED traffic signals/ Feasibility of streetlight conversion to LEDs	Complete/ In progress
		In-pavement crosswalk lights on Mt. Diablo Blvd. converted to solar	Complete
		Traffic light synchronization program*	Ongoing
		Adaptive traffic signal control technology for Ygnacio Valley corridor*- State grant	In progress
		Carpool/commute alternative program for city employees, promoting the public transit, carpool, walking and biking.	Ongoing
	Vehicle Fleet	Increase hybrid vehicles in City fleet	Ongoing
		Conversions to bio-diesel fuels	Ongoing
		Explore car sharing & trip reduction programs	In progress
	Waste	Increased office conservation, reuse and recycling practices	Ongoing
		Implementation of paperless police records management system	Complete
		Expanded use of City website for information and business transactions	Ongoing
		Green procurement policy	In progress
		Waste reduction gardening practices e.g. plant material used for ground cover	Ongoing
Community	Commercial/ Residential	Increased land use density – example: BART transit village	Ongoing
		Development of green building standards and green building program	In progress
		Work with community partners to assist residents and small businesses to become more energy efficient.	In progress

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Sector	Category	Description	Status
	Transportation	Pedestrian-friendly design in the downtown core area	Ongoing
		Bicycle Master Plan-bicycle integration	In progress
		Support employee & student commute-alternative programs through 511.org	Ongoing
		Free Ride Trolley from BART to Broadway Plaza	Ongoing
		Work with neighboring jurisdictions to manage traffic along the Kirker Pass/Ygnacio Valley Rd. and Treat Blvd. corridors	Ongoing
	Waste	Make recycling more convenient for restaurants and other small businesses	In progress
		Recycle cans in the downtown core area	In progress
	All	Promote sustainability in City publications and at events	Ongoing

*Community transportation benefit

Table 4. Local government and community actions to reduce MTCO₂e emissions