

LIVERMORE AREA RECREATION AND PARK DISTRICT

**AGENDA**

**FINANCE COMMITTEE**

Wednesday, September 12, 2018  
2:00 PM

Robert Livermore Community Center  
4444 East Avenue Livermore, CA 94550-5053  
West Wing Conference Room

COMMITTEE CHAIR: PALAJAC

COMMITTEE MEMBER: FURST

1. Public Comment
2. Energy Efficiency Measures – CIP Project #729D (staff report)
3. Reserve Policies and Practices (discussion)
4. Bill Payne Park Master Plan – Financing Considerations (discussion)
5. Matters Initiated

# Livermore Area Recreation and Park District

## Staff Report

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TO: Chair Palajac and Finance Committee

FROM: Mathew Fuzie, General Manager

PREPARED BY: Jeffrey Schneider, Administrative Services Manager  
Fred Haldeman, Facility Maintenance Supervisor  
Bruce Aizawa, Parks and Facilities Manager

DATE: September 12, 2018

SUBJECT: Energy Efficiency Measures Project

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**RECOMMENDATION:** That the Finance Committee recommend that the Board of Directors approve the Energy Efficiency Measures project at the Robert Livermore Community Center (RLCC), which consists of two components that can commence simultaneously and that shall be completed by the fall of 2019:

- A. **Energy Conservation Measures (ECMs):** focuses on the reduction of energy use at the RLCC through the replacement of infrastructure that is aging and inefficient with new energy efficient equipment.
- Capital investment: \$2,662,877 financed through a combination of PG&E (\$1,358,726) and AB1600 funds (\$1,304,151).
  - Operating Expense reduction of \$133,955 per year (today's dollars).
- B. **RLCC Alternative Energy Sources:** to further reduce energy usage at the RLCC through the engineering, building, and installation of a solar voltaic system atop a newly constructed covered parking structure at the RLCC Loyola parking area. Together with the Energy Efficiency Measures, the solar energy technology will allow the District to achieve zero net energy consumption at the RLCC while reducing its greenhouse gas emissions.
- Capital investment: \$0. A Power Purchasing Agreement (PPA) partner will build, own and maintain the infrastructure and solar equipment. An agreement with the City will be required to establish an easement for the PPA to build the structure.
  - Operating Expense reduction of \$20,000 per year in reduced electricity costs (in today's dollars and prior to any assumption about price escalation if we were to do nothing).

**BACKGROUND:** The District contracted on February 8, 2017 with Syserco, an energy services company, to complete an Investment Grade Audit (IGA) of the RLCC's existing building energy utilization to identify energy savings opportunities. The Audit included a review of the RLCC's existing heating, ventilation, and air conditioning (HVAC), interior and exterior lighting, and

building automation systems. The IGA has been completed and reflects input and guidance from the District's Facilities Maintenance team, and the result of that effort forms the foundation for the recommendations outlined here. Note: Sysco is the contractor that originally installed and currently maintains the existing Building Management System (BMS) for the RLCC.

## A. ENERGY CONSERVATION MEASURES (ECMs):

### 1. Project Overview

- a. The proposed energy conservation and infrastructure improvement projects at the RLCC are estimated to reduce utility usage by approximately 41%. Electrical consumption will drop by 609,067 kWh annually and natural gas consumption by 20,321 therms annually. The proposed energy conservation projects will also reduce annual greenhouse gas emissions by 561 metric tons (1,236,781 lbs.) This equates to removing 120 cars from the road or planting 660 acres of trees, annually. The electrical savings for this project equates to the electrical use of 84 typical US homes for one year.
- b. In addition, many significant, high priority investments to replace/upgrade facility infrastructure that is beyond its useful economic life, as flagged by the recent Kayuga Asset Management study, are addressed in this proposal. Please see **Appendix A** for notes related to each capital item included in this proposal, as well as **Table 1**, below, for item-specific spend and energy savings data.

### 2. Project Scope

- a. Replacing the existing chiller and hot water and pool boilers with new, reliable and energy efficient equipment.
- b. Upgrading both RLCC buildings' inefficient interior and exterior lighting and related controls with new LED lighting technology that will provide energy efficiencies and a safer environment, as the light quality and output illuminating the building's exterior and parking lot will be improved.
- c. Upgrading the RLCC's existing Alerton BMS to provide for a much more effective and reliable HVAC operation that will allow the Facilities Department to view, monitor, schedule and adjust equipment operation remotely as well as have the ability to receive alarms remotely to help address, diagnose and respond to system operating issues proactively. These improvements will allow for improved temperature control, air flow, and air quality.
- d. Additional HVAC measures include the installation of variable-speed drives on existing pumps, improving existing fan belt operation and life expectancy, and building envelope efficiency improvements.

### 3. Fiscal Impact

- a. **Capital:** The capital investment in this project amounts to \$2,662,877 and is detailed in Table 1, below. The District will utilize several financing mechanisms in the course of this effort:
  - i. **\$1,358,726: Financed by PG&E's "on-bill-financing" (OBF) program**, which will allow the District to utilize 0% financing for up to 10-times the annual energy

savings that have been quantified by Syserco's engineers and validated by staff. ARUP, a third party quality control and assurance firm used by PG&E, has validated Syserco's savings calculations and thus PG&E has formally approved the District's OBF funding at \$1,358,726. Based upon the equipment that will be deployed, this project will drive annual savings of \$135,873 in utility expenses (reducing the District's total annual utilities (gas and electric) expense by 27% and the RLCC expenses by 41%).

1. The District will be accountable for the initial investment in the equipment that will be subject to OBF; once the project is completed, PG&E will finance the investment (repay the District) and the OBF program will commence: a line item will be added to on-going PG&E invoices and will reflect financing over 10 years at 0% interest, or \$11,323 per month, which, by definition, will be offset by our projected utility cost savings.
  2. Syserco can make available "bridge financing" for the OBF-related investment, but at approximately 6.25% (prime plus 1.25%), it makes more sense for the District to temporarily utilize existing capital rather than take advantage of the Syserco financing offer.
- ii. **\$1,304,151: Financed by AB1600 (developer fee) Funds:** The balance of the capital required for the ECM component of this project (\$1,304,151) will be eligible for AB1600 financing, which is assumed in the FY18-21 Capital Improvement Plan (CIP) budget, approved by the Board in August, 2018.
1. Of the capital investment that will not be subject to PG&E's OBF program, roughly half, or \$637,911, is related to a single investment in a replacement for the RLCC's chiller. As with every investment item in this proposed list, the chiller's replacement was highlighted in the recently completed Kayuga asset management study as a high priority, and staff has indicated the current unit requires extensive care after 16 years in production. This equipment is beyond its useful economic life. Please see **Appendix A** for a more rigorous justification for the proposed chiller investment, along with other line items included in this proposal.
  2. The remainder of the AB100 funds (\$666,240) will go to Energy Management System Controls (\$160,937), general contracting for trade work (\$23,754), general conditions (\$57,976 and explained further in Appendix A), a 3<sup>rd</sup> party commissioning agent who will validate the completeness and effectiveness of the equipment deployed (\$62,002), a contingency (\$135,214), and \$226,537 toward the difference between asset costs and the portion of these assets that will be eligible for OBF (example from Table 1: "Replace Pool Heaters": cost = \$331,316, but OBF financed amount is \$176,933, which is 10x annual energy savings, or 10 x \$17,693; the difference is the AB1600 funded portion, or \$154,383).

**Table 1 (ECM Capital List)**

ECM #	ECM Description	Electric Energy Savings (kWh/yr)	Gas Savings (therms/yr)	Electric Cost Savings (\$/yr)	Gas Cost Savings (\$/yr)	Total Cost Savings (\$/yr)	ECM Price (\$)	OBF (\$)
0.01	General Contracting			\$0	\$0	\$0	\$23,754	\$0
0.02	General Conditions			\$0	\$0	\$0	\$57,976	\$0
0.03	3rd Party Commissioning Agent			\$0	\$0	\$0	\$62,002	\$0
1.01	Upgrade Energy Management System Controls			\$0	\$0	\$0	\$160,937	\$0
1.01	Optimize Controls Schedules / Set Points	105,826	6,096	\$19,926	\$5,846	\$25,772	\$0	\$257,717
1.01	Chilled Water System Outside Air Temperature Reset	8,491		\$1,599	\$0	\$1,599	\$0	\$15,986
1.02	Integrate Heat Tape into BMS	55,973		\$10,539	\$0	\$10,539	\$54,415	\$105,392
2.01	Replace Packaged Chiller w/ Hi Efficiency ACC	(10,187)		(\$1,918)	\$0	(\$1,918)	\$637,911	\$0
2.02	Replace HHW Boilers		6,396	\$0	\$6,133	\$6,133	\$344,828	\$61,334
2.03	Replace Pool Heaters	60,600	6,552	\$11,410	\$6,283	\$17,693	\$331,316	\$176,933
2.05	Replace Belts with Cogged V-Belts	16,081		\$3,028	\$0	\$3,028	\$19,156	\$30,279
2.09	Install new VFD on HHW Pumps	16,280		\$3,065	\$0	\$3,065	\$104,699	\$30,654
2.09	Install new VFD on CHW Pumps	25,332		\$4,770	\$0	\$4,770	\$104,699	\$47,698
3.01	Lighting Efficiency & Controls Upgrade	267,404		\$50,349	\$0	\$50,349	\$529,424	\$503,495
7.01	Replace Door Sweeps and Seals	7,995	766	\$1,506	\$735	\$2,241	\$23,915	\$22,399
7.02	Window Film	56,742		\$10,684	\$0	\$10,684	\$72,631	\$106,839
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Item	% of pre-Conting spend	Spend
Syserco Overhead/Profit	13.0%	\$328,596
Syserco - Professional Services incl training, measurement, and verification (incl 1 yr after project completion)	21.7%	\$548,503
Performance Bonds, Permits	3.2%	\$80,885
Hard Costs for capital equipment	62.1%	\$1,569,679
<b>Sub-total Prior to Contingency</b>	<b>100.0%</b>	<b>\$2,527,663</b>
Contingency (relatively new facility - expect few surprises)	5.3%	\$135,214
<b>Total Project Cost</b>		<b>\$2,662,877</b>

**b. Operating expense implications:**

- i. Engineering studies by Syserco, validated by staff and ARUP (third party auditor), call for annual electricity and gas utility savings, at today's prices, of \$133,955. Note: the savings calculation for OBF purposes is modestly higher, at \$135,873, as the chiller's impact on electricity of (\$1,918) is excluded for OBF purposes.
- ii. Equipment will be under warranty for one year (parts and labor).

**c. Qualitative benefits:**

- i. Improved efficiencies in managing our energy infrastructure;
- ii. An enhanced lighting system that will provide for a safer environment in the RLCC's parking lot and building exterior;
- iii. Reaching Zero Net Energy status for the RLCC (in conjunction with the solar deployment);
- iv. Improved airflow and temperature control throughout the facility;
- v. Reduced greenhouse gas emissions and carbon footprint.

## B. RLCC ALTERNATIVE ENERGY SOURCES:

### 1. **Project Overview and Scope**

- a. The District will partner with a Power Purchasing Agreement (PPA) provider who will build and own a covered parking structure that would be located in the existing RLCC-Loyola parking area, deploy and maintain a solar voltaic system atop the parking structure, and, at the onset of the agreement, establish set energy prices within a 25-year agreement that would contain options to purchase the solar equipment, at pre-set prices, at various points in time. There will be NO capital outlay required of the District for this project.
- b. Electricity pricing from a PPA provider would be established following a competitive bid process managed by Syserco, whose fees for the management of this project would be absorbed by the PPA. Syserco has obtained committed pricing from one potential PPA that is extremely favorable versus today's actual rates: approx. 12% below today's rates. Given the likelihood that energy prices will continue to grow (recent experience has been at ~5% per year), the District should expect to never pay "market" energy prices during the life of the PPA.
- c. An agreement will be required with the City to establish an easement to allow for the construction of the parking structure. As of September 6th, the City's Administrative Services Manager is working with their counsel to outline the requisite steps we'll need to take.

### 2. **Fiscal Impact**

#### a. **Operating Expense Implications:**

- i. Annual operating expense savings will be derived from the difference between electricity prices IF we were to do nothing versus the guaranteed pricing provided by the PPA. Syserco has obtained committed, fixed pricing (no annual escalation) from one potential PPA that is extremely favorable versus today's actual rates: approx. 12% below today's rates.
- ii. Assuming the "do nothing" alternative would result in annual price increases of 5%, and the prices from the PPA are set at a flat rate of \$0.165 per kWa (kilowatt hour), or 12% below today's actual rate of \$0.188 per kWh, the annual savings we would realize would be \$20,000 in year 1, growing by more than 5% each year due to the per unit price differential alone (if usage didn't change). Given the likelihood that energy prices will continue to grow, the District should expect to never pay "market" energy prices during the life of the PPA.

#### b. **Qualitative benefits:**

- i. Solar Carports in Loyola parking lot will provide sun/rain protection for staff and the public.
- ii. Combined with the ECM effort, the deployment of solar technology gets the RLCC to a Zero Net Energy status.

### C. PROCUREMENT/CONTRACTUAL CONSIDERATIONS:

California Government Code §4217.10-18 is a primary consideration in support of the District's plan to award a contract to Syserco to provide the project management and general contracting services required to manage the acquisition and implementation of the systems outlined herein.

Best Value contracting per California Government Code §4217.1 was created by the state over 37 years ago to encourage energy efficiency within existing public facilities by allowing public agencies the ability to utilize the ensuing energy savings as an alternative funding source to finance infrastructure upgrades that were deemed a net benefit and cost effective. Section 4217 provides local agencies flexibility to use the contracting method that the governing body determines to be in the best interest of the agency.

Government Code §4217 authorizes local governments to enter into energy contracts on terms that are found to be "in the best interests" of the agency. In essence, §4217 allows a public agency to select a pre-qualified Energy Services contractor to design and deliver energy efficiency projects so long as the anticipated cost for the energy project or efficiency services are less than the anticipated energy cost savings to be derived from those services. This code is commonly used by Energy Service Companies (ESCOs) that pursue performance-based contracts with public agencies where project costs may be guaranteed, providing cost visibility and transparency while minimizing risk with ongoing system performance.

Agencies may use the best value criteria as defined in Public Contract Code §20133(c)(1). Best value criteria, as set forth in the law, includes objective criteria related to price, features, functions and life-cycle costs.

A significant advantage of utilizing an integrated and turnkey Energy Performance Contract via §4217 is that the owner has a single contract and point of accountability for both the design and implementation of the Energy Conservation project.

The contract is fully inclusive of all services and products to be delivered by the selected Energy Service Contractor. The contractor and designer work collaboratively through the design and development process, the contractor gains a thorough and detailed knowledge of the design intent and the engineering team can design in the details and systems that the contractor can provide most efficiently.

**ATTACHMENT B** includes an example of the public notice that the District is required to post in relation to its intent to agree to enter into a Contract related to Energy Conservation under California Government Code §4217.10-18.

#### **1. Contracts to be completed**

- a. Syserco: General Contracting and project management services encompassing both the ECM and Alternative Energy Sources projects;
- b. PG&E for on-bill financing of a portion of the ECM capital investment;
- c. Power Purchasing Agreement (PPA) for power supply to be derived from their deployment of solar technology at RLCC;
- d. Easement with the City of Livermore to support the PPA's construction of the Parking Structure and Solar equipment deployment.

**APPENDICES:**

**Appendix A: Energy Conservation Measures: Capital Request**

**Appendix B: Public Notification Outline**



## **APPENDIX A**

### **Energy Conservation Measures: Capital Request**

#### **ECM 0.01 – General Contracting**

**Cost: \$23,754; no direct, quantified savings**

A general contractor for “trade work”, including modest construction work such as sheet rock, painting, etc.

#### **ECM 0.02 – General Conditions**

**Cost: \$57,976; no direct, quantified savings**

General Conditions is a catch-all for costs incurred on-site. These costs may include (not a comprehensive list):

- Expedited or special shipping/handling costs associated with the delivery of large equipment (chiller/boilers) or large shipments of materials (pallets of lights)
- Security (fencing, caution tape, cones, security guard) that may be needed if the lay-down of materials is in a public space
- On-site, separate utilities (power, water, port-a-potties)
- Equipment/tools associated with the job (everything from office supplies/phone/internet)
- Trailer – if needed
- Demolition and disposal of materials
- Extra trash service
- Parking lot sweep service – if needed

#### **ECM 0.03 – 3<sup>rd</sup> Party Commissioning Agent:**

**Cost: \$62,002; no direct, quantified savings**

Third party who will work with us upon project completion to verify that all equipment is installed and functioning as intended, including a point-to-point check out for all controls and functionality, will provide a punch list and then sign off once punch list completion is verified.

#### **ECM 1.01 – Upgrade Energy Management Controls, Optimize Controls of the RLCC’s Mechanical Systems, including Water Pumps, Exhaust Fans, and AC Unit:**

**Cost: \$160,937, energy savings of \$27,371 per year**

The RLCC’s existing Alerton Building Management System (BMS) was installed in 2002 and has not received any significant upgrades since. The system is no longer supported and replacement components are difficult to procure. Facilities staff has been operating the system without service support and training. This request will upgrade the front end computer and equipment controllers to provide needed enhancements to the control of building maintenance systems, resulting in reduced equipment run-time.

#### **ECM 1.02 – Integrate Heat Tape into BMS:**

**Cost: \$54,415, energy savings of \$10,539 per year**

Heat tape, applied along distribution lines for potable hot water (DHW – domestic hot water) to help keep the lines warm, can be integrated in to the BMS. Using the BMS, the heat tape zones can be turned on and off based on building occupancy and thus reduce electricity use.

## **APPENDIX A - Continued**

### **Capital Request – Justifications and Notes**

#### **ECM 2.01 – Replace Chiller with High Efficiency Air-Cooled Chiller (ACC)**

**Cost: \$637,911, modest increase in energy utilization of \$1,918 per year**

The RLCC's HVAC infrastructure relies on a water-cooled chiller, which is a machine that removes heat from water. The chilled water can then be circulated to cool air. The RLCC's existing chiller is 16 years old and is at the end of its useful life. In recent years, staff has addressed multiple component failures and system leaks. Note: chiller downtime would be devastating to RLCC operations, particularly if it occurred in the mid-summer, and an emergency solution would be extremely expensive. Chillers have long lead times (several months minimum), which means RLCC would need a temporary cooling solution in the form of a rented, mobile chiller. The cost of renting temporary chillers on short notice and paying contractors expediting fees to quickly mobilize can be significantly more than the planned approach that is being proposed.

Staff has assessed alternative chiller types and recommends the acquisition of an air-cooled chiller due its dramatically lower maintenance requirements relative to a water-cooled unit, and the lack of the need for a treated water system (which accelerates oxidation of surrounding components). Operational efficiencies will be realized (reduced staff time) and miscellaneous equipment replacement costs will be eliminated (not quantified).

#### **ECM 2.02 – Replace two Hot Water (HHW) Boilers**

**Cost: \$344,828; energy savings of \$6,133 per year**

New boilers will be integrated into the new BMS system to facilitate efficient operations and will replace 16 year-old units that are in poor condition and present frequent operational issues. Impact of failure: emergency repair or replacement which can be 2X+ the cost of a solution in "non-emergency" situations. Loss of boilers will result in the loss of heat in the two main RLCC buildings. Syserco, in conjunction with staff, evaluated multiple proposals/solutions from multiple HVAC/Mechanical contractors. The recommended solution is based on relative efficiency and price.

#### **ECM 2.03 – Replace Pool Heaters**

**Cost: \$331,316; energy savings of \$17,693 per year**

The two existing pool heaters, one for each pool at RLCC, are 16 years old and in poor condition. The heater in the competition pool has had multiple rebuilds to remain functional, but is past its useful life, as is the case for the unit that supports the second pool. The new units will be integrated with the new BMS, allowing for improved operational efficiencies and energy usage. Syserco, in conjunction with facilities and aquatics staff, evaluated multiple proposals/solutions from multiple providers and their recommendation is based on functionality and price.

#### **ECM 2.05 – Replace V-belts with Cogged V-belts**

**Cost: \$19,156; energy savings of \$3,028 per year**

By replacing V-belts with cogged belts, used throughout the facility for HVAC equipment (fans), power usage will be reduced and power transfer to the end devices that use these belts will be enhanced. Result: less energy usage and less wear and tear on the devices themselves.

**APPENDIX A - Continued**  
**Capital Request – Justifications and Notes**

**ECM 2.09 – Install New Variable Frequency Drives (VFD) on Hot (HHW) and Cold (CHW) Water Pumps**

**Cost: \$209,398; energy savings of \$7,835 per year**

By installing VFDs on the water pumps that support the two main RLCC buildings, the water flow can be ramped up or down based on demand. Also, aged motors will be replaced. Energy savings will come from both the new motors and the improved ability to manage usage based on demand.

**ECM 3.01 – Lighting Efficiency and Controls Upgrade**

**Cost: \$529,424; energy savings of \$50,349 per year**

The RLCC's existing lighting systems are 16 years old (excluding the gym and a portion of exterior lights, which have been converted to LED). Reduced energy consumption and enhanced light production, along with longer lamp life, will be realized through the completion of the deployment of new LED fixtures, and staff time (unquantified) will be materially lessened as a result of the longer lamp life.

**ECM 7.01 – Replace Door Sweeps and Seals**

**Cost: \$23,915; energy savings of \$2,241 per year**

Many exit and interior stairwell doors have never had door sweeps and seals, which function to prevent air, water, and pest infiltration. This proposal would add sweeps and improved seals where needed/appropriate, and will enable more efficient energy usage to condition the RLCC's buildings.

**ECM 7.02 – Window Film**

**Cost: \$72,631; energy savings of \$10,684 per year**

The facade windows on the East, South, and West exposures have windows that let in a significant amount of solar heat and ultraviolet radiation. By installing window film directly on the interior surface of the windows to reduce glare, UV, and heat gain in the RLCC, there will be less demand on the RLCC's HVAC to cool the buildings. Question: Why not just close our blinds on hot days? It is often challenging to "rely" on people to be proactive in taking steps to reduce energy, and heat still enters the space when blinds are closed, just not as much. Plus, the window film still allows usable light into the building while reducing the UV and heat build-up.

**ATTACHMENT B**  
**Public Notification Requirement**

In accordance with California Government Code §4217.13, notice is hereby given that the Board of Directors of the Livermore Area Recreation and Park District (LARPD) intends to agree to enter into a contract related to energy conservation under California Government Code §4217.10-.18 at the District Board meeting that is scheduled to be held on September 20, 2018.