



Laguna Woods Village®

OPEN MEETING

REGULAR MEETING OF THE VILLAGE ENERGY TASK FORCE

**Wednesday, August 1, 2018 - 9:30 A.M.
Laguna Woods Village Community Center Cypress Room
24351 El Toro Road**

NOTICE and AGENDA

This Meeting May be Recorded

1. Call to Order
2. Acknowledgment of Media
3. Approval of the Agenda
4. Approval of Meeting Report for June 6, 2018
5. Chairman's Remarks
6. Member Comments (*Items Not on the Agenda*)
7. Department Head Update

Consent:

All matters listed under the Consent Calendar are considered routine and will be enacted by the Task Force in one motion. In the event that an item is removed from the Consent Calendar by members of the Task Force, such item(s) shall be the subject of further discussion and action by the Task Force.

8. Project Log
9. SCE Street Light Outage Report
10. Electric Vehicle History Report (place holder only)
11. Golf Cart Report (place holder only)

Reports:

12. Prioritized Work Items from Each Corporation for the Energy Consultant
13. Third Mutual Solar Photovoltaic System Update

Items for Future Agendas:

- *EV Charging Stations at Stand Alone Laundry Rooms
- *LED Solar Street Lights (low priority)
- *2-story Buildings LED Lighting Pilot Program (low priority)
- *Costs for Level 2 Charging Stations at Stand-alone Laundry Rooms (low priority)
- *Investigate the installation of conduit from the electric panels in GV to service the carports
- *Install Level II EV Bollard Chargers (on the streets)



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*2-3 Year Energy Plan: (Verbal Discussion)

- a) Distributed Energy Resources Contract
- b) Microgrid Investigation
- c) Street Light LED Replacement Program
- d) Street Light Maintenance Contract

Concluding Business:

Date of next meeting – September 5, 2018

Adjournment

Bill Walsh, Chair
Ernesto Munoz, Staff Officer
Telephone: 268-2281

OPEN MEETING

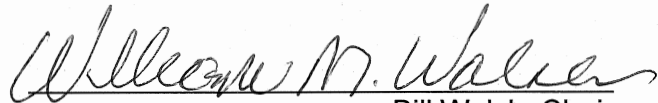
Third Energy Committee
June 6, 2018
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Concluding Business:

Date of next meeting – August 1, 2018

Adjournment

This meeting was adjourned at 11:58 AM

A handwritten signature in black ink, appearing to read "William M. Walsh", written over a horizontal line.

Bill Walsh, Chair
Third Laguna Hill Mutual

Energy Task Force Project Log (July 2018)

United Mutual

#	Name	Description	Status	Estimated Completion	Budget
1	Walkway Lighting Program	<p>This program is dedicated to improving walkway lighting through additional fixture installation, or the upgrade of existing ones. Alternatives to the existing pagoda style fixtures are evaluated as needed. Requests for additional lighting are received from residents on an ongoing basis. Those requests are vetted and additional lighting is installed if it meets the program requirements.</p>	<p>Staff is processing additional lighting requests and began installations in late February. 19 additional lights have been added to date. The Committee awarded an "as needed" contract to US Energy for lighting consultant services. US Energy has performed an audit of the walkway lighting in Gates 5 and 6 and staff will deliver a report at the August M&C Committee meeting with proposals for walkway lighting improvements in this area.</p>	<p>December 2018 Annual</p>	<p>Budget: \$38,408 Invoiced: \$21,516.21 Balance: \$16,891.79</p> <p>Cumulative Expenditures 2010 through 2017: \$295,748</p>
2	Energy Projects	<p>An Energy Consultant will be used as needed in order to advance United's and the Community's future energy initiatives.</p>	<p>A contract was awarded to The Energy Coalition, for a not to exceed amount of \$50,000 and was approved at the July 10, 2018, Board meeting. The Energy Task Force is considering the top priorities to be given to the energy consultant. The consultant will be engaged as needed, or as directed by the respective M&C Committee.</p>	<p>On-going</p>	<p>Supplemental Appropriation: \$50,000 Invoiced: \$0 Balance: \$50,000</p>
3	2018 Pushmatic Electrical Panel Replacement	<p>This project is dedicated to replacing 2,750 Pushmatic electric panels over a 10 Year period. The Pushmatic panels are obsolete and their replacement parts are no longer manufactured or supported. The Board entered into a five year contract with Coastal Current Electric Corp. to install 1,375 Pushmatic electric panels. This contract expires in May 2021; at which time a new five year contract will be required to complete the remaining 1,375 electric panels.</p>	<p>In 2016 and 2017 a total of 387 Pushmatic panels were installed. The 2018 Pushmatic Replacement Program started January 2018 with 177 panels installed as of June 28, 2018.</p>	<p>December 2018 Annual</p>	<p>Budget: \$371,250 Invoiced: \$264,693 Balance: \$106,557</p> <p>Cumulative Expenditures 2016 through 2017: \$583,484</p>

Third Mutual

1	Solar Street Light Pilot Program	<p>The Energy Committee directed staff to install a solar powered street light as a pilot project. The Committee's goal was to determine whether the solar street light was an economical option to improve street lighting levels without trenching for new conduits.</p>	<p>The pilot installation was completed approximately one year ago on Del Faro. The Board has expressed interest in keeping this fixture and requested a quote to install it permanently. A quote was procured and provided to the Committee for use of a marblite pole to match others in the community. The Committee directed staff to ask the contractor to wait until Siemens completes the light assessment to determine whether this pilot should be installed permanently.</p>	N/A	Not Budgeted
2	2018 Electrical Systems	<p>This program is dedicated to repairing or replacing electrical equipment as needed.</p>	<p>Funding is provided for this program as a contingency to address electrical panel failures. One replacement has occurred at manor 3366-1F. There is a second replacement that is being planned at building 3242.</p>	December 2018 Annual	<p>Budget: \$50,000 Invoiced: \$1,950 Balance: \$48,050</p>
3	Energy Projects	<p>An Energy Consultant will be used as needed in order to advance Third's and the Community's future energy initiatives.</p>	<p>The Professional Service Agreement contract has been fully executed. The Energy Task Force is considering the top priorities to be given to energy consultant. The consultant will be engaged as needed, or as directed by the respective M&C Committee.</p>	December 2018	<p>Budget: \$50,000 Invoiced: \$0 Balance: \$50,000</p>
4	Exterior Lighting	<p>In 2018 funding for this program will be allocated towards the purchase of the Southern California Edison street light infrastructure. a contract with Siemens in the amount of \$843,857 was executed. The scope of work is to assist with the street light acquisition, retrofit of the existing lighting fixtures, and to perform the operations and maintenance of the asset for three years. Additionally, it will offset the cost of consulting services to assist with the acquisition, and the upgrade of other exterior lighting.</p> <p>This program also includes funding for walkway lighting needs.</p>	<p>Street Lights: On May 30 the CPUC approved the sale & transfer of streetlights from SCE to Third. The Siemens team will be working with SCE during the transfer process of surveying, tagging, auditing, and invoicing for the assets. The transfer process is scheduled to be completed in November 2018. In September 2018 the pilot program will start to select the LED fixtures for installation. Around November-December 2018 trial fixtures will be temporarily installed to evaluate their luminance & aesthetics. Once a fixture is selected the LED retrofit of 788 fixtures is scheduled to be completed in March 2019.</p> <p>Walkway Lighting: A lighting contract was awarded for walkway lighting upgrades in Gates 5, 6, 7 & 8 and work is currently underway.</p>	December 2018	<p>Budget: \$500,000 Invoiced: \$36,781 Balance: \$463,219</p>

GRF

	GRF				
1	<p>Energy Projects</p>	<p>An Energy Consultant will be used as needed in order to advance GRF's and the Community's future energy initiatives.</p>	<p>The Energy Coalition contract award was approved at the July 3, 2018, Board meeting for energy consulting services and the contract is being executed. The consultant will be engaged as needed, or as directed by the respective M&C Committee.</p>	<p>On-going</p>	<p>Contingency Fund Supplemental Appropriation: \$50,000 Invoiced: \$0 Balance: \$50,000</p>
2	<p>Community Center HVAC and Controls Upgrade</p>	<p>This project is dedicated to making the facility more energy efficient by engineering and retrofitting the Community Center with a new Heat Ventilation Air Conditioning (HVAC) and upgraded controls being integrated to the existing Energy Management System (EMS).</p>	<p>A contract for this project was awarded at the July 3, 2018, Board meeting. While the contract is being executed, staff is scheduling a pre-construction meeting with the selected contractor and third party consultant. A construction schedule will be provided after the pre-construction meeting.</p>	<p>TBD</p>	<p>Facilities Fund Budget: \$940,473 Invoiced: \$47,696 Balance: \$892,777</p>



STAFF REPORT

DATE: August 1, 2018
FOR: Energy Task Force
SUBJECT: SCE Street Light Outage Report

RECOMMENDATION

Receive and file.

BACKGROUND

The Southern California Edison (SCE) street light outage report (Attachment 1) details the current outages that are pending review and completion by SCE.

DISCUSSION

The report has been updated to also include the completed work orders and the length of time it took SCE to respond to our request and schedule the repair work.

FINANCIAL ANALYSIS

None.

Prepared By: Christopher Naylor, Senior Management Analyst

Reviewed By: Ernesto Munoz, P.E., Maintenance and Construction Director

ATTACHMENT(S)

Attachment 1 – Street Light Outage Report 2018

Facility	Reported	Closed	Status	Notes
B3003	7/17/2018		In Progress	Contact SCE - Two (2) Path Lights Out - # 1873952E & 1873954E
B5282	7/16/2018		In Progress	street light is out btwn manor 5283 and 5284
B3056	7/9/2018		In Progress	SCE Light # 1961359E in from of MNR (D) is out
B5529	7/5/2018	7/9/2018	Completed	street light in front of Mnr O out <unknown pole number>
B3168	7/5/2018	7/17/2018	Completed	The post light is blinking east of 3168 Via Vista Unit D. CDS 303
B3190	7/5/2018	7/17/2018	Completed	SCE Light Pole 1974321E outside of MNR (C) flickering
B592	7/5/2018	7/5/2018	Completed	**lampost on walkway by creek behind bldgs 592 & 591 knocked down
B2333	7/5/2018		In Progress	SCE light out - No Pole Number Available
B5535	7/5/2018		In Progress	Edison light out in front of manor #4229333-E
B3306	7/2/2018		In Progress	Edison light in front of building //2008731E
B3162	6/29/2018		In Progress	LIGHT ON PASEO DE LAGO #2118594 is out
B3532	6/29/2018	7/9/2018	Completed	Edison Lighting 2070016E outside B3532 is flickering / YT tagged.
B5148	6/29/2018	7/9/2018	Completed	Edison lightpole #203088E, light on during daylight hours, possible timer issue.
B5499	6/29/2018		In Progress	Edison lighting 2070030E out by B5499 / YT tagged.
B308	6/29/2018		In Progress	Behind Gate 1
B3244	6/27/2018	7/3/2018	Completed	2 concrete lights in front of mnr out 1953854E 1953855E
B3415	6/25/2018	6/27/2018	Completed	<2043929E>Edison light post comes on and off in front of manr N
B5518	6/25/2018		In Progress	Edison light pole is out-Pole# 4252363E between B s 5518 and 5519
B3071	6/21/2018		In Progress	**1961382E - light has never been fixed per resident - reopened with SCE**
B2384	6/18/2018	6/22/2018	Completed	Flickering Edison Lighting pole 1879761E south of building 2384 / YT tagged.
B2391	6/18/2018	6/25/2018	Completed	Flickering Edison Lighting Pole 1879777E east of building 2391 / YT tagged.
B2395	6/18/2018	6/22/2018	Completed	Flickering Edison Lighting Pole 1879740E west of building 2395 / YT tagged.
B2404	6/18/2018	6/25/2018	Completed	Edison Lights 1879789E & 189790 E are both out < on grass area by Bldg 2404 >
B3061	6/18/2018	6/25/2018	Completed	solar light #1961369-E btw bldg 3061 &3062
B3138	6/18/2018		In Progress	entrance to the cul de sac
B5323	6/18/2018	6/25/2018	Completed	Edison light pole #2008563E is blinking.
B5327	6/18/2018	6/25/2018	Completed	street light on Bahia Blanca in front of bldg 5327 & 5328 is always on
B5328	6/18/2018	6/25/2018	Completed	Edison pole light #2088561E, light on during daylight hours, tagged with yellow caution tape.
B5337	6/18/2018	6/25/2018	Completed	2008533E / light tagged with caution tape.
B5541	6/18/2018	6/22/2018	Completed	street light in front of manor not working at all <unknown #>
B5284	6/18/2018	6/25/2018	Completed	Near B5284 - Edison light out - #2030728E.... Marked with yellow tape.
B3152	6/13/2018	6/14/2018	Completed	Edison Light # 1961839E (light pole IFO MNR (B) is out
B5509	6/13/2018	6/14/2018	Completed	Edison light pole #2118824E, light on during daylight hours, possible timer or sensor issue.
B3071	5/17/2018	5/22/2018	Completed	#1961382E not working, has a tag on it
B3499	5/11/2018	5/14/2018	Completed	CONDUIT WIRING DAMAGED BY ETW 2072030E
B3499	5/11/2018	5/14/2018	Completed	CONDUIT WIRING DAMAGED BY ETW 2070029E
B3499	5/11/2018	5/14/2018	Completed	EI Toro hi conduit blew out lights 2070028E
B3003	5/2/2018	5/2/2018	Completed	Street light is out between 3004-D & 3003-D <no pole #>
B3338	4/30/2018		In Progress	Southwest of building, adjacent cul de sac roadway, Edison lightpole # 2044082E light on, daylight h
B3407	4/30/2018	5/2/2018	Completed	Edison pole light flickering on/off - #1961011E in front of manor 3407 at the sidewalk.
B5497	4/30/2018		In Progress	Light not working <pole # 21185935>

B2384	4/16/2018	4/23/2018	Completed	Edison light out, pole #1879736E, by 2348 Via Mariposa West. Tagged with yellow tape. CDS 203
B2397	4/16/2018	4/23/2018	Completed	Edison light out, pole #1379770E, by 2397 Via Mariposa West. Tagged with yellow tape. CDS 219
B3277	4/16/2018	4/23/2018	Completed	Contact Edison - Path Light # 1974544E is out
B3384	4/16/2018	4/23/2018	Completed	street edison pole light # 2043935E near 3384-A is out
B3510	4/16/2018	4/23/2018	Completed	Edison lightpole #2070043E light on, daylight hours, possible timer or sensor issue.
C353	4/16/2018	4/23/2018	Completed	SCE light 2070028E out on Bahia Blanca West & Monte Hermoso
B2398	4/13/2018	4/20/2018	Completed	Edison light flickers, pole #1879781E, by 2398 Via Mariposa West CDS 221
B2405	4/13/2018	4/20/2018	Completed	Edison light (#1879802E) near building burning out, marked w/ YT
B3123	4/13/2018	4/20/2018	Completed	Edison Light 1961870E out by building 3123 / YT tagged
C357	4/13/2018	4/20/2018	Completed	**Edison light out tagged with tape <possibly purple & unknown #> on corer of avenida sosiega & mont
B3242	4/3/2018	4/5/2018	Completed	Edison Light # 1873691E is out in front of Bldg 3242
B2218	4/3/2018	4/5/2018	Completed	Concrete pole nxt to the gate <Mnr A> flickering - mem also requesting to get it replaced <old/dirty
B2397	4/3/2018	4/5/2018	Completed	Contact Edison - Path Lights Out: 1879779E, 1879784E & 1879781E
B3070	4/3/2018	4/5/2018	Completed	Contact Edison - Path Light # 1981379E between B3071 & B3074 is Out
B2397	3/29/2018	4/5/2018	Completed	SCE Light # 1870770 is out
B3071	3/28/2018	4/12/2018	Completed	Post light on side of B3071 near laundry room - not working
B3117	3/28/2018	4/4/2018	Completed	Edison Light # 1961511E is out
B3354	3/28/2018	4/6/2018	Completed	Edison street light out # 4229322E at the intersection of Monte Hermoso & CDS 334 / YT tagged.
B5190	3/28/2018	4/4/2018	Completed	concrete pole light near blng flickering
B5165	3/20/2018	3/22/2018	Completed	Edison lightpole #2030878E light on, daylight hours, possible timer or sensor issue.
B5167	3/20/2018	3/21/2018	Completed	Edison lightpole #2030677E light on, daylight hours, possible timer or sensor issue.
B5170	3/20/2018	3/21/2018	Completed	Edison lightpole #2030676E light on, daylight hours, possible timer or sensor issue.
B5179	3/20/2018	3/21/2018	Completed	Edison lightpole #2030651E light on, daylight hours, possible timer or sensor issue.
B5180	3/20/2018	3/21/2018	Completed	Edison lightpole #2030712E light on, daylight hours, possible timer or sensor issue.
B5261	3/20/2018	3/22/2018	Completed	Edison lightpole #2030680E light on, daylight hours, possible timer or sensor issue.
B3117	3/20/2018	3/23/2018	Completed	SCE Lightpole # 1961508E is out
B5114	3/20/2018	3/22/2018	Completed	Edison lightpole #2030687E light on, daylight hours, possible timer or sensor issue.
B5130	3/20/2018	3/22/2018	Completed	Edison lightpole #2030685E light on, daylight hours, possible timer or sensor issue.
B5138	3/20/2018	3/22/2018	Completed	Edison lightpole #2030683E light on, daylight hours, possible timer or sensor issue.
B5559	3/16/2018	3/16/2018	Completed	Edison light pole (#2196171E) in front of 5559-B flickers on and off during nighttime.
B3115	3/15/2018	3/21/2018	Completed	SCE Light # 1961505E is out
B3133	3/15/2018	3/21/2018	Completed	SCE Light Out - Edison # 1961545E
B5200	3/15/2018	3/19/2018	Completed	Edison lightpole #2030717E light on, daylight hours, possible timer or sensor issue.
B5296	3/15/2018	3/19/2018	Completed	Edison lightpole #2030724E light on, daylight hours, possible timer or sensor issue.
B5297	3/15/2018	3/19/2018	Completed	Edison lightpole #2030681E, between buildings 5297 & 5298, light on, daylight hours, possible timer
B3071	3/9/2018	3/16/2018	Completed	SCE Light # 1961379E
B3501	3/9/2018	3/16/2018	Completed	Edison lightpole #2070024E light on, during daylight hours, possible timer or sensor issue.
B5557	3/9/2018	3/16/2018	Completed	Edison light pole # 2070014E turns off / on continuous on Bahia Blanca West near building 5557 / YT
B5596	3/9/2018	3/16/2018	Completed	Unknown pole #. Does not turn on most of time
B3092	2/26/2018	3/5/2018	Completed	SCE Light Out - # 1961272E
B5568	2/16/2018	2/26/2018	Completed	SCE Pole #2195151E. Light Out. Located at intersection of Portora and Sosiega West. Tagged.
B5128	2/15/2018	2/26/2018	Completed	Light out at end of street <tripping hazard> unknown pole #

B2389	2/15/2018	2/26/2018	Completed	SCE Light # 1879900E is out
B3252	2/15/2018	2/26/2018	Completed	SCE Light 1953834E
B3366	2/15/2018	2/26/2018	Completed	SCE Light # 2043927 E
B3429	2/15/2018	2/26/2018	Completed	Edison Lighting Pole # 2043903E turns off & on every 1-2 minutes / YT tagged.
B3437	2/15/2018	2/26/2018	Completed	Blinking light Edison pole - # 2043909E
B3491	2/15/2018	3/13/2018	Completed	Concrete light pole - Edison - #4468416E Light flickering
B489	2/15/2018	2/26/2018	Completed	Edison Light Out - Unknown # - end of CDS 14
B5206	2/15/2018	2/26/2018	Completed	edison light not working properly #e1270502 in front of unit
B5331	2/15/2018	2/26/2018	Completed	FRONT OF MANOR EDISON LIGHT OUT #2030748E
B5348	2/15/2018	2/26/2018	Completed	Light # 2008541E - Missing Label < Tagged with Caution Tape >
B5529	2/15/2018	2/26/2018	Completed	street light in front of building is out
B3111	1/22/2018	1/29/2018	Completed	Edison lighting # 1961519E out / YT tagged.
B3123	1/22/2018	1/29/2018	Completed	Edison lighting # 1961870E out / YT tagged.
B3154	1/22/2018	1/29/2018	Completed	Edison lighting # 1961843E out / YT tagged
B3301	1/22/2018	1/29/2018	Completed	Edison lighting # 4468424E turning on-off every 1-2 minute / YT tagged.
B5378	1/22/2018	1/25/2018	Completed	Edison lightpole #2044070E light on, daylight hours, west of building, adjacent Avenida Sosiega, pos
B5380	1/22/2018	1/29/2018	Completed	Edison lightpole #2258601E light on, daylight hours, southeast of building, adjacent Paseo Del Lago
B5381	1/22/2018	1/29/2018	Completed	Edison lightpole #2030043E light on, daylight hours, east of building, adjacent Paseo Del Lago West,
B5490	1/22/2018	1/29/2018	Completed	Edison lightpole #2118528E light on, daylight hours, adjacent Paseo Del Lago West, possible timer or
B5497	1/22/2018	1/29/2018	Completed	Edison lighting # 2118593E out / YT tagged.
B5509	1/22/2018	1/29/2018	Completed	Edison lightpole #2030044E light on, daylight hours, west of unit C, adjacent Paseo Del Lago West, p
B3020	1/8/2018	1/10/2018	Completed	street light in front of bldg 3020 reported by resident walking
B3340	1/8/2018	1/16/2018	Completed	street light at CDS340 is out



STAFF REPORT

DATE: August 1, 2018
FOR: Energy Task Force
SUBJECT: Prioritized Work Items from Each Corporation for the Energy Consultant

RECOMMENDATION

Develop a scope of work for the energy priorities chosen by each Corporation in order to solicit a proposal from the energy consultant to develop and execute said priorities.

BACKGROUND

At the June 6, 2018 Energy Committee Meeting, the Committee requested that the corporations develop three energy-related initiatives to focus the consultant's efforts.

DISCUSSION

The priorities staff received from the corporate representatives are as follows:

United Mutual:

1. Review the current United Mutual electric infrastructure with an eye toward the current, 5 and 10-year load capacity needs for electric panels, transformers etc.
2. Perform an analysis and report on the findings of the electric infrastructure review.
3. Prepare a strategic action plan for recommended electric infrastructure upgrades, as well as EV charging, solar and any other recommended upgrades that will make our systems more efficient and thus reduce our operating costs.

Third Mutual:

1. Review the current Third Mutual electric infrastructure with an eye toward the current, 5 and 10 year load capacity needs for electric panels, transformers etc.
2. Perform an analysis and report on the findings of the electric infrastructure review.
3. Prepare a strategic action plan for electric infrastructure upgrades, particularly in the multi-story building garages and carports, as well EV charging, solar and other efficiencies.

GRF:

1. Grant Opportunities: There are many opportunities for grants from federal and state government agencies and foundations to help reduce the overall costs associated with energy generation and conservation. In addition over the years Southern California Edison has offered lucrative rebate programs to assist them in reaching the clean energy goals that have been established in California.
2. Research the feasibility for alternative energy & microgrids for electrical energy generation.
3. Develop a Community Strategy for EV Charging Stations.

There are several commonalities between the recommended priorities from the Housing Mutuals and GRF. Each expresses interest in having their electrical infrastructures load capacity evaluated and a recommendation provided by the consultant on ways to efficiently upgrade the infrastructure to support facilities such as golf cart and electric vehicle charging.

If so directed, staff will prepare a scope of work for the consultant to provide cost proposals for developing each of the initiatives put forth by each of the corporations. Staff will bring back to the Task Force the cost proposal, along with timelines and a work plan for direction to initiate the work effort by the consultant.

FINANCIAL ANALYSIS

There is no fiscal impact associated with this report.

Prepared By: Laurie Chavarria, Executive Assistant

Reviewed By: Ernesto Munoz, P.E., Maintenance and Construction Director



STAFF REPORT

DATE: August 1, 2018
FOR: Maintenance and Construction Committee
SUBJECT: Solar Photovoltaic System Update

RECOMMENDATION

Receive and file.

BACKGROUND

In September 2016, the Third Board entered into an agreement with Solar Optimum for the purchase and installation of a solar photovoltaic system on 12 buildings (2353, 2381, 2393, 2394, 2397, 2399, 2400, 3242, 3243, 3420, 5372 and 5510). The system is intended to provide 841 kW DC total capacity for a cost of \$2,312,750.

In the course of construction, the contractor encountered issues with some Southern California Edison (SCE) transformers not having sufficient capacity. Three buildings required trenching for interconnections with other buildings that could support the associated loads. The contract change orders from the contractor increased the cost by \$250,385 for a total cost of \$2,563,135.

Third Mutual received permission to operate (PTO) from SCE during June 2017 and began production. The system experienced initial challenges with two of the largest pieces of equipment at buildings 2381 & 2394, resulting in 5 months of poor performance.

We encountered a few challenges with SCE's billing and meter setup. The 12 solar units registered data on 424 different meters. The year-one charges per meter were higher than expected; $\$140 \times 424 = \$59,360$ which should decrease to \$13,737 per year starting in June 2018.

DISCUSSION

Overall the project was successful in several regards. Third Mutual achieved a large degree of energy independence as more than 1,000,000 kWh of renewable, low maintenance power will be created annually. This is a significant portion of the average 2.61 MWh annual usage. The community's carbon footprint has diminished while likely increasing property values. The system essentially creates an insurance policy or hedge against hyper-inflation in the energy market. The less electricity you purchase from SCE, the lower your risk of uncontrolled, rising electricity costs.

While holding all variables constant, we are expecting a simple ROI of 11.35 years (Attachment 1). It should be noted that our expectation is that the variables will not remain

constant. We should expect that energy prices continue to slowly rise; however, the two largest units create significantly more kWh now that they are fully functional and increased opportunities for solar power owners should all improve the ROI moving forward.

FINANCIAL ANALYSIS

We recommend reviewing the ROI again in November 2018 when we have recorded a full year of production data for the 12 roof-top units.

Prepared By: Christopher Naylor, Senior Management Analyst

Reviewed By: Ernesto Munoz, P.E., Maintenance and Construction Director

ATTACHMENT(S)

Attachment 1 – Solar Project ROI Spreadsheet

ATTACHMENT 1

Project Locations	System (kWDC)	Estimated Cost based on kWDC	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total kWh	Revenue	Phoenix O&M	SCE YEAR 1	SCE YEAR 2+	ROI Years
2353 Via Puerta	78.48	\$239,094	7,336	11,749	9,151	8,125	5,756	5,807	5,860	7,790	10,400	12,370	10,730	14,030	109,104	\$26,403	(\$1,554)	(\$4,947)	(\$1,145)	9.93
2381 Via Mariposa	82.4	\$251,037	0	8,566	5,922	6,211	4,410	5,622	4,730	3,340	6,210	8,130	8,260	10,360	71,761	\$17,366	(\$1,554)	(\$4,947)	(\$1,145)	16.86
2393 Via Mariposa West	78.48	\$239,094	6,283	8,423	7,967	6,712	4,671	4,157	5,166	6,867	7,876	2,799	10,380	13,260	84,561	\$20,464	(\$1,554)	(\$4,947)	(\$1,145)	13.24
2394 Via Mariposa West	86.32	\$262,979	1,789	0	2,203	1,029	5,542	5,826	5,450	8,840	11,420	13,590	12,130	15,450	83,269	\$20,151	(\$1,554)	(\$4,947)	(\$1,145)	14.85
2397 Via Mariposa West	75.86	\$231,112	12,437	11,011	8,431	7,446	5,330	3,627	5,590	7,560	9,400	11,660	10,420	13,510	106,422	\$25,754	(\$1,554)	(\$4,947)	(\$1,145)	9.86
2399 Via Mariposa West	66.7	\$203,206	6,206	10,194	7,617	6,703	4,770	4,678	5,240	6,780	8,680	10,380	9,340	12,030	92,618	\$22,414	(\$1,554)	(\$4,947)	(\$1,145)	10.11
2400 Via Mariposa West	79.78	\$243,055	7,282	5,400	8,697	7,668	5,468	5,514	5,990	7,730	10,130	12,060	10,870	14,150	100,959	\$24,432	(\$1,554)	(\$4,947)	(\$1,145)	11.01
3242 San Amadeo	69.32	\$211,188	11,193	9,736	7,256	6,312	4,341	4,433	4,960	6,340	8,600	10,480	9,570	12,220	95,441	\$23,097	(\$1,554)	(\$4,947)	(\$1,145)	10.17
3243 San Amadeo	53.95	\$164,362	10,351	9,449	6,901	4,708	3,409	4,397	4,192	5,428	7,896	8,896	7,932	9,953	83,512	\$20,210	(\$1,554)	(\$4,947)	(\$1,145)	9.17
3420 Calle Azul	48.39	\$147,423	8,381	7,141	5,666	4,971	3,325	3,288	2,016	2,705	5,128	7,581	6,910	8,744	65,856	\$15,937	(\$1,554)	(\$4,947)	(\$1,145)	10.85
5372 Punta Alta	69.32	\$211,188	2,439	8,332	8,216	7,016	5,004	5,081	5,296	7,220	8,918	11,074	10,012	12,649	91,257	\$22,084	(\$1,554)	(\$4,947)	(\$1,145)	10.70
5510 Paseo Del Lago West	52.32	\$159,396	7,962	7,090	5,329	4,628	3,110	3,015	3,138	4,451	5,679	7,130	6,098	8,283	65,913	\$15,951	(\$1,554)	(\$4,947)	(\$1,145)	11.74
Total	841.32	\$2,563,135	81,659	97,091	83,356	71,529	55,136	55,445	57,628	75,051	100,337	116,150	112,652	144,639	1,050,673	\$254,263	(\$18,647)	(\$59,360)	(\$13,738)	11.35

Total kWDC = 841.32
 Total Expense = \$2,563,135
 Revenue per kWh = \$0.24
 Meters charged by SCE = 424
 Year #1 SCE Charges = \$59,360
 Year #2+ SCE Charges = \$13,738
 ROI for Complete Project = 11.35 Years