City Council Memorandum

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MEMORANDUM: October 26, 2015

AGENDA DATE: October 27, 2015

TO: Mayor and City Council

FROM: Susan A. Stanton, ICMA-CM
City Manager

SUBJECT: **DISCUSSION OF ENERGY SERVICE CONTRACT**

BACKGROUND

Almost two years ago, the City began discussing the installation of a solar project in the City of Greenfield with Chevron Energy Solutions (which was subsequently sold to and is now OpTerra Energy Services). OpTerra Energy Services workforce is comprised of technical experts spanning a range of disciplines from engineering and design to project finance and workforce development. They bring a diverse group of specialists to each engagement so they can develop a deep understanding of each customer's situation and needs from multiple perspectives.

In April 2015, the City approved a development agreement with OpTerra Energy Services to perform an energy assessment for the installation of solar power at City Hall, the Wastewater Treatment Plant and Ponds, Water Wells #1, #6, and #7 and at Patriot Park and to prepare recommendations that would identify potential energy improvements and operational changes that could be implemented at each of these sites to realize future energy cost savings.

The primary purpose of the Assessment and the Recommendations was to provide an economic basis for the implementation of Energy Conservation Measures and to negotiate and execute an Energy Service Contract which would provide for, among other things, engineering, procurement, installation, construction and training service. The Energy Service Agreement outlines a master project schedule and the process that will be used to coordinate the work. If the City approves the proposed contract and has secured financing, OpTerra Energy Services will be given its authorization to begin the project.

Under the proposed contract, OpTerra Energy Services is responsible for obtaining all applicable Permits, except those issued by the City itself, and the City will assist OpTerra Energy Services

in obtaining the permits. The City will be responsible for obtaining and paying for all other permits or approvals that may be required, including annual operating permits and any approvals or exemptions required by CEQA, as applicable. The City is also responsible for paying all fees associated with plan checks, inspections and utility interconnection. After completion of the design phase and approval of the final plans and specifications by the City, OpTerra Energy Services will order the equipment identified in the scope of work, and any other necessary materials and supplies in order to meet the project schedule.

Proposed Scope of Work

The proposed scope of work is divided into two distinct phases. Phase I involves the installation of energy management equipment including the construction of solar panels Phase II would be the replacement of the City's outdated water meters and irrigation control systems and only be implemented after the Water Master Plan is complete and a the new Water User Fees are established during the next year. Both projects relate to increased effectiveness of city operations and the preservation of natural resources. The total construction cost for Phase I related to the Solar and Energy Conservation Measures is $4,120,377. Including the cost of finance and interest charges, the total project cost is $5,809,187 and will produce $255,964 of annual savings related to reduced energy bills resulting from the production of solar energy, $17,770 in savings related to energy conservation measures (ECM) (explained below) and $5,078 in general savings related to reduced maintenance costs. The projected net benefits of the project (including solar, energy conservation and maintenance savings) for a twenty-five year period is $4,469,248 as shown in Attachment #1. The total construction cost for Phase II related to the installation of new water meters and related improvements is $2,856,465. Including the cost of finance and interest charges, the total project cost is $3,844,724 which will generate $137,962 in annual energy conservation savings (ECM) and $100,475 in maintenance savings related to utility management. The projected net benefits of the project (including increased revenue from the new meters and maintenances savings) for a twenty-five year period is $6,128,415 as shown in Attachment #2 Chart 1 summarizes this information.

Chart 1
Total Project Cost and Savings

Scope	Project Cost	Solar Savings	ECM Savings	Maintenance Savings
Solar and Energy Conservation Measures	$5,809,187	$255,964	$17,770	$5,078
Water Meters and Valves	$3,844,724		$137,962	$100,475
Total	$9,653,911	$255,964	$155,732	$105,553

Solar and Energy Conservation Measures:
$5,809,187 cost ÷ $278,812 annual savings = 20.8 year breakeven/payback period

Water Meters and Valves:
$3,844,724 cost ÷ $238,437 annual savings = 16.1 year breakeven/payback period

The Energy Service Contract has a very complex and defined scope of work (See Attachment #3 for detail) that covers both Phase I relating to the Solar and Energy Conservation Measures well as Phase II relating to the Installation of Water Meters and Values. The scope of work for both parts of the project is best understood by examining its specific component parts. The Energy

Conservation element of this project involves the 1) Installation of solar generating facilities, 2) Retrofitting Interior and Exterior Lighting, 3) Retrofit of Streetlights and 4) Upgrade of Smart Thermostats. The Water Meter element of this project involves 1) Retrofitting Water Meters and installing a Fixed Network Communication System, 2) Installing Smart Irrigation Controls and 3) Installing Dissolved Oxygen (DO) Sensors at the Waste Water Treatment Plant. Each of the individual components will be discussed during the presentation and within this memorandum.

PHASE I: SOLAR AND ENERGY CONSERVATION MEASURES

Solar Generating Facilities are proposed for at City Hall, Patriot Park, Well #7, the Wastewater Treatment Percolation Pond, RES-BCT. As discussed with the City in previous work sessions, solar units at City Hall and Patriot Park will be installed on a canopy and remaining areas will be ground mounted. (See attached power point presentation.)

OpTerra Energy will prepare design drawings, required geotechnical evaluations, utility interconnection drawings and will provide and install solar canopy structures. The canopy structure design will include a painted canopy structure 9-12 feet in height and a pier depth of eight feet deep and assumes no de-watering, benching, shoring, or casing.

As shown below, the proposed system installation is projected to reduce energy costs by $255,964 per year, most of which will be realized in the water and wastewater programs.

$5,551,441 cost ÷ $255,964 annual savings = 21.7 year breakeven/payback period

Chart 2
Projected Solar Savings

Location	KWh Usage (July 2024 - June 2015) from monthly Bills	Actual Bills	3% Utility User Tax Removal	kw DC	Year 1 kWh Solor Production	$/kWh Offset	Year 1 PV Production Value
City Hall/PD	170,333	32,446	31,473	58.50	90,154	$ 0.22	$ 19,713
Wells #5 Patriot Park	186,965	33,901	32,884	87.75	135,731	$ 0.24	$ 32,267
Wells #7 Corp Yard	434,640	90,037	87,336	187.20	302,751	$ 0.28	$ 83,860
WWTP Ponds	213,407	37,167	36,052	187.20	299,904	$ 0.20	$ 61,042
RES-BCT				263.30	421,981	$ 0.14	$ 59,082
				783.95	**1,250,521**		**255,964.00**

Retrofitting Interior Lights will include the installation of High Efficiency light emitting diodes (LED) to replace 32-34 watt T8 and T12 lamps and ballasts with new LED lamps and drivers or new LED fixtures. The total cost for replacing these lights is $235,139. While the standard warranty on a LED light is between 5 and 10 years, the typical lifespan of an LED light is about 80,000 to 100,000 hours. This equates to 20 to 25 years. It should be noted that the warranty does not equal the life of the product. As shown in the retrofits specified for the City Hall, the warranty is for 10 years, but the life expectancy is 88,000 hours. So for an average of 3,000 hours a year (6 am to 6 pm 5 days a week) at the City Hall, that equates to a 29 year life expectancy. Lighting Controls will include the installation of occupancy sensors and dimming controls. Emergency Ballasts will include the installation of 97 emergency ballasts at existing

locations. Exterior Retrofit includes replacement of high pressure sodium (HPS), low pressure sodium (LPS) and metal halide (MH) fixtures with new LED fixtures at eight separate sites.

As shown Chart 3, retrofitting these lights will save 72,501 total Kw hours and reduce the City's annual cost of energy by $14,748 and maintenance costs by $2,692. (See Appendix B for the site details.)

$235,139 cost ÷ $17,440 annual savings = 13.5 year breakeven/payback period

Chart 3
Interior Light Projected Savings

	Existing		Retrofit		Electric Savings			
Bldg Name	kW	kWh	kW	kWh	kW	Retrofit kWh	Controls kWh	Total Savings kWh
Child Development Center	1.59	4,824	1.25	4,096	0.33	729	294	1,022
City Hall & Police Dept	27.67	77,631	12.94	36,185	14.72	41,448	3,039	44,487
Corp Yard	6.47	18,923	3.36	6,941	3.11	11,983	551	12,534
Patriot Park	3.95	17,318	1.84	8,037	2.12	9,281	-	9,281
WWTP-Main	1.50	6,570	0.32	1,393	1.18	5,177	-	5,177
Grand Total	**41.18**	**125,266**	**19.71**	**56,651**	**21.47**	**68,617**	**3,883**	**72,501**

Retrofitting Streetlights will include the replacement or retrofit of 21 City owned Street Light fixtures with LED light fixture, necessary traffic control and identification of light pole location for GIS mapping. The total cost of replacing these lights is $16,808. Total annual projected savings is $4,590. Chart 4 shows the location of each streetlight that will be retrofitted.

$16,808 cost ÷ $4,590 annual savings = 3.7 year breakeven/payback period

Chart 4
Street Light Location

Street Light Descriptive Address	Suspension	Sp Id	Prem Id	Retrofit Spec	Type	Wattage
EL CAMINO REAL & OAK ST SWC	10 FT OR 12 FT	6937007588	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & OAK AVE NWC	10 FT OR 12 FT	6937007544	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & OAK AVE NEC	10 FT OR 12 FT	6937007593	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & OAK AVE SEC	10 FT OR 12 FT	6937007568	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & ELM AVE SEC	10 FT OR 12 FT	6937007585	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & ELM AVE NWC	10 FT OR 12 FT	6937007594	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & ELM AVE NEC	10 FT OR 12 FT	6937007562	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & ELM AVE SEC	10 FT OR 12 FT	6937007557	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & TYLER AVE NEC	10 FT OR 12 FT	6937007587	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & TYLER AVE NWC	10 FT OR 12 FT	6937007547	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & TYLER AVE SEC	10 FT OR 12 FT	6937007577	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & TYLER AVE SWC	10 FT OR 12 FT	6937007534	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & WALNUT AVE NWC	10 FT OR 12 FT	6937007574	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & WALNUT AVE NEC	10 FT OR 12 FT	6937007575	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & WALNUT AVE SEC	10 FT OR 12 FT	6937007506	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
EL CAMINO REAL & WALNUT AVE SWC	10 FT OR 12 FT	6937007592	6937007541	BXSP C HT 2ME E 40K-UL SV N	LED	83
252 13TH ST NORTH OF	10 FT OR 12 FT	7944665457	7944665425	BXSP B HT 2ME A 40K-UL SV N	LED	53
252 13TH ST	10 FT OR 12 FT	7944665491	7944665425	BXSP B HT 2ME A 40K-UL SV N	LED	53
252 13TH ST SOUTH OF	10 FT OR 12 FT	7944665406	7944665425	BXSP B HT 2ME A 40K-UL SV N	LED	53
2025 EL CAMINO REAL	6 FT	5045188247	5045188221	BXSP C HT 2ME E 40K-UL SV N	LED	83
798 CHERRY AVE	6 FT	6355534634	6355534637	BXSP B HT 2ME A 40K-UL SV N	LED	45

Installation of Smart Thermostat Upgrade will be done at the Community Center for $5,799. Currently the thermostats at the community center are manually controlled and are set to default time schedules. OpTerra Energy Services will replace existing manual thermostats with smart thermostats that are controlled wirelessly via the internet to access thermostats and set schedules of operation and temperature set points. As shown in Chart 5, the total annual savings associated with this improvement is $818.

Chart 5
Community Center Smart Thermostat Savings

Unit #	Baseline Consumption (kWh)	Retrofit Consumption (kWh)	kWh Savings	$ Savings (2016)
1	1,784	832	952	$ 205.51
2	1,433	672	762	$ 164.47
3	679	317	362	$ 78.09
4	1,609	752	857	$ 184.99
5	1,609	752	857	$ 184.99
Total	**7,113**	**3,325**	**3,788**	**$ 818.05**

$5,799 cost ÷ $818 annual savings = 7.1 year breakeven/payback period

PHASE II: WATER SYSTEM IMPROVEMENTS (Water Meters and Valves)

As indicated in beginning of this memo, Phase II would only occur after the City has completed the Water System Master Plan for the Water Utility and established new Water User Rates to cover the $226,160 annual lease payment for fifteen years.

Greenfield currently has 3,698 water meters in the utility district, 580 have been upgraded and provided with drive-by communication capabilities. As part of the City's compliance with its 2010 Unban Water Management Plan, OpTerra Energy Services will replace the hardware of the remaining 3,118 meters, and upgrade all 3,698 meters with fixed communication radio transmitters. As shown in Chart 6, the City pumps 641,062,000 gallons of water annually.

Chart 6
Water Well Production

2013	WELL #5 GALLONS PUMPED	WELL # 1 GALLONS PUMPED	WELL #6 GALLONS PUMPED	WELL # 7 GALLONS PUMPED	TOTAL GALLONS PUMPED**	TOTAL ACRE FEET**
JANUARY	823,000	8,693,000	12,187,000	13,704,000	34,584,000	106.1
FEBRUARY	1,244,000	8,527,000	11,892,000	15,161,000	35,580,000	109.2
MARCH	2,842,000	13,868,000	19,384,000	14,360,000	47,612,000	146.1
APRIL	4,397,000	15,675,000	22,006,000	21,327,000	59,008,000	181.1
MAY	7,204,000	22,068,000	41,333,000	1,745,000	65,146,000	199.9
JUNE	7,259,000	18,066,000	48,616,000	0	66,682,000	204.6
JULY	1,786,000	4,069,000	62,588,000	0	66,657,000	204.6
AUGUST	0	1,676,000	61,139,000	0	62,815,000	192.8
SEPTEMBER	0	6,992,000	54,094,000	0	61,086,000	187.5
OCTOBER	0	2,020,000	53,374,000	0	55,394,000	170.0
NOVEMBER	0	2,368,000	42,213,000	0	44,581,000	136.8
DECEMBER	0	735,000	41,182,000	0	41,917,000	128.6
TOTAL *	**25,555,000**	**104,757,000**	**470,008,000**	**66,297,000**	**641,062,000**	**1,967.3**

The overwhelming majority of the City's water connections are for single family residential accounts which make up 83% of the service connections; multi-family customers (apartments, duplexes and trailer parks) make up approximately 11%; commercial (businesses, schools, churches and business parks) make up 4%; landscape (parks and medians) make up 1%; and 1% are "other" (fire protection, government, and hydrants). As noted in the City's 2010 Unban Water Management Plan, the Water Utility loses approximately 13% of all water in its distribution system due to old inaccurate water meters running slow and to water leaks in the system. It is projected that the City can reduce the loss of water by 9% with the installation of newer water meters and redirecting utility staff to increase maintenance of the water distribution system. The total cost of replacing meters is $1,509,690; however, staff is recommending the addition of electronic shutoff values to automate the process of turning water service on and off without manually sending a staff person to the address which is the current practice. The cost for this feature is $590,707. As indicated, staff has been slowly replacing water meters during the year which is costly and inefficient.

As shown in Chart 7, annual savings associated with reducing water loss is estimated at $81,969.

Chart 7
Projected Water Meter Upgrade Savings

2013 Total Gallons Pumped	641,062,000
Recoverable Losses	9%
Total Lost Gallons	57,695,580
Total Meters	3,698
Loss per meter	15,602
# of meters Upgrading	3,118
Total Water saved	48,646,517
Average Cost per Gallon July 2016	$ 0.0017
Total $	$ 81,969

Replacing out dated water meters was an important component in the City's 2010 Urban Water Management Plan which requires the City to project water demands over the next 20 years to ensure there will be sufficient water supply to meet these demands. One of the most critical elements of this plan is the calculation and selection of water conservation targets required by the Water Conservation Act of 2009. The most important benefit associated with the replacement of new meters that can electronically communicate user data to the City without physically going to each customer address to read a meter is reduced staff cost. As shown in Chart 8, annual labor cost savings of $67,200 can be realized by eliminating water meter readings.

Chart 8
Water Meter Readings Savings

Labor Days per Month (2 People X 10 days)	20
Months in Year Meter Read	12
Hours in Day	8
Total Hours per Year	1,920
Labor Rate	$ 35
Total Cost per Year	$ 67,200

As mentioned, the City will also save money by terminating water service to customers without having to dispatch a Utility Worker to the actual location of the customer. The ability to turn service on and off remotely has been used in the electric power industry and will enhance the customer service to City residents. As shown in Chart 9, the total labor cost savings associated with the ability to remotely turn off and turn on water service will save $43,000 per year.

Chart 9
Manual Shut Off Value Savings

Labor Days per Month (2 People X 8 days)	16
Months in Year Valves closed	12
Hours in Day	8
Total Hours per Year	1,536
% of Labor Saved	80%
Labor Rate	$ 35
Total Cost per Year	$ 43,000

OpTerra Energy Services will assist the City with setting up both an internal and client website, and with the automatic transfer of usage data to our existing Tyler Technologies billing system.

The total cost of installing the new meters is $2,484,421 and financing costs are $1,059,271, for a total project cost of $3,643,692. Annual labor cost savings and reduced water loss are estimated at $180,119.

$3,643,692 cost ÷ $180,119 annual savings = 20.2 year breakeven/payback period

Upgrading Irrigation Control in City parks including the removal of existing controllers and the installation of weather-based irrigation smart controllers is projected to cost $194,225 and will save $39,205.

$194,225 cost ÷ $39,205 annual savings = 5.0 year breakeven/payback period

It should be noted that currently the City is not reimbursing the Water Fund for the water being used in Patriot Park. This practice should be discontinued when the City's General Fund has the ability to pay the Water Fund for the service it is using.

Chart 10
Smart Controller Savings

Address	Description	Jan-Dec 2014 Consumption (gallons)	Jan-Dec 2014 Cost ($)	Jan-Dec 2014 $/gallon	Estimated Annual Water Savings (gallons)	Annual Savings 2016
13th and Oak - Patriot Park	Patriot Park - Baseball fields Patriot Park - Well #5 Patriot Park - Community Center	40,663,000	$ 87,019	$ 0.00214	10,165,750	$ 26,976
221 PINOT AVE - CITY PARK	Vintage Park	2,530,580	$ 5,588	$ 0.00221	632,645	$ 1,732
200 RAVA PARKWAY PARK	Rava Parkway	2,111,370	$ 4,862	$ 0.00230	527,843	$ 1,507
207 TUSCANY AVENUE PARK	Tuscany Park	1,962,193	$ 4,695	$ 0.00239	0	
98 SEL CAMINO REAL-PARK	Village Green Park	1,679,793	$ 3,812	$ 0.00227	419,948	$ 1,182
246 BORZINI CIRCLE	Rotary Centennial Park	1,116,613	$ 2,461	$ 0.00220	279,153	$ 763
634 ST CHRISTOPHER LANE	St Christopher Lane	1,043,778	$ 2,231	$ 0.00214	260,945	$ 692
890 TYLER AVE - CITY PARK	Tyler Park	964,920	$ 2,128	$ 0.00220	241,230	$ 660
328 PARKSIDE Court	Parkside Park	843,767	$ 1,847	$ 0.00219	210,942	$ 573
599 EL CAMINO REAL	City Hall & Police Dept.	644,302	$ 1,740	$ 0.00270	161,076	$ 539
540 BAYWOOD DR-CITY PARK	Baywood Park	757,421	$ 1,594	$ 0.00210	189,355	$ 494
801 APRICOT STREET PARK	Apricot Park	580,080	$ 1,180	$ 0.00203	145,020	$ 366
0000 GIANOLINI PARKWAY	0000 GIANOLINI PARKWAY	390,490	$ 805	$ 0.00206	97,623	$ 249
385 THORP AVE	385 THORP AVE	446,155	$ 718	$ 0.00161	111,539	$ 222
326 WILSON CIRCLE	326 WILSON CIRCLE	382,177	$ 642	$ 0.00168	95,544	$ 199
303 EL CAMINO REAL MUSEUM PK	Hicks Park/Library	368,718	$ 568	$ 0.00154	92,180	$ 176
20 WALKER LANE ISLAND	20 WALKER LANE ISLAND	306,181	$ 532	$ 0.00174	76,545	$ 165
235 THORP-WALNUT TREE LINE	235 THORP-WALNUT TREE LINE	289,207	$ 476	$ 0.00165	72,302	$ 148
317 MORENO STREET	317 MORENO STREET	234,636	$ 342	$ 0.00146	58,659	$ 106
131 SEL CAMINO REAL LS (El Camino	131 SEL CAMINO REAL LS	236,958	$ 305	$ 0.00129	59,240	$ 94
632 VAZQUEZ AVENUE	632 VAZQUEZ AVENUE	188,295	$ 275	$ 0.00146	47,074	$ 85
300 LAS MANZANITAS DRIVE	300 LAS MANZANITAS DRIVE	158,749	$ 165	$ 0.00104	39,687	$ 51
Totals					**13,984,298**	**$ 36,980**

Waste Water Treatment Plant Dissolved Oxygen (DO) Sensor Installation: The City of Greenfield is currently contracted with the Wallace Group to design and oversee the installation of 18 aerators in the percolation ponds at the Waste Water Treatment Plant. These new aerators are designed to run 12 hours a day, seven days a week. In order to reduce the power consumption of the aerators, their operating times will be operated based on Dissolved Oxygen (DO) concentrations. The DO data will be supplied by DO meters and sensors located in the ponds. OpTerra Energy Services will provide the Wallace Group with the design information needed to integrate DO Sensors into their design. OpTerra Energy Services will provide and install DO sensors during the installation of the aerators for a total cost of $189,321. As shown below, the projected annual cost savings associated with this sensor installation is $19,113.

$189,321 cost ÷ $19,113 annual savings = 9.9 year breakeven/payback period

Chart 11
Wastewater Treatment Plant Dissolved Oxygen (DO) Savings

Location		Pre DO Control					Post DO Control					
		Status	Motor kW	Run Hours	Days Per Y	kWh/Year	Status	Motor kW	Run Hours	Days Per Y	kWh/Year	kWh Savings
Pond 1	Aerator 1	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 2	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 3	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 4	On	3.36	12	365	14,723	Off	3.36	7.2	365	8,834	5,889
	Aerator 5	On	3.36	12	365	14,723	Off	3.36	0	365	0	14,723
	Aerator 6	On	3.36	12	365	14,723	Off	3.36	0	365	0	14,723
Pond 2	Aerator 7	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 8	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 9	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 10	On	3.36	12	365	14,723	Off	3.36	7.2	365	8,834	5,889
	Aerator 11	On	3.36	12	365	14,723	Off	3.36	0	365	0	14,723
	Aerator 12	On	3.36	12	365	14,723	Off	3.36	0	365	0	14,723
Pond 3	Aerator 13	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 14	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 15	On	3.36	12	365	14,723	On	3.36	12	365	14,723	0
	Aerator 16	On	3.36	12	365	14,723	Off	3.36	7.2	365	8,834	5,889
	Aerator 17	On	3.36	12	365	14,723	Off	3.36	0	365	0	14,723
	Aerator 18	On	3.36	12	365	14,723	Off	3.36	0	365	0	14,723
				216		265,021			129.6		159,012	106,008

The proposed improvements will reduce the average hour reduction by which, based on an average blended rate for electrical service in 2016 at .01803 Kwh.

BUDGET AND FINANCIAL IMPACT

Excluding financing, the total cost of the proposed projects, which includes design, project management, construction, bonds, and overhead/profit, is $6,976,842. The total cost, including $2,677,069 in interest financing, is $9,653,911.

If the City were to decide not to move forward on this project, it is contractually obligated to pay a one-time cost of $30,00 to OpTerra Energy Services for the cost of engineering the proposed project. The proposed design fees for this project are reasonable and customary given the complexity and coordination that will be required in order to complete.

In order to fund the proposed City-Wide Energy Efficiency and Renewable Energy Project, staff recommends obtaining financing from PNC Equipment Finance. Financing includes the purchase, acquisition, and installation of Solar PV, Street Lighting, Interior/Exterior Lighting, Water Meters, Irrigation Controls, Thermostats and WWTP DO Sensors. The proposed Agreement is a net lease whereby the City is responsible for all costs of operation, maintenance, insurance, and taxes.

The lease term is 14 years plus 12 months of construction with a lease rate of 3.139%. At lease closing, PNC Equipment Finance will deposit the entire financed amount into an escrow account from which disbursements will be made to contractors and equipment providers as directed by the City. The lease rate may be adjusted prior to lease closing and the deposit of funds into an escrow account to reflect market conditions at the time of closing.

The lease rate will be indexed to the 10-year interest rate swap as published by the Federal Reserve. Legal title to the equipment during the lease term will be with the City. Upon performance of the terms and conditions of the lease agreement, the City will have the option to purchase all equipment for $1.00.

The manufacturer's warranty for specific pieces of equipment is listed in the Energy Service Contract. OpTerra Energy Services will perform measurement and verification services at City Hall, Well #7 and the Corporation Yard, Patriot Park and Well #5, Wastewater Treatment Plant and the RES-BCT. The proposed contract has a two year guaranteed savings of $237,063 for year one and $244,133 for year two. OpTerra Energy Services will warrant that the City will realize these total Energy Consumption Savings during the first two years of the lease, subject to adjustment for changes in energy rate factors, energy use factors, and consequential revisions to the relevant baseline.

Annually during the first two years of the lease term, OpTerra Energy Services will submit to the City an energy savings report containing a precise calculation of the energy consumption savings realized by the City. OpTerra Energy Services will also perform preventive maintenance services with respect to the solar PV facilities during the first two years of the lease term. The annual maintenance fee for the first year will be $25,114.

System performance is evaluated by comparing actual production data and actual local weather data to the production values predicted by modeling software. These evaluations are performed monthly; greater-than-predicted degradations may indicate the need for panel washing. One panel washing is included in the OpTerra Energy Services agreement. The City does have the option to purchase additional washings to maintain optimal performance. In the event that a second annual washing is recommended by OpTerra Energy Services in order to maintain optimal performance, but the City declines to purchase the additional washing, OpTerra Energy Services may adjust the Energy Savings Guarantee for that year. In years of extreme drought and/or where system performance is greater than 100%, OpTerra Energy Services and the City may agree not to wash the solar panels, and the City will receive a credit for that year's panel washing.

REVIEWED AND RECOMMENDED

As stated in the City 2013 Energy Action Strategy plan, "with the unprecedented energy challenges resulting from concerns about the limited supply of fossil fuels globally and our overall energy delivery infrastructure, coupled with an emerging public interest in energy conservation and sustainability, it is clear that action must be taken in communities throughout California. In order to address these concerns, Greenfield is committed to reducing community-wide energy use through the enactment of policies, strategies, and actions that are both cost-effective and environmentally sound."

As noted in this report, official energy consumption and Green House Gas emission reduction targets have not yet been established or adopted by the City. At the time of this report, Energy Watch staff suggested, and the City approved the following goal and GHG reduction targets:

> *Support achievement of a 15% reduction below 2005 baseline community-wide GHG emissions levels by 2020—consistent with the State-recommended reduction targets identified by AB 32—through implementation of cost-saving energy efficiency and conservation measures included in this Energy Action Strategy.*

The goal of reducing GHG emissions by 15% is consistent with state guidance established by AB 32 and supports local compliance with the California Environmental Quality Act (CEQA) Guidelines for GHG emissions. This policy statement is one of the important factors to understanding the contribution of energy efficiency to compliance with the evolving regulatory framework related to GHG emissions.

Admittedly, the project that is being recommended for approval at the next regular City Council Meeting on November 11, 2015, is substantial and will impact all City operations. Staff has worked very closely with OpTerra Energy Services engineers designing the proposed project and has taken a very long term prospective on managing our limited city assets. ***Approving this project is an investment in sustainable progressive city government***. Since the City has limited financial assets, it is imperative that we use our resources wisely and integrate technology into our daily operations. Given the small size of our Public Works staff, the City is losing its most critical resources when staff is forced to spend thousands of hours walking every four weeks to every house in the City reading water meters. Even worse is the lost time devoted to manually turning customer water service off on Monday …and then…manually turning it back on Tuesday after payment is received. The use of technology is this area will allow staff to focus its efforts on system maintenance and customer service as the City is required to do by state law.

Most of the financing of this project will be the obligation of our Utilities services that need to be run like independent enterprises. The projected savings from the energy conservation measures and the efficiencies in the distribution of water and utilization of staff offset the initial investment that the City will make with the approval of this Energy Conservation Project.

Based on the benefits of this project, Community Services Director Mic Steinman, Utility Manager Arturo Felix and your City Manager recommend approval of the proposed Energy Conservation Contract.

SUBSEQUENT ACTIONS

The adoption of a Resolution providing for financing the project with PNC will be placed on the November 11, 2015 Council Agenda for approval. Once the City approves financing for Phase I of the project, the City will need to approve the Energy Conservation Agreement. Phase II notice to precede will not be authorized until the completion of the Water Utility Master Plan and adoption of new Water User Rates.

The proposed FY 2016 Budget provides funds for conducting a Capital Planning and Funding Analysis to evaluate the timing and funding sources for the recommended capital improvement plans and individual projects. Concurrent with this analysis, the City will also be conducting a Revenue Sufficiency Analysis which will provide a multi-year projection on the sufficiency of the of the Water and Sewer Fund's revenues to meet all of its current and projected financial

requirements. Completing these two studies, the Water and Wastewater System Master Plans, will enable the City to determine the level of rate adjustments necessary in each year to provide adequate revenues to fund all of the Utility's cost requirements and capital needs.

Both the City's Water and Sewer Utilities are critical to the community's economic development but are undercapitalized and in need of substantial infrastructure improvement and expansion. The FY 2016 and 2017 Water Fund Budget included $250,000 for the purchase of new water meters and $90,000 each year for replacing existing water meters which will not be necessary with the approval of this project

The Finance Department will facilitate the necessary execution of loan documents with PNC Equipment Finance for moving forward on the project and establishing an internal amortization schedule for loan repayment from all impacted City funds.