AGENDA
TOWN OF CAMP VERDE
WORK SESSION
MAYOR AND COUNCIL
473 S MAIN STREET, SUITE 106
FRIDAY, AUGUST 11, 2017 AT 9:00 A.M.

Note: Council member(s) may attend Council Sessions either in person or by telephone, video, or internet conferencing.

1. Call to Order.

2. Roll Call. Council Members: Jackie Baker, Buck Buchanan, Dee Jenkins, Brad Gordon, Robin Whatley; Vice Mayor Jessie Murdock; and Mayor Charles German.

3. Pledge of Allegiance

Page 3 **4. Agenda Items for Discussion.** No action to be taken.

4.1. Review and discuss Investment Grade Energy Audit Findings and possibly give direction to move forward on projects identified for future Council formal consideration. [Staff Resources: Russ Martin]

85 **4.2. Review and discuss Town Manager sample contracts for future consideration.** [Staff Resources: Russ Martin]

5. Adjournment

Posted by:_____ Date/Time:_____

Note: Pursuant to A.R.S. §38-431.03.A.2 and A.3, the Council may vote to go into Executive Session for purposes of consultation for legal advice with the Town Attorney on any matter listed on the Agenda, or discussion of records exempt by law from public inspection associated with an agenda item.

The Town of Camp Verde Council Chambers is accessible to the handicapped. Those with special accessibility or accommodation needs, such as large typeface print, may request these at the Office of the Town Clerk at 928-554-0023

38-431.01 Meetings shall be open to the public
A. All meetings of any public body shall be public meetings and all persons so desiring shall be permitted to attend and listen to the deliberations and proceedings. All Legal Action of public bodies shall occur during a public meeting.

☐Bashas's Community Board
☐Town Hall
☐Website

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Camp Verde
ARIZONA

INVESTMENT GRADE AUDIT
DRAFT
07.14.2017

wendel

contents

Section A

Executive Summary

Executive Summary

$1,046,812
Total Project Cost

$6,609
Annual Savings

13.7YR
Simple Payback

$639,391
Positive Cumulative Cash flow

135 Metric Tons CO_2

15,151 gallons of gas[1]

15 Homes[1]

Project Overview

With the Town of Camp Verde's support and coordination, Wendel has completed our review of their facilities. This investment grade audit (IGA) summarizes our findings and provides technical details in the appendix regarding projected energy savings and costs.

Wendel has formulated our initial recommendations for a base project for the Town's consideration. The intent is to leverage projects that draw a balance between three sectors; financial, technical, and community. We believe this balance accurately describes the goals of the Town of Camp Verde as a municipality and community. We have presented a base project with this in mind. The project hits on each sector.

Financial:

- 15% reduction in water and energy costs
- 75% reduction in Biosolids disposal costs
- Positive cumulative cash flow over 20 year financing term

Technical:

- Improves control and comfort of the buildings
- Enhance plant operation

Community:

- Promotes LED lighting & reduces light pollution from site lighting
- Visibly promotes conservation awareness with solar panel installation
- Reduces the Town's emissions by 318,500 lbs of CO_2 annually.

We are calling this a base project since it is missing a key aspect, your input. While we feel this solution will fit your needs, we have laid out an approach that will foster collaboration. We look at the base project as a starting point. As you read through this document you will find three underlying themes to our approach:

- Owner Control: The Town has the final say as to what is included in the project.
- Accountability: Using Open Book & Fully Transparent Pricing
- Realistic & Innovative Energy Solutions: Our experience and expertise will provide you with solution options that have been proven to perform.

The base project is projected to result in a positive cumulative cash flow over the term of financing. The Town could choose to leverage this money in the project and replace street lighting or other longer payback improvements. This may benefit the Town since the work is done all at once under one contract.

[1]Annual Equivalents based on the U.S. Environmental Protection Agency's greenhouse gas equivalencies calculator. The annual energy savings achieved by this project will have an impact on our environment equal to these equivalent actions.

Town of Camp Verde
TOTAL PROJECT SUMMARY

(Y)es (N)o (O)ption	Line No.	Facility	EEM No.	Energy Conservation Measure	Total Measure Cost[1] ($)	Annual Electric Savings (kWh)	Annual Demand Savings (kW)	Annual Fuel Savings (mmBtu)	Annual Water Savings (Gallons)	Annual O&M Savings ($)	Annual Electric Savings ($)	Annual Fuel Savings ($)	Total Annual Savings ($)	Simple Payback Period [2]	Emissions Reduction (lbs of CO_2)	Estimated Total Incentive [3]
Y	1	100 BLDG	1.1	Lighting System Improvements	$13,716	9,264	37.8	0	0	-$104	$1,073	$0	$969	14.2	8,151	$379
Y	2	200 BLDG	1.1	Lighting System Improvements	$1,937	1,358	6.3	0	0	-$8	$200	$0	$192	10.1	1,195	$158
Y	3	300 BLDG	1.1	Lighting System Improvements	$29,032	15,279	69.4	0	0	-$172	$1,810	$0	$2,321	12.5	13,444	$776
Y	4	Archaeology Center	1.1	Lighting System Improvements	$1,829	779	4.7	0	0	-$8	$116	$0	$108	16.9	686	$52
Y	5	Butler Park	1.1	Lighting System Improvements	$539	79	0.7	0	0	$0	$11	$0	$17	31.7	70	$21
Y	6	CVMO	1.1	Lighting System Improvements	$21,141	13,221	42.4	0	0	-$154	$1,257	$0	$1,520	13.9	11,634	$429
Y	7	Library	1.1	Lighting System Improvements	$33,921	18,349	58.1	0	0	$15	$2,069	$0	$2,604	13.0	16,145	$669
Y	8	Maintenance Shop	1.1	Lighting System Improvements	$1,002	466	2.3	0	0	-$4	$71	$0	$67	15.0	410	$44
Y	9	Pool/Skate Park	1.1	Lighting System Improvements	$3,583	488	4.9	0	0	-$7	$72	$0	$66	54.1	430	$62
Y	10	Public Works Yard (Streets)	1.1	Lighting System Improvements	$4,244	2,148	10.8	0	0	-$19	$318	$0	$299	14.2	1,890	$142
Y	11	Town-Wide	1.1	Exterior Lighting Upgrades (Multiple-Sites)	$49,320	16,761	0.0	0	0	-$299	$1,949	$0	$1,650	29.9	14,748	$91
Y	12	WWTP	1.1	Lighting System Improvements	$2,732	2,592	8.5	0	0	-$36	$222	$0	$263	10.4	2,281	$45
N	13	Town-Wide	1.2	Streetlighting	$241,291	50,132	0.0	0	0	$0	$5,829	$0	$5,829	41.4	44,111	$0
N	14	Butler Park	1.3	Athletic Field Lighting	$542,685	46,777	418.6	0	0	$0	$6,495	$0	$10,477	51.8	41,159	$0
Y	15	100 BLDG	2.1	HVAC - Adjust Thermostats Setbacks	$100	0	0.0	9	0	$0	$0	$75	$75	1.3	1,089	$0
Y	16	300 BLDG	2.1	HVAC - Adjust Thermostats Setbacks	$100	1,382	3.6	11	0	$0	$164	$84	$284	0.4	2,460	$0
Y	17	Library	2.1	HVAC - Adjust Thermostats Setbacks	$50	0	0.0	13	0	$0	$0	$100	$100	0.5	1,543	$0
N	18	CVMO	2.2	HVAC Equipment Upgrades	$127,595	13,002	0.0	0	0	$0	$1,236	$0	$1,236	103.2	11,441	$1,000
N	19	Senior Center	2.3	HVAC Upgrade - Swamp Cooling to AC	$75,272	-2,728	-32.2	0	0	$0	-$471	$0	-$679	-110.8	-2,400	$0
N	20	300 BLDG	2.4	HVAC - Occupancy Setback Controls	$11,035	3,098	10.3	6	0	$0	$367	$51	$519	21.3	3,477	$480
Y	21	WWTP Lift Station	3.1	Lift Station - Pump Rehab	$90,066	56,225	-165.8	0	0	$0	$6,061	$0	$4,435	20.3	49,473	$0
N	22	WWTP Lift Station	3.1	Lift Station - Pump Replacement	$339,847	48,261	-192.4	0	0	$0	$5,202	$0	$3,316	102.5	42,465	$0
N	23	WWTP Lift Station	3.1	Lift Station - Pump Rehab, Variable Flow	$122,063	-122,106	183.1	0	0	$0	-$13,162	$0	-$11,368	-10.7	-107,441	$0
Y	24	100 BLDG	4.1	Building Envelope Improvements - Weatherization	$8,886	223	0.0	41	0	$0	$26	$330	$356	25.0	4,999	$0
Y	25	200 BLDG	4.1	Building Envelope Improvements - Weatherization	$312	108	0.0	0	0	$0	$16	$0	$16	19.5	95	$0
Y	26	Archaeology Center	4.1	Building Envelope Improvements - Weatherization	$247	4	0.0	1	0	$0	$1	$6	$7	35.7	96	$0
Y	27	Senior Center	4.1	Building Envelope Improvements - Weatherization	$944	984	0.1	0	0	$0	$170	$0	$171	5.5	866	$0
N	28	100 BLDG	4.2	Building Envelope Improvements - Window Replacements	$123,841	492	0.0	3	0	$0	$57	$23	$80	1553.8	764	$280
N	29	200 BLDG	4.2	Building Envelope Improvements - Window Replacements	$162,943	922	0.0	3	0	$0	$136	$21	$157	1036.2	1,123	$450
N	30	300 BLDG	4.2	Building Envelope Improvements - Window Replacements	$270,704	1,331	0.0	12	0	$0	$158	$95	$253	1069.6	2,578	$780
N	31	100 BLDG	5.1	Water Fixture Upgrades	$13,880	742	0.0	0	44	$0	$86	$0	$527	26.4	653	$0
N	32	Pool/Skate Park	5.2	Pool Cover Water & Energy Savings	$84,579	0	0.0	35	106	$0	$0	$281	$674	125.5	4,139	$0
Y	33	WWTP	6.1	Aeration Upgrades - D.O. Control of 2nd Stage	$30,571	34,111	93.5	0	0	$0	$2,920	$0	$3,768	8.1	30,014	$0
N	34	WWTP	6.2	Aeration Control - Intermittent 1st Stage	$6,178	24,679	0.0	0	0	$0	$2,112	$0	$2,112	2.9	21,715	$0
Y	35	WWTP	7.1	Solids - Conventional Drying Beds - Pressed Cake	$375,000	0	0.0	0	0	$43,400	$0	$0	$43,400	8.6	0	$0
N	36	WWTP	7.1	Solids - Solar Drying Beds - Direct Sludge	$1,928,000	-29,538	-36.0	0	0	$59,000	-$2,528	$0	$56,145	34.3	-25,991	$0
N	37	WWTP	7.1	Solids - Conventional Drying Beds - Direct Sludge	$0	21,269	97.3	0	0	$25,100	$1,820	$0	$27,804	0.0	18,715	$0
Y	38	WWTP	8.1	Ground Mount Solar Array - 80% Demand	$322,541	153,582	85.5	0	0	$0	$13,145	$0	$13,922	23.2	135,137	$0
N	39	WWTP	8.1	Ground Mount Solar Array - Full Consumption	$1,221,518	601,373	85.5	0	0	$0	$51,472	$0	$52,248	23.4	529,148	$0
N	40	WWTP Lift Station	8.2	Roof Mounted Solar Array - Lift Station	$50,216	17,561	0.0	0	0	$0	$1,893	$0	$1,893	26.5	15,452	$0
Y	0	Town-Wide	0.0	Investment Grade Audit	$55,000	0	0.0	0	0	$0	$0	$0	$0	-	0	$0
				PROGRAM TOTALS - Recommended Measures	**$1,046,812**	**327,402**	**262.9**	**75**	**0**	**$42,604**	**$31,670**	**$595**	**$76,609**	**13.7**	**296,853**	**$2,865**
				PROGRAM TOTALS - All Measures (w/o Options)	**$6,368,459**	**1,002,668**	**797.1**	**134**	**151**	**$126,704**	**$92,372**	**$1,067**	**$227,831**	**28.0**	**897,960**	**$5,854**

NOTES:

1. TOTAL MEASURE COST includes direct construction costs (subcontractor material and labor) and DOES include fees for services described below: Energy, Electrical and Mechanical engineering, Construction documents, Financing assistance services, Subcontractor coordination and administration
2. SIMPLE PAYBACK periods DO NOT include incentives. Payback is given by the total measure cost divided by total annual savings.
3. INCENTIVES are estimated based on APS's Solution for Buisness Program. These values represent the best estimates of future incentives and are subject to change. Please refer to the report for details. Note incentives are not inluced in simple payback periods.

wendel

DATE PRINTED: 7/13/2017

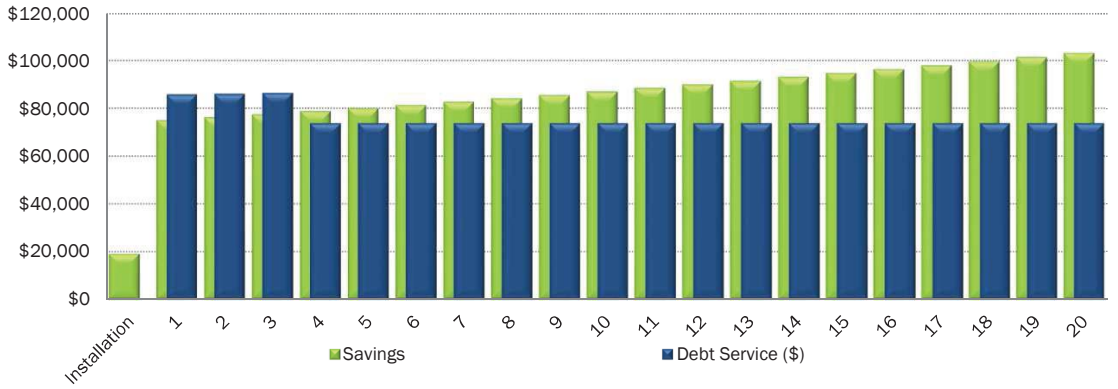
Town of Camp Verde
Preliminary Financial Projections
6/5/2017
BASE PROJECT

Project Financing Details

Total Project Cost[1]	$1,046,812
Buydown	$0
Financed Amount	$1,046,812
Interest Rate	3.50%
Term of Financing	20
Payment Frequency	Annual

Net Present Value of Annual Cash Flow	$324,498

Return on Investment[3]	31%



	A	A1	A2	B	C=A+B	D	E	F	G=D+E+F	H=C+G	I=H+I^{n-1}
Year	Annual Energy Savings	New Energy Incentives[2]	Total Third-Party Funding	Annual O&M Savings	Total Annual Savings	Financing Payments	Annual M&V Costs	Other Costs	Net Annual Costs	Annual Cash Flow	Cumulative Cash Flow
Installation	$16,133	$2,865	$0	$0	$18,997					$18,997	$18,997
1	$32,265	$0	$0	$42,604	$74,869	-$73,655	-$12,000	$0	-$85,655	-$10,785	$8,212
2	$33,072	$0	$0	$43,030	$76,102	-$73,655	-$12,360	$0	-$86,015	-$9,913	-$1,701
3	$33,899	$0	$0	$43,460	$77,359	-$73,655	-$12,731	$0	-$86,386	-$9,026	-$10,727
4	$34,746	$0	$0	$43,895	$78,641	-$73,655	$0	$0	-$73,655	$4,986	-$5,741
5	$35,615	$0	$0	$44,334	$79,949	-$73,655	$0	$0	-$73,655	$6,294	$553
6	$36,505		$0	$44,777	$81,283	-$73,655	$0	$0	-$73,655	$7,628	$8,181
7	$37,418		$0	$45,225	$82,643	-$73,655	$0	$0	-$73,655	$8,988	$17,169
8	$38,354		$0	$45,677	$84,031	-$73,655	$0	$0	-$73,655	$10,376	$27,545
9	$39,312		$0	$46,134	$85,446	-$73,655	$0	$0	-$73,655	$11,791	$39,336
10	$40,295		$0	$46,595	$86,890	-$73,655	$0	$0	-$73,655	$13,236	$52,572
11	$41,303		$0	$47,061	$88,364	-$73,655	$0	$0	-$73,655	$14,709	$67,281
12	$42,335		$0	$47,532	$89,867	-$73,655	$0	$0	-$73,655	$16,212	$83,493
13	$43,393		$0	$48,007	$91,401	-$73,655	$0	$0	-$73,655	$17,746	$101,239
14	$44,478		$0	$48,487	$92,966	-$73,655	$0	$0	-$73,655	$19,311	$120,550
15	$45,590		$0	$48,972	$94,562	-$73,655	$0	$0	-$73,655	$20,908	$141,457
16	$46,730		$0	$49,462	$96,192	-$73,655	$0	$0	$0	$96,192	$237,649
17	$47,898		$0	$49,956	$97,855	-$73,655	$0	$0	$0	$97,855	$335,504
18	$49,096		$0	$50,456	$99,552	-$73,655	$0	$0	$0	$99,552	$435,056
19	$50,323		$0	$50,961	$101,284	-$73,655	$0	$0	$0	$101,284	$536,339
20	$51,581		$0	$51,470	$103,051	-$73,655	$0	$0	$0	$103,051	$639,391
Totals	$840,343	$2,865		$938,097	$1,781,304	-$1,473,097	-$37,091	$0	-$1,141,914	$639,391	

Assumptions:

O&M Escalation:	1.0%
Energy Escalation:	2.5%
M&V Escalation:	3.0%
Discount Rate:	4.0%

Notes

1. Project Cost include all design, project management and construction management fees.
2. Energy Incentives or Grants were not included for the purposes of this report
3. [(Net Present Value of Annual savings - Finacing cost) over average equipment useful life] / [Total project cost]
4. M&V period is assumed to include 3 years of active M&V followed by a stiputlated guarentee for the balance of the contract.

Town of Camp Verde
TOTAL PROJECT SUMMARY - OPTIONAL

(Y)es (N)o (O)ption	Line No.	Facility	EEM No.	Energy Conservation Measure	Total Measure Cost[1] ($)	Annual Electric Savings (kWh)	Annual Demand Savings (kW)	Annual Fuel Savings (mmBtu)	Annual Water Savings (Gallons)	Annual O&M Savings ($)	Annual Electric Savings ($)	Annual Fuel Savings ($)	Total Annual Savings ($)	Simple Payback Period [2]	Emissions Reduction (lbs of CO_2)	Estimated Total Incentive [3]
Y	1	100 BLDG	1.1	Lighting System Improvements	$13,716	9,264	37.8	0	0	-$104	$1,073	$0	$969	14.2	8,151	$379
Y	2	200 BLDG	1.1	Lighting System Improvements	$1,937	1,358	6.3	0	0	-$8	$200	$0	$192	10.1	1,195	$158
Y	3	300 BLDG	1.1	Lighting System Improvements	$29,032	15,279	69.4	0	0	-$172	$1,810	$0	$2,321	12.5	13,444	$776
Y	4	Archaeology Center	1.1	Lighting System Improvements	$1,829	779	4.7	0	0	-$8	$116	$0	$108	16.9	686	$52
Y	5	Butler Park	1.1	Lighting System Improvements	$539	79	0.7	0	0	$0	$11	$0	$17	31.7	70	$21
Y	6	CVMO	1.1	Lighting System Improvements	$21,141	13,221	42.4	0	0	-$154	$1,257	$0	$1,520	13.9	11,634	$429
Y	7	Library	1.1	Lighting System Improvements	$33,921	18,349	58.1	0	0	$15	$2,069	$0	$2,604	13.0	16,145	$669
Y	8	Maintenance Shop	1.1	Lighting System Improvements	$1,002	466	2.3	0	0	-$4	$71	$0	$67	15.0	410	$44
Y	9	Pool/Skate Park	1.1	Lighting System Improvements	$3,583	488	4.9	0	0	-$7	$72	$0	$66	54.1	430	$62
Y	10	Public Works Yard (Streets)	1.1	Lighting System Improvements	$4,244	2,148	10.8	0	0	-$19	$318	$0	$299	14.2	1,890	$142
Y	11	Town-Wide	1.1	Exterior Lighting Upgrades (Multiple-Sites)	$49,320	16,761	0.0	0	0	-$299	$1,949	$0	$1,650	29.9	14,748	$91
Y	12	WWTP	1.1	Lighting System Improvements	$2,732	2,592	8.5	0	0	-$36	$222	$0	$263	10.4	2,281	$45
Y	13	Town-Wide	1.2	Streetlighting	$241,291	50,132	0.0	0	0	$0	$5,829	$0	$5,829	41.4	44,111	$0
N	14	Butler Park	1.3	Athletic Field Lighting	$542,685	46,777	418.6	0	0	$0	$6,495	$0	$10,477	51.8	41,159	$0
Y	15	100 BLDG	2.1	HVAC - Adjust Thermostats Setbacks	$100	0	0.0	9	0	$0	$0	$75	$75	1.3	1,089	$0
Y	16	300 BLDG	2.1	HVAC - Adjust Thermostats Setbacks	$100	1,382	3.6	11	0	$0	$164	$84	$284	0.4	2,460	$0
Y	17	Library	2.1	HVAC - Adjust Thermostats Setbacks	$50	0	0.0	13	0	$0	$0	$100	$100	0.5	1,543	$0
N	18	CVMO	2.2	HVAC Equipment Upgrades	$127,595	13,002	0.0	0	0	$0	$1,236	$0	$1,236	103.2	11,441	$1,000
N	19	Senior Center	2.3	HVAC Upgrade - Swamp Cooling to AC	$75,272	-2,728	-32.2	0	0	$0	-$471	$0	-$679	-110.8	-2,400	$0
N	20	300 BLDG	2.4	HVAC - Occupancy Setback Controls	$11,035	3,098	10.3	6	0	$0	$367	$51	$519	21.3	3,477	$480
Y	21	WWTP Lift Station	3.1	Lift Station - Pump Rehab	$90,066	56,225	-165.8	0	0	$0	$6,061	$0	$4,435	20.3	49,473	$0
N	22	WWTP Lift Station	3.1	Lift Station - Pump Replacement	$339,847	48,261	-192.4	0	0	$0	$5,202	$0	$3,316	102.5	42,465	$0
N	23	WWTP Lift Station	3.1	Lift Station - Pump Rehab, Variable Flow	$122,063	-122,106	183.1	0	0	$0	-$13,162	$0	-$11,368	-10.7	-107,441	$0
Y	24	100 BLDG	4.1	Building Envelope Improvements - Weatherization	$8,886	223	0.0	41	0	$0	$26	$330	$356	25.0	4,999	$0
Y	25	200 BLDG	4.1	Building Envelope Improvements - Weatherization	$312	108	0.0	0	0	$0	$16	$0	$16	19.5	95	$0
Y	26	Archaeology Center	4.1	Building Envelope Improvements - Weatherization	$247	4	0.0	1	0	$0	$1	$6	$7	35.7	96	$0
Y	27	Senior Center	4.1	Building Envelope Improvements - Weatherization	$944	984	0.1	0	0	$0	$170	$0	$171	5.5	866	$0
N	28	100 BLDG	4.2	Building Envelope Improvements - Window Replacements	$123,841	492	0.0	3	0	$0	$57	$23	$80	1553.8	764	$280
N	29	200 BLDG	4.2	Building Envelope Improvements - Window Replacements	$162,943	922	0.0	3	0	$0	$136	$21	$157	1036.2	1,123	$450
N	30	300 BLDG	4.2	Building Envelope Improvements - Window Replacements	$270,704	1,331	0.0	12	0	$0	$158	$95	$253	1069.6	2,578	$780
N	31	100 BLDG	5.1	Water Fixture Upgrades	$13,880	742	0.0	0	44	$0	$86	$0	$527	26.4	653	$0
N	32	Pool/Skate Park	5.2	Pool Cover Water & Energy Savings	$84,579	0	0.0	35	106	$0	$0	$281	$674	125.5	4,139	$0
Y	33	WWTP	6.1	Aeration Upgrades - D.O. Control of 2nd Stage	$30,571	34,111	93.5	0	0	$0	$2,920	$0	$3,768	8.1	30,014	$0
N	34	WWTP	6.2	Aeration Control - Intermittent 1st Stage	$6,178	24,679	0.0	0	0	$0	$2,112	$0	$2,112	2.9	21,715	$0
Y	35	WWTP	7.1	Solids - Conventional Drying Beds - Pressed Cake	$375,000	0	0.0	0	0	$43,400	$0	$0	$43,400	8.6	0	$0
N	36	WWTP	7.1	Solids - Solar Drying Beds - Direct Sludge	$1,928,000	-29,538	-36.0	0	0	$59,000	-$2,528	$0	$56,145	34.3	-25,991	$0
N	37	WWTP	7.1	Solids - Conventional Drying Beds - Direct Sludge	$0	21,269	97.3	0	0	$25,100	$1,820	$0	$27,804	0.0	18,715	$0
Y	38	WWTP	8.1	Ground Mount Solar Array - 80% Demand	$322,541	153,582	85.5	0	0	$0	$13,145	$0	$13,922	23.2	135,137	$0
N	39	WWTP	8.1	Ground Mount Solar Array - Full Consumption	$1,221,518	601,373	85.5	0	0	$0	$51,472	$0	$52,248	23.4	529,148	$0
N	40	WWTP Lift Station	8.2	Roof Mounted Solar Array - Lift Station	$50,216	17,561	0.0	0	0	$0	$1,893	$0	$1,893	26.5	15,452	$0
Y	0	Town-Wide	0.0	Investment Grade Audit	$55,000	0	0.0	0	0	$0	$0	$0	$0	-	0	$0
				PROGRAM TOTALS - Recommended Measures	**$1,288,103**	**377,534**	**262.9**	**75**	**0**	**$42,604**	**$37,499**	**$595**	**$82,437**	**15.6**	**340,964**	**$2,865**
				PROGRAM TOTALS - All Measures (w/o Options)	**$6,368,459**	**1,002,668**	**797.1**	**134**	**151**	**$126,704**	**$92,372**	**$1,067**	**$227,831**	**28.0**	**897,960**	**$5,854**

NOTES:

1. TOTAL MEASURE COST includes direct construction costs (subcontractor material and labor) and DOES include fees for services described below: Energy, Electrical and Mechanical engineering, Construction documents, Financing assistance services, Subcontractor coordination and administration
2. SIMPLE PAYBACK periods DO NOT include incentives. Payback is given by the total measure cost divided by total annual savings.
3. INCENTIVES are estimated based on APS's Solution for Buisness Program. These values represent the best estimates of future incentives and are subject to change. Please refer to the report for details. Note incentives are not inluced in simple payback periods.

wendel

DATE PRINTED: 7/13/2017

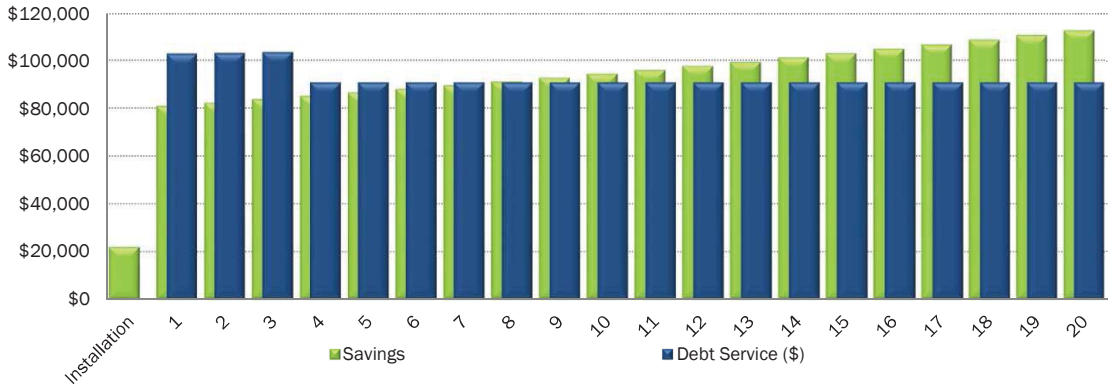
Town of Camp Verde
Preliminary Financial Projections
6/5/2017
OPTIONAL PROJECT

Project Financing Details

Total Project Cost[1]	$1,288,103
Buydown	$0
Financed Amount	$1,288,103
Interest Rate	3.50%
Term of Financing	20
Payment Frequency	Annual

Net Present Value of Annual Cash Flow	$240,011

Return on Investment[3]	19%



	A	A1	A2	B	C=A+B	D	E	F	G=D+E+F	H=C+G	I=H+I^{n-1}
Year	Annual Energy Savings	New Energy Incentives[2]	Total Third-Party Funding	Annual O&M Savings	Total Annual Savings	Financing Payments	Annual M&V Costs	Other Costs	Net Annual Costs	Annual Cash Flow	Cumulative Cash Flow
Installation	$19,047	$2,865	$0	$0	$21,912					$21,912	$21,912
1	$38,094	$0	$0	$42,604	$80,698	-$90,632	-$12,000	$0	-$102,632	-$21,934	-$23
2	$39,046	$0	$0	$43,030	$82,076	-$90,632	-$12,360	$0	-$102,992	-$20,916	-$20,939
3	$40,023	$0	$0	$43,460	$83,483	-$90,632	-$12,731	$0	-$103,363	-$19,880	-$40,819
4	$41,023	$0	$0	$43,895	$84,918	-$90,632	$0	$0	-$90,632	-$5,714	-$46,533
5	$42,049	$0	$0	$44,334	$86,383	-$90,632	$0	$0	-$90,632	-$4,250	-$50,783
6	$43,100		$0	$44,777	$87,877	-$90,632	$0	$0	-$90,632	-$2,755	-$53,538
7	$44,177		$0	$45,225	$89,402	-$90,632	$0	$0	-$90,632	-$1,230	-$54,768
8	$45,282		$0	$45,677	$90,959	-$90,632	$0	$0	-$90,632	$327	-$54,442
9	$46,414		$0	$46,134	$92,548	-$90,632	$0	$0	-$90,632	$1,916	-$52,526
10	$47,574		$0	$46,595	$94,170	-$90,632	$0	$0	-$90,632	$3,537	-$48,989
11	$48,764		$0	$47,061	$95,825	-$90,632	$0	$0	-$90,632	$5,193	-$43,796
12	$49,983		$0	$47,532	$97,515	-$90,632	$0	$0	-$90,632	$6,882	-$36,914
13	$51,232		$0	$48,007	$99,239	-$90,632	$0	$0	-$90,632	$8,607	-$28,307
14	$52,513		$0	$48,487	$101,000	-$90,632	$0	$0	-$90,632	$10,368	-$17,939
15	$53,826		$0	$48,972	$102,798	-$90,632	$0	$0	-$90,632	$12,166	-$5,773
16	$55,172		$0	$49,462	$104,633	-$90,632	$0	$0	$0	$104,633	$98,860
17	$56,551		$0	$49,956	$106,507	-$90,632	$0	$0	$0	$106,507	$205,367
18	$57,965		$0	$50,456	$108,421	-$90,632	$0	$0	$0	$108,421	$313,788
19	$59,414		$0	$50,961	$110,374	-$90,632	$0	$0	$0	$110,374	$424,162
20	$60,899		$0	$51,470	$112,369	-$90,632	$0	$0	$0	$112,369	$536,531
Totals	$992,146	$2,865		$938,097	$1,933,107	-$1,812,647	-$37,091	$0	-$1,396,576	$536,531	

Assumptions:

O&M Escalation: 1.0%
Energy Escalation: 2.5%
M&V Escalation: 3.0%
Discount Rate: 4.0%

Notes

1. Project Cost include all design, project management and construction management fees.
2. Energy Incentives or Grants were not included for the purposes of this report
3. [(Net Present Value of Annual savings - Finacing cost) over average equipment useful life] / [Total project cost]
4. M&V period is assumed to include 3 years of active M&V followed by a stiputlated guarentee for the balance of the contract

Section B

Approach

Approach

Kick-off

The investment grade auditing services began with a project kickoff meeting where our team discussed the project approach, goals, objectives, and priorities that are most valuable to Camp Verde. Our familiarity and experience performing similar projects allowed us to focus the audit on the best opportunities to save energy, improve operations and efficiencies, and reduce costs. This collaborative process set the direction of the overall project.

Data Collection | Documents

Wendel provided a Request for Information (RFI) letter outlining documentation that would support our analysis. Camp Verde provided information such as building floor plans, lighting drawings and inventories, WWTP flow data and utility contact information. Some of the data requested by Wendel was not available. These items were noted by Wendel and incorporated into our site visit data collection efforts.

Data Collection | Site Visits

Wendel's team performed multiple site visits to collect facility data, survey key equipment, and understand the operation of the systems. These site visits were complimented by periodic one-on-one and conference calls with facility staff to validate information or clarify our understanding of the facility or process operation.

Data Collection | Loggers

Wendel's team installed lighting loggers to trend the run hours of the existing lighting system. This type of data informs our auditors as to how occupants utilize the space and how long the lights are on based on space type.

Analysis | Utilities & Benchmarking

Utility data was compiled and analyzed to validate trends and profiles. Please refer to Section D. Benchmarking was completed using EnergyStar Portfolio Manager for applicable facility types.

Analysis | Identify Opportunities

Wendel compiled data for systems within each facility to establish a profile. Our team took a systems approach to identify opportunities consistent with the scope of work. During the course of this phase several opportunities were initially identified then rejected due to the opportunity being deemed to be not technically or financially feasible. An example of this would be a low run time on a motor or pump.

Analysis | Saving Calculations

Energy savings calculations are developed on a system approach. Wendel utilized industry recognized approaches for analyzing these systems. These include lighting calculations based on room-by-room visual inspection and logger trends and HVAC and building envelop

calculations which leverage temperature bin weather data. All calculations are provided in Appendix 2. These calculations clearly identify inputs, assumptions, and key equations to facilitate review and validation.

Analysis | Cost Estimates

Cost Estimates for this project are based on a combination of subcontractor / vendor provided quotes and previous similar projects Wendel has completed or has in development. While this pricing is considered investment grade, as outlined in Section F, our process will encourage subcontractor competition to further reduce these cost following the design phase.

Conclusions | Recommendations

The Project Summary Table includes key information such as; measure cost, annual energy, operational, and maintenance savings, grants and incentives, and simple payback. Wendel made preliminary selections of specific measures to formulate a project that we believe addresses Town needs and is also financially viable. We welcome comments and discussion regarding the recommendations. The intent of this table is to be a tool for decision makers to select their desired project.

Conclusions | Cashflow Analysis

Accompanying the Project Summary Table will be a Project Cash Flow. This illustrated cash flow incorporates financing into the project economics and shows how the selected project will perform financially over the full term. This provides insight into the economic viability of a given project selection and helps shape decision making around what to include in an EPC project.

Quality Control

Quality takes many forms, and we use a variety of process to address them. This all starts with clear communication and check-in meetings to make sure we are developing the project in manner that is in alignment with your expectations.

On the technical side, we preform several team check-in procedures to validate our analysis. The first is a comparison of our calculated baselines to the utility data. This back check validates our models. Once a calculation is developed, a senior engineer reviews the calculation, inputs, data sources and assumptions to validate that the projected savings are realistic, achievable, and measurable. A senior engineer or construction manager reviews the cost estimate to validate that all anticipated ancillary costs have been accounted for and a realistic contingency has been established. Finally the overall report goes through a final review utilizing a standard QA/QC check list.

At the conclusion of this review we still ask that this document is considered DRAFT until we have had to opportunity to receive your input and comments.

Section C

Facility Descriptions

Facility Descriptions

Location

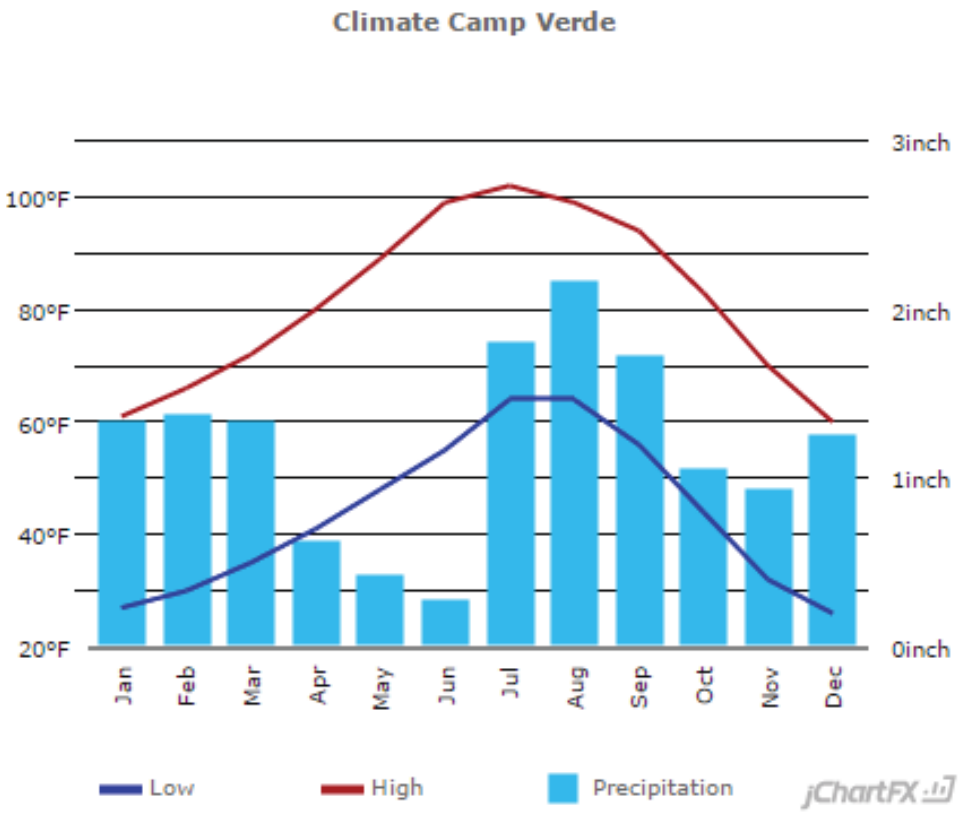
Camp Verde, located on the banks of the Verde River at an elevation of 3,133 feet, is near the center of Arizona. The town incorporated in 1986. The Town has seen a steady increase in population growth over the last couple decades.

Population

As of July 2016 the U.S. Census Bureau reports a population of 11,238 compared to 6,262 in July of 1990.

Weather

Camp Verde has July highs around 100 degrees and January lows around 29. The Town gets 13 inches of rain per year. Please see chart below from the US U.S. Climate Data version 2.2.



Wastewater Treatment Facilities

Facility Type: Wastewater treatment
Area: 20,000 sqft
Operating Hours: 6am–4:30pm Mon–Sun, additional on-call hours

The existing WWTP is the SEQUOX system as manufactured by Aero-Mod, Inc and consists of two treatment trains designated as "A" (south side) and "B" (north side) each designed for a maximum flow of 0.65 mgd. The current average daily flow for the WWTP is approximately 0.25 mgd and only treatment train "A" is being utilized, along with both Aerobic Digester Tanks A and B. The treatment train "B" process tanks are currently kept full with water reportedly to balance the structural loading on the common walls between treatment train A and B.

Butler Park

Facility Type: Multi-Use Sports Field and Park
Area: 3,203 sqft
Operating Hours: Variable

Butler Park has three main structures. The announcer booth has no HVAC, with the primary function of the building acting as storage and maintenance rooms. The irrigation pump room is located on the ground level along with field lighting controllers. The concession stand is a simple one room structure with no HVAC. It includes basic food preparation equipment, refrigerator and freezer. The bathroom structure includes as small M/W restroom with electric resistance heating unit and a ceiling fan. Lighting is controlled with a motion sensor.

Town Hall Complex

Facility Type: 100 BLDG – Economic Development, Community Development, Town Record
200 BLDG – Municipal courts, Visitors Center, Historical Society, Flex Space
300 BLDG – Public Gym, Showers, Wood Shop, Offices, Kitchen, Storage

Area: 100 BLDG – 7,129 sqft
200 BLDG – 7,034 sqft
300 BLDG – 23,401 sqft

Operating Hours: 7am-5pm Mon-Thurs, 7am-11am Friday (typical for all buildings)

The Town Hall Complex is comprised of three buildings that make up an old school complex. Town Hall (100 Building) has three sections, Town Hall, Economic Development Office and Community Development. Sections have been renovated at different times and are in various conditions with regard to interior finish, building envelope, HVAC. The 200 Building is also separated into three sections The East End (Municipal Court) was recently renovated in April of 2017 and includes energy efficient improvements such as new LED fixtures and dimming/motion lighting controls. The Center of the building is the oldest section and includes group meeting space and flexible use room. Both areas are cooled by swamp coolers and have original windows with poor sealing around the building envelope. The West End (Visitor Center & Historical Society) is closest to the street, the front section serves as Historical/Cultural Museum and Visitor Center for Town and surrounding areas.

The rear of this space functions as space for historical society functions. This area is of a similar vintage and condition as the center section. The 300 Building contains Town Engineering, Parks and Rec Dept., Accounting, Facility Maintenance Offices, public gymnasium, and storage. Since its original design as a primary school facility, mixed levels of renovation have been completed throughout the building. Many interiors were completed in the 90's – 00's, however original windows are still in place for much of the facility. There are also several vacant spaces on rear and auxiliary spaces around the community gymnasium.

Marshal's Office

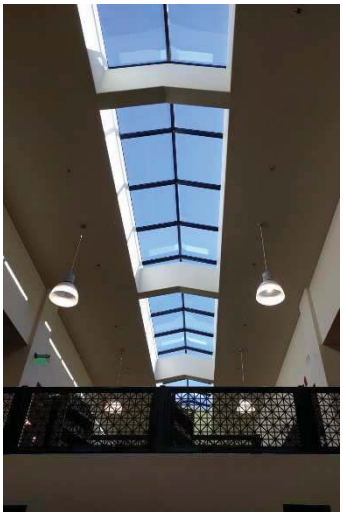
Facility Type: Marshals Office and Dispatch
Area: 8,029 sqft
Operating Hours: 7am-5pm Mon-Fri (office); 24/7 dispatch center

The Camp Verde Marshals Office was originally a church building but was purchased in 2004 and renovated for its current function. The building primarily contains staff offices, training/ meeting rooms, dispatch center, holding rooms, evidence storage, and staff locker rooms. The building envelope is in good condition. The HVAC system is comprised of several furnace units with remote condenser cooling. The evidence storage area also contains walk-in coolers/freezers.

Street Yards

Facility Type: Street department, public works yard
Area: 5,750 sqft
Operating Hours: 7am-3:30pm Mon-Fri (Typical)

The site includes a steel construction prefabricated building. The Maintenance shop area includes three (3) garage bays with infrared heaters and swamp cooling. The building has some weather stripping. Connected to the building is a storage/aux area served by a swamp cooler. This area has no insulation and minimal air-sealing in the exterior walls. A separate office building has residential style furnace/DX unit.



Library

Facility Type: Public Library
Area: 17,000 sqft
Operating Hours: 9 am – 8 pm Mon, Tues, Fri
9am to 5:30pm Tues, Wed, Sat

The construction of this facility was completed in 2016. The two (2) story building contains various library sections as well as community resources and flex-use spaces which include a commercial kitchen and larger group multimedia room. HVAC for the building is provided by several air-handling units with direct-fired, natural gas heating and DX cooling coils. The units are controlled by a central building management system which provides scheduling control. Lighting throughout the building is a mixture of fluorescent and LED fixtures with a lighting control system that allows for building wide on/off control from a single control panel.

Swimming Pool / Skate Park

Facility Type: Public Swimming Pool and Skate Park
Area: 2,238
Operating Hours: 7am-9am Mon-Fri, Noon-7pm Mon-Sat, 1pm-5pm Sunday
Operating Season: Memorial Day – First Day of School

The site has a building consists of men's and women's changing rooms, staff office with a packaged DX AC unit, pump/boiler room, and chemical room. A small pump is also located under the water slide which serves the slide water circulation. The skate park is adjacent to the pool facility and has pole LED light fixtures for use after dark.

Senior Center

Facility Type: Thrift Store and Seniors Programs
Area: 5,760 sqft
Operating Hours: 9am to 3pm Mon - Fri

The upper floor serves as senior community space with a kitchen serving daily meals with a large open primary dining space. Additional billiard room and storage spaces are located on the upper floor. Downstairs is a consignment shop run by the Senior Community. The building has electric baseboard heat, swamp coolers, and older windows. The main door needs to be rehung to seal properly. The lighting throughout the building was recently upgraded to use LED replacement tubes.

Verde Valley Archaeology Center & Museum

Area: 3,569 sqft
Operating Hours: 10am to 4pm Tues to Sat

This single story building has a primary exhibit space which contains a variety of local cultural artifacts and archaeological collections. This space is open to the public and also contains a small store section. Lighting in the exhibit space consists primarily of LED spot light and display case lighting highlighting various displays. The building also contains a larger meeting/conference room and a staff preservation room and collection archive space for handling and storing artifacts. HVAC for the building consists of packaged rooftop units.

Section D

Business as Usual

Business as Usual

Often energy conservation and renewable energy projects are framed using metrics such as simple payback, return on investment and savings to investment ratio. All of these financial analysis have something in common. They are a comparison between two scenarios. The proposed scenario and a "business as usual" scenario. We use the term "business as usual" to define the existing operations, equipment, and utility tariffs that form the baseline from which proposed improvements will be compared to. A deliberate process to developing the "business as usual" scenario is the foundation for the reliable financial analysis and selection of energy conservation measures (ECM) that comprise an energy performance project.

Establish utility baseline.

Step 1 | Utility Baseline & Rates

For the Town of Camp Verde a stepped analysis process was used starting with the review and analysis of baseline utility data provided by the Town. We sorted this data by facility and graphed the usage trends. Energy and water consumption by individual meters was reviewed, as well as in aggregate. Graphs have been presented in aggregate for the purposes of concise reporting. March 2016 to February 2017 was considered as the baseline year. We reviewed utility histories, utility bills, and rate tariffs to establish utility rates reflecting an accurate accounting of what the energy cost would be. This effort culminated into a **utility baseline.**

Compare buildings.

Step 2 | Benchmark Building

Energy benchmarking[1,2,3] is the practice of comparing energy usage data for a select building against data from a national database of buildings in the same usage type and geographic region. Assessing the existing energy performance of your facilities provides knowledgeable benefits. It allows for current energy use to be broken down by usage category to prioritize opportunities to save energy and utility costs. It also allows for the comparison of your facilities to each other and peers. And, it provides the basis for understanding your energy usage and to set clear, attainable and measureable goals.

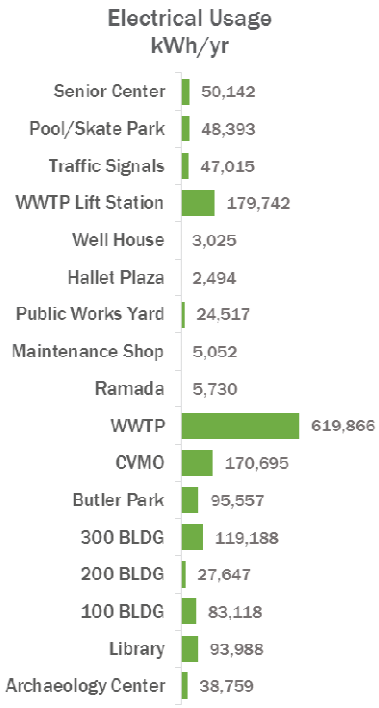
1 – Utility end-use data & benchmarking data is based on the EPA Portfolio Manager and Commercial Building Energy Consumption Survey (CBECS) conducted by the U.S. Department of Energy for buildings across the country. The CBECS commercial sector survey encompasses data available through the U.S. Energy Information Administration based on a specific U.S. region and division.

2 - The 2015 ASHRAE Handbook – HVAC Applications (Chapter 35: Energy Use and Management) provides EUI data for buildings in various categories. This data is based on the 2012 Commercial Building Energy Consumption Survey (CBECS) conducted by the U.S. Department of Energy for buildings across the country.

3 - A normalized EUI is calculated by converting all energy consumed in a building to a common unit, 1,000 Btu's or kBtu's, and then dividing it by the gross square footage of the building. EUI is typically measured in kbtu/sqft/year. Utilizing conversion rates of 1 kilowatt hour is equal to 3.413 kbtu and 1 mmBtu is equal to 1,000 kbtu.

Step 1 | Utility Baseline & Rates: Your Buildings

Electric



Electricity for the Town of Camp Verde is provided by Arizona Public Service (APS). Wendel reviewed the current APS rates effective as of 7/1/12. All non-energy related charges have been excluded to properly model the energy specific rates associated with each electric account. Wendel summarized the utility data over a period from 2/2016 – 2/2017, with the exception of the Senior Center, which considered data from 4/2016 – 4/2017. Rates were averaged over these thirteen months to determine the effective utility rates for usage and demand to be used to evaluate ECMs.

The Town's facilities each fall into one of three rate classes; Medium, Small, and Extra-Small General Service. Placement into each of these three rate classes is determined by average monthly demand total. The extra-small general service corresponds to an average monthly demand of 20 kW or less. Accounts falling under this rate class do not pay any demand charges. The small general service rate class includes any accounts with an average monthly demand greater than 20 kW, but less than or equal to 100 kW. Accounts can freely transfer between these two rate classes month-to-month, depending on their demand during that specific month. Accounts reaching an average demand greater than 100 kW and less than or equal to 400 kW, will fall under the medium general service classification. Rates differ for each classification between the summer (May – October) and winter (November – April) months. The applicable rates are outlined in Table 1.

Table 1

Medium General Service Rates:				
	Summer		Winter	
	First 100 kW	All Additional kW	First 100 kW	All Additional kW
Demand (kW)	$10.235	$5.385	$10.235	$5.385
	First 200 kWh per kW	All Additional kWh	First 200 kWh per kW	All Additional kWh
Usage (kWh)	$0.09884	$0.06091	$0.08378	$0.04586

Small General Service Rates:				
	Summer		Winter	
	First 100 kW	All Additional kW	First 100 kW	All Additional kW
Demand (kW)	$9.828	$5.214	$9.828	$5.214
	First 200 kWh per kW	All Additional kWh	First 200 kWh per kW	All Additional kWh
Usage (kWh)	$0.10337	$0.06257	$0.08718	$0.04638

Extra-Small General Service Rates:				
	Summer		Winter	
	First 5,000 kWh	All Additional kWh	First 5,000 kWh	All Additional kWh
Usage (kWh)	$0.13537	$0.07427	$0.11769	$0.05658

The above rates were applied to usage and demand totals, which were found on utility bills. Each corresponding usage rate was used to determine the total supply charge for each account. If the account included a charge for demand, that specific rate was applied to the demand total found on the bills. These two charges, along with the customer charges, were then deducted from the total costs found on utility bills to determine the delivery charges

for each account. A summary of usage and demand rates for each facility are shown in Table 2.

Table 2

Bldg No.	Building name	Elec Demand $/kW	Elec Usage $/kWh
1	Archaeology Center	N/A	$0.149
2	Library	$7.16	$0.116
3	100 BLDG	$8.25	$0.116
4	200 BLDG	N/A	$0.147
5	300 BLDG	$9.83	$0.118
6	Butler Park	$9.51	$0.139
7	CVMO	$9.83	$0.095
8	WWTP	$9.08	$0.086
9	Ramada	N/A	$0.149
10	Maintenance Shop	N/A	$0.153
11	Public Works Yard (Streets)	N/A	$0.148
12	Hallet Plaza	N/A	$0.150
13	Well House	N/A	$0.151
14	WWTP Lift Station	$9.80	$0.108
15	Traffic Signals	N/A	$0.148
18	Pool/Skate Park	$0.15	$0.148
19	Senior Center	$6.49	$0.173

Wastewater Treatment Facilities | Four Accounts

Separate accounts service the main facility, offices, lift station, and well. The WWTP includes a combination of all three rate classes through the four available accounts. The accounts servicing the offices and well fall under the extra-small general service, while the lift station falls into the small general service class. The main facility has a maximum average monthly demand over 100 kW, placing this account in the medium general service class.

A combined usage profile for the main facility, offices, and well is fairly flat throughout the course of the year. The demand profile shows a significant increase through the summer months, indicating the demand peak is most likely set by cooling equipment. The usage and demand profiles for the lift station are also fairly flat throughout the course of the year. This would indicate equipment usage patterns are consistent throughout the summer and winter months, while the peak demand is due to equipment startup.

Community Parks | One Account

One account is used to service Butler Park. The Butler Park account falls under the medium general service classification, since the demand total is consistently over 100 kW.

The usage profile for this account shows in increase in usage during spring and fall months, with lower usage through the middle of summer and winter months. This trend shows a correlation with the use of site lighting for athletic fields. The account also contains a considerably low load factor throughout the year, meaning the demand peaks are most

likely set by the usage of sports related lighting. Since these lights are only utilized during short periods of time, the demand far exceeds the level of usage of these lights.

Town Hall Complex | Eight Accounts

The Town Hall Complex is made up of eight different accounts, which covers the electrical usage of the 100, 200, and 300 Buildings, Ramada, Hallet Plaza, Maintenance Yard, and Well House. Many of these facilities fall under the extra-small general service classification, including the 200 Building, Ramada, Maintenance Yard, Hallet Plaza, and Well House. All of these accounts have a demand total consistently under 20 kW, which allows these facilities not to be charged for demand. The 300 Building is the only facility completely under the small general service classification.

As for the 100 Building, the demand fluctuates throughout the year above and below 20 kW threshold. This means that over the course of the year, this account is accounted for under both the small and extra-small service classes at different times. Over the previous thirteen months, the account was billed under the small general service classification from 3/2016 – 12/2016, as the demand total was over 20 kW for all of these consecutive months. The extra-small classification was applied for January and February of 2017, as well as the previous February, in 2016. These months were not charged for demand.

The 100, 200, and 300 Buildings all exhibit similar usage patterns over the course of the year. Usage increases during the summer months and is reduced during the winter. The demand at each facility follows a similar pattern. Since these buildings mainly consist of office spaces, cooling equipment used in these office spaces would primarily contribute to the usage baselines, as well as setting the peak demands.

The Ramada experiences spikes in both usage and demand throughout certain times in the year, specifically in April, August, and October. While these specific months don't necessarily show a usage pattern, these increases can most likely be attributed to increased activity during these times.

The Maintenance Yard, which includes two electric accounts, exhibits fairly low usage and demand over the course of the year. Although there is an increase in both usage and demand during summer months, the overall values during all months is still relatively low. All patterns are most likely determined by use of shop equipment and the on-site pump.

Hallet Plaza, similar to the Maintenance Yard, utilizes very little electrical energy throughout the year. The main contributor to the Plaza's usage can be attributed to outdoor lighting at the site. As there is a slight increase in usage during winter months, this shows that the lighting, used at night, is needed for more operable hours as daylight is decreased during these months.

Electrical patterns at the Well House stay fairly consistent throughout the year, especially when considering the average monthly peak demand.

Marshal's Office | One Account

A Single account services the Camp Verde Marshal's Office (CVMO). This account has average monthly demand totals which fall under the small general service rate class.

Demand and usage patterns for this facility follow a similar trend to other office spaces throughout the town, such as the offices at the Town Hall Complex. Increases in usage and peak demand are noted during the summer months. As with the other office buildings, this can be attributed to the use of electrical cooling equipment throughout the office spaces of the building.

Street Yard | One Account

The Public Works Yard for the Streets division is serviced by one electrical account. This account falls under the extra-small general service classification, meaning no demand charges are applied to this account. This account is used to service two buildings on the property; the main shop/storage warehouse and the office.

Usage and demand trends follow a similar pattern, with increases occurring during summer months. Since both buildings on site are served under the same account, these patterns can be attributed to either of the two. The office may set the usage baseline and peak demand by use of electrical cooling equipment, while the main shop could also contribute through the use of equipment in the shop.

Library | Two Accounts

The utility analysis for the Library was unique since the new library was completed and the old library went vacant within the period of our utility analysis. The account associated with the new Library only has consumption information starting from September 2016 when the Library opened. To address the lack of a full baseline year of utility usage data from the new Library, the relative annual usage pattern from the Old Library was used to estimate what the usage of the new Library would have been if it had been open during the whole baseline year. This creates a closer approximation of the annual energy usage of the building that we compare our calculated savings to.

The usage and demand profiles of the accounts show a trend of increased usage and peak demand during summer months. This would mean the usage baseline and peak demands are set by the use of cooling equipment. The large increase during the early fall months corresponds to the user of both electric accounts simultaneously.

Swimming Pool / Skate Park | Two Accounts

The Swimming Pool and Skate Park utilize two different accounts. These accounts both fall under the extra-small general service classification, which means no demand charge is applied to either account. Each account is used to service each of the two sections of the facility.

The combined profile of the two accounts shows an increased usage during the summer months. This would be attributed to increased use of the facilities during this time, especially since the pool is only open from Memorial Day to the start of the school year. Baseloads for energy usage at these facilities are primarily due to site lighting.

Senior Center | One Account

A single electrical account is used to serve the Senior Center. This facility receives billing in a different manor compared to the rest of the Town. The monthly energy charges for the Senior Center are determined from a normalized monthly price. This means that in each month, the total energy charge is of the same amount. This amount is determined based on previous usage and is averaged over a specific previous period, meaning energy charges do not correspond with each corresponding monthly usage. Although this is the case, average energy rates determined over this time period should still be appropriate, since the charges have been normalized.

Energy trends show an increase during the winter months. Since the facility uses swamp coolers and electric heating this trend appears to be consistent with the equipment and observed operation.

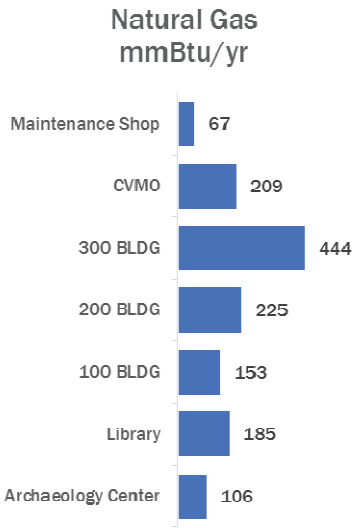
Archaeology Center | Two Accounts

The Archaeology Center is made up of two different electrical accounts. The main account is used to serve the Center itself, while the secondary account is utilized for the exterior pedestrian lighting. Both of these accounts have average monthly peak demands less than 20kW, qualifying them for the extra-small general service classification.

The main account shows an increase of usage during summer months, corresponding to the use of electric cooling equipment in the facility. The account responsible for the exterior lighting is fairly flat throughout the year until a spike in December and January. This significant increase is most likely due to a needed increased of pedestrian lighting during months with less daylight.

Traffic Signals | Six Accounts

The traffic signals appear to have constant monthly demand and a slight month to month variation in usage based on the number of days in the billing period.



Natural Gas

Natural Gas for the Town of Camp Verde is provided by UniSource Energy Services. Wendel summarized the utility data over a period from 2/2015 – 3/2017 and averaged the rate over this twenty-six month period. This serves as the effective utility rate that will be used to evaluate ECMs. All non-energy related charges, such as the customer charge, have not been included when determining the average rates of each facility.

The accounts available for the Town are covered under two different rate classes. The majority of accounts fall under the Small Volume Public Authority Service (PA-40) classification. This classification refers to any government owned or operated facility with a total usage of less than 120,000 therms per year. The Library is the only facility served under a different classification, which falls into the Small Volume Commercial Service (C-20) rate class. This classification, similarly to PA-40, requires a usage of less than 120,000 therms, but is used by commercial customers. The applicable natural gas rates for each classification are shown in Table 3.

Table 3

Service Class	Delivery Charge / therm ($)
Small Volume Public Authority Service (PA-40)	$0.2841
Small Volume Commercial Service (C-20)	$0.2837

The above rates were then used to determine delivery charges for each account. In order to determine the supply charges associated with each account, the delivery charge and customer charge were deducted from the total costs, which were found on utility bills. The total rates per mmBtu of natural gas for each facility are shown in Table 4.

Table 4

Bldg No.	Building name	Fossil Fuel $/mmBtu
1	Archaeology Center	$8.01
2	Library	$7.57
3	100 BLDG	$8.03
4	200 BLDG	$7.98
5	300 BLDG	$7.93
7	CVMO	$7.95
10	Maintenance Shop	$8.07

Town Hall Complex | Four Accounts

The Town Hall Complex has four (4) accounts. One account for each building and the gym. The usage pattern shows increased usage during the winter and no summer usage. This is consistent with the observed equipment and the heating requirements of the building.

Marshal's Office | One Account

The Marshal's office has one account. The usage pattern shows increased usage during the winter and no summer usage. This is consistent with the observed equipment and the heating requirements of the building.

Library | One Account

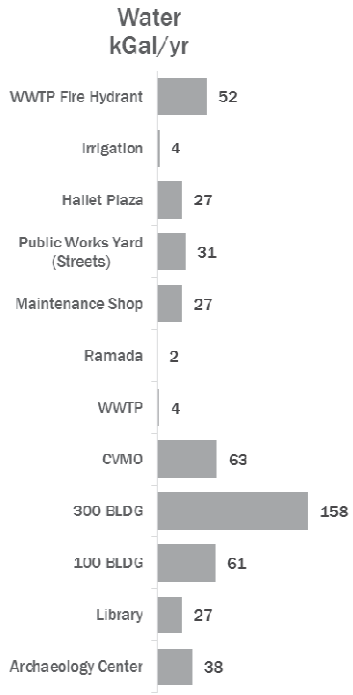
The Library office has one account. The usage pattern shows increased usage during the winter and no summer usage. This is consistent with the observed equipment and the heating requirements of the building. Note this usage pattern started in September of 2016 when the Library first opened.

Archaeology Center | One Account

The Archaeology Center has one account. The usage pattern shows increased usage during the winter and no summer usage. This is consistent with the observed equipment and the heating requirements of the building.

Liquid Propane Gas (LPG)

The Camp Verde Heritage Pool receives delivery of liquid propane gas (LPG) to an on-site storage tank. The LPG is used in the pool heating boiler and operates to maintain appropriate pool temperatures during more moderate periods of the pool season. Utility bills for this LPG service were not provided and this service was not analyzed in this report.



Water

Water and Sewer throughout the Town is supplied by the Camp Verde Water System. Wendel summarized the utility data for the period of FY2017. Wendel has averaged the rate for potable water over this twelve month period. This serves as the effective utility rate that will be used to evaluate ECMs impacting potable water used for plumbing. The sewer charge for the Camp Verde Water System is based on a per fixture rate. Since savings cannot be achieved through reduced usage, the sewer rates were not included in the total water rate. Non-water related charges, such as customer charges, were not included when determining rates. The applicable rates are outlined in Table 5.

Table 5

Bldg No.	Building name	Water $/kGal
1	Archaeology Center	$4.06
2	Library	$24.49
3	100 BLDG	$9.94
5	300 BLDG	$3.19
7	CVMO	$2.40
8	WWTP	$4.34
9	Ramada	$4.52
10	Maintenance Shop	$3.84
11	Public Works Yard (Streets)	$4.74
12	Hallet Plaza	$4.85
16	Irrigation	$3.69
17	WWTP Fire Hydrant	$3.92

Wastewater Treatment Facilities | One Water Account

Seasonal water usage increases during the winter season, it is assumed this spike was for a refill of the north side treatment train.

Town Hall Complex | Four Water Accounts & Two Sewer Accounts

There does not appear to be a seasonal deviation in water usage. This indicated that water usage is primarily directed to plumbing loads with limited cooling or irrigation loads.

Marshal's Office | One Water Account & One Sewer Account

There does not appear to be a seasonal deviation in water usage. This indicated that water usage is primarily directed to plumbing loads with limited cooling or irrigation loads.

Street Yards | One Water Account

There appears to be a seasonal (summer) increase in water usage. This indicated that water usage includes both plumbing, cooling or irrigation loads. Some water usage would be associated with the garage swamp coolers.

Library | One Water Account & One Sewer Account

Full year of data is not available. Based on facility, relatively flat usage throughout the year is anticipated based on plumbing fixture use.

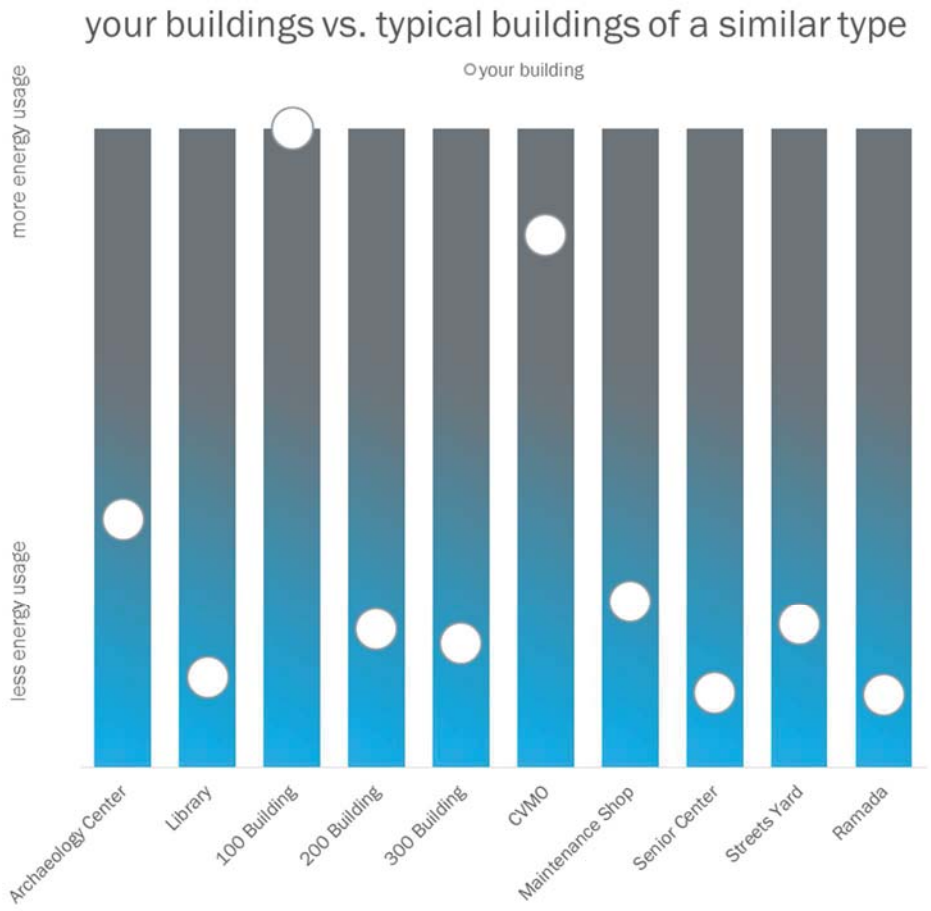
Archaeology Center | One Water Account & One Sewer Account

There appears to be a seasonal (summer) increase in water usage. This indicated that water usage includes both plumbing and some irrigation loads.

Step 2 | Benchmarking Energy Usage

How Your Building Compares To Others[1]

The chart below compares your facilities to other similar buildings in your region. In general your facilities are considered energy efficient or have a low usage pattern. There are a couple buildings that are exceptions to this. These buildings have a higher usage pattern comparted to many of the other buildings subsequently resulting in a higher score. Please note several facility types, such as wastewater treatment plants, are not able to be benchmarked due to a lack of reliable comparable data points.



1 –benchmarking data is based on the Energy Start Portfolio Manager which includes information from the Commercial Building Energy Consumption Survey (CBECS) conducted by the U.S. Department of Energy for buildings across the country. The CBECS commercial sector survey encompasses data available through the U.S. Energy Information Administration based on a specific U.S. region and division.

Section E

Energy Conservation Measures

Energy Conservation Measures (ECMs)

This Section is organized by energy conservation measures (ECM) type. We have numbered the ECMs 1 through 8. Additionally, some ECMs are broken into different groups. For instance ECM 1 covers all lighting with ECM 1.1 being building interior/exterior lighting and 1.2 being street lighting.

For each ECM, this section includes an overview outlined as follows:

- **Investigation** – a description of the ECM and how it saves energy or water.
- **Existing System** – a description of the system that is being considered for a particular ECM. Depending on the ECM we may expand on what site conditions made this opportunity possible.
- **Proposed System** – this is an overview of the preliminary design concept.
- **Recommendation** – A recommendation on whether the ECM is viable given the existing and proposed system.
- **Measurement & Verification (M&V)** – this is a very brief overview of the proposed approach that would be used to M&V this ECM.

At the top of each section we note which facilities this ECM was considered for. We have also broken down ECMs that occur at multiple facilities into sub headers by facility. We also note if the ECM was not recommended by placing an [NR] next to the building name.

In Appendix 2 of this report we included additional technical details for each ECM. This includes a summary of assumptions, data sources, calculations, equations used to calculate the ECM's major energy saving components, and additional detail on the M&V approach.

Rebates & Incentives were investigated and are included in the Total Project Summary in section A. Minimal incentives are available and based on APS's current incentive program for commercial and government clients. The following is a summary of key incentives identified and included in our analysis.

- Lighting
  - Linear LED: 2-ft, 3-ft, 4-ft | $3.50/lamp
  - LED non-reflector bulb | $6.50/lamp
  - LED reflector bulb | $8/lamp
- HVAC Controls
  - CO_2 Sensors | $120/sensor
- HVAC AC Units
  - Unitary air conditioner <760 kBtu/h |$2/kBtu/h
  - Unitary heat pump <760 kBtu/h | $2/kBtu/h
- Building Envelope
  - High-performance window and glass door | $0.50/sq ft
- VSD for Motors
  - VSD | $50/hp

ECM 1.1 | Lighting Upgrades

Applies to: All Sites

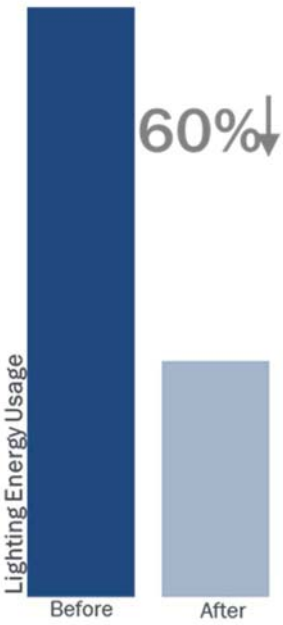
INVESTIGATION

Wendel evaluated facilities maintained by the Town of Camp Verde to investigate the existing lighting systems and determine opportunities to save energy. A survey of interior and exterior lighting was performed to identify the quantity, type of lighting fixtures, lamps, and lighting controls used in each space. During the survey, quantities and conditions of existing lighting fixtures was documented. The current level of energy efficiency was evaluated and upgrades were identified.

The proposed lighting upgrade focuses on optimizing the current lighting system by replacing or retrofitting less efficient fixtures. Normally a retrofit is not recommended in a situation where either:

a) Removing the fixture may cause disturbance of hazardous material
b) Energy savings would not warrant the cost of the fixture replacement
c) The fixture is relatively new or in good condition and therefore replacing the entire fixture does not make economic sense

Under a retrofit condition, the existing fixture body is left in place and the internal components are replaced with energy efficient lamps, electronic ballast, and new socket bars as needed. In some cases an LED retrofit kit can be installed in the existing fixture housing. With a retrofit, significant energy savings can be realized at a much lower cost than a complete fixture replacement.



Current exterior lighting technologies deployed use Omni-directional lamps in directional fixtures to direct light to the desired area to be illuminated. The choice of technology for the past 20 years has been the high pressure sodium fixture due to its high lumen per watt efficiency and lower lumen degradation. Light Emitting Diode (LED) fixtures have made improvements in design, efficiency, life span, and affordability bringing them to the forefront of area/site lighting fixture design. LED lights also provide a better quality of light than high pressure sodium lamps enabling the human eye to recognize colors better at night. This investigation focuses on the energy efficiency, operation and maintenance savings that can be achieved for the Town of Camp Verde.

The focus is to reduce the electrical energy consumption of the overall lighting system, while providing an aesthetically pleasing lighting plan that will maintain or improve the working environment for its occupants. The proposed upgrades will follow industry standard guidelines to ensure that proper lighting levels are maintained for the various illuminated areas, while maximizing the energy efficiency of the lighting system. These lighting levels have been selected based on criteria established by the Illuminating Engineering Society (IES).

The lighting upgrades will result in direct energy savings by decreasing the overall energy usage necessary to provide general lighting. Cost estimates were developed through contractor pricing from similar Wendel projects as well as specific manufacturer pricing for certain fixtures. The output and details regarding these calculations are presented following this write-up.

Library

Example newer fixture using fluorescent lamps.

Existing System

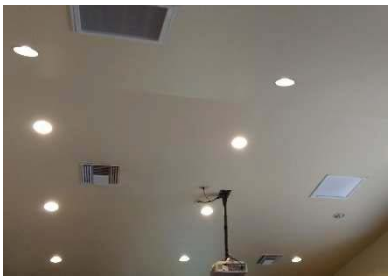
The majority of the lighting in this facility consists of multiple T8 fluorescent fixtures with 2' and 4' lamps utilizing standard electronic ballasts, and plug-in CFL lamps in recessed cans. This building is only approximately 1 year old, and as such, the existing ballasts are assumed to be in good condition. For the purpose of this analysis, it is assumed that the new LED lighting will be compatible with the existing ballasts and the ballasts will be retained. This is not typical for a lighting retrofit in older buildings, as condition and age of ballasts would vary throughout the building. Some areas of the building have been provided with more efficient LED technology. Most fixtures are in good condition and are not recommended for replacement. Controls for the buildings lighting consists of local ON/OFF switches. Occupancy sensing is minimal in the building but was noted in locations like restrooms. The building utilizes a lighting control system which allows lighting to be turned on an off throughout much of the building from a single control and allows further programming.

Proposed System

The focus of this measure will be to perform the following upgrades:

- Retrofit existing T8 fluorescent lamp fixtures with efficient linear LED tubes and retain existing electronic ballasts (this assumes existing ballasts are compatible with new LED lamps).
- Replace plug-in CFL lamps with reduced wattage plug-in LED lamps and retain existing electronic ballasts (assuming they are compatible with new LED lamps).
- Retain existing LED fixtures.
- Retain any existing T5 fixtures.

Town Hall and Municipal Court (100 and 200 Buildings)



Example recessed can fixtures with CFLs.

Existing System

The majority of the lighting in this facility consists of multiple T8 fluorescent fixtures with 4' lamps utilizing standard electronic ballasts, and screw-in CFL or incandescent lamps in a variety of different luminaires. Some areas of the Municipal Court building have been provided with more efficient LED technology. Most fixtures are in good condition and not recommended for replacement. Controls for the buildings lighting consists of local ON/OFF switches. The LED lighting upgrades in the Municipal Court Building have been provided with motion sensors to control lighting.

Proposed System

The focus of this measure will be to perform the following upgrades:

- Retrofit existing T8 fluorescent lamp fixtures with efficient linear LED tubes and new electronic ballasts.
- Replace screw-in CFL and incandescent lamps with reduced wattage LED screw-in lamps.
- Retain existing LED fixtures.

Town Hall (300 building)

Existing System

The majority of the lighting in this facility consists of multiple T8 fluorescent fixtures with 2' and 4' lamps utilizing standard electronic ballasts, and screw-in CFL and incandescent lamps. Only one fixture was noted to have been upgraded to LED technology. Most fixtures are in good condition and not recommended for replacement. Controls for the buildings lighting consists of local ON/OFF switches. Occupancy sensors were identified during our survey in the CXT shower spaces.

Proposed System

The focus of this measure will be to perform the following upgrades:

- Retrofit existing T8 fluorescent lamp fixtures with efficient linear LED tubes and new electronic ballasts.
- Replace screw-in CFL and incandescent lamps with reduced wattage LED screw-in lamps.
- Retain existing LED fixtures.

Marshalls Office (CVMO)

Existing System

The majority of the lighting in this facility consists of multiple T8 fluorescent fixtures with 2' and 4' lamps utilizing standard electronic ballasts, and plug-in CFL lamps in recessed cans. No LED fixtures have been installed at this building. Most fixtures are in good condition and not recommended for replacement. Controls for the buildings lighting generally consists of local ON/OFF switches. The back patio and front entrance lighting utilize photocell sensors to control lighting.

Proposed System

The focus of this measure will be to perform the following upgrades:

- Retrofit existing T8 fluorescent lamp fixtures with efficient linear LED tubes and new electronic ballasts.
- Replace plug-in CFL lamps with reduced wattage plug-in LED lamps and new electronic ballasts.

Streets Shop

Existing System

The majority of the lighting in this facility consists of multiple T8 fluorescent fixtures with 4' lamps utilizing standard electronic ballasts, and screw-in incandescent lamps. No fixtures have been upgraded to LED technology, are in good condition and not recommended for replacement. Controls for the buildings lighting consists of local ON/OFF switches. The lighting is on a schedule timer for four (4) ten hour days.

Example fixtures with fluorescent lamps.

Proposed System

The focus of this measure will be to perform the following upgrades:

- Retrofit existing T8 fluorescent lamp fixtures with efficient linear LED tubes and new electronic ballasts.
- Replace screw-in incandescent lamps with reduced wattage LED screw-in lamps.

Pool Building

Existing System

The majority of the lighting in this facility consists of multiple T8 fluorescent fixtures with 4' lamps utilizing standard electronic ballasts, and screw or plug-in CFL lamps. The only LED lighting used is for an exit light. Most fixtures are in good condition and not recommended for replacement. Controls for the buildings lighting consists of local ON/OFF switches.

Proposed System

The focus of this measure will be to perform the following upgrades:

- Retrofit existing T8 fluorescent lamp fixtures with efficient linear LED tubes and new electronic ballasts.
- Replace plug-in CFL lamps with reduced wattage plug-in LED lamps and new electronic ballasts.
- Replace screw-in CFL lamps with reduced wattage LED screw-in lamps.
- Retain existing LED fixture.

Old Teen Center [NR]

Existing System

Though there are a small number of T8 fluorescent fixtures that would be good candidates for retrofits, this building is currently unused and not actively connected to the electrical utility. Therefore, this building has been left out of the detailed lighting assessment.

Seniors Center [NR]

Existing System

The Senior Center has recently undergone a conversion to Philips LED InstaFit technology. According to site reports this conversion was completed in March 2016. This is a similar conversion that is being proposed for the other buildings. Some, but not all, ballasts were replaced as part of this conversion. It is generally recommended to replace **all** ballasts at the time of conversion, unless they had been replaced recently. Reusing existing ballasts could lead to compatibility issues and makes it more difficult to accurately predict the post install system wattage. This building has been left out of the detailed lighting assessment.

Historic Old Jail [NR]

Existing System

This building was excluded from the lighting analysis due to the historic aesthetic required for the lighting in this building. Additionally, the very low operating hours of the fixtures would not result in any notable savings.

Exterior Building or Site Lighting

Existing System

Example fixtures with fluorescent lamps.

The Town of Camp Verde facilities have a wide variety of lighting technologies and fixture types currently installed. Facility personnel provided a tabulated list of fixtures and associated wattages that the savings calculations for this measure have been based on. Exterior lighting is primarily comprised of pole lighting or wall pack fixtures with photocells or timers. Most of the lamp types are high pressure sodium (HPS) or Metal Halide (MH) and range from 35 to 400 watts. Additional exterior lighting is provided by halogen/incandescent and compact fluorescent lamps. Some outdoor lighting has already been replaced with more efficient LED or induction technology. Please note this ECM excludes street lighting and sports field lighting. Due to the application specific nature of those opportunities they are evaluated as a different ECM.

Proposed System

The focus of this measure will be to replace existing lighting that is used continuously throughout the year. It should be noted that there are several lights located at the public ramada's that are only used a few times throughout the year. These fixtures will be retained due to unfavorable project economics.

RECOMMENDATIONS

Wendel recommends the implementation of the proposed lighting upgrades at the Town of Camp Verde Facilities as outlined in this measure summary. The new lighting system is designed to maintain lighting levels, while meeting IES standards in affected areas. All recommendations were made with the intent to optimize energy savings without compromising the quality and level of light output. These improvements to the lighting system would reduce the electrical consumption in the building, thus reducing the energy costs associated with providing general lighting. In addition to the savings calculated, the replacements with longer life LED lamps will result in less lamp change outs by maintenance staff each year. Maintenance savings only include the material savings and do not factor in any labor cost savings.

For exterior fixtures it is recommended to replace lighting with new LED technology. Fixture replacements will require interaction with the existing infrastructure. Retrofits (if applicable) would require a proven product specifically designed for the application. For parking lots and other critical areas, Wendel uses AGI 32 photometric modeling to validate equipment selections, provide proper illuminations per industry standards and conform to dark skies compliance.

Lighting Controls [NR] are NOT recommended. There are minimal occupancy sensors installed at the properties included for this report. Occupancy sensors were discovered to be installed only in the stairwells and bathrooms in the Library, the CXT Restrooms at the Town Hall Complex, and the Butler park restrooms. Light loggers were deployed as part of this study. Light logger data that was collected seems to indicate that the run time hours generally correspond to the occupancy hours for the majority of areas. This indicates that people are generally doing a good job remembering to turn off lights when they leave a space. Due to the low run time hours, advanced lighting controls are not recommended at this time as the savings would not warrant the additional expense.

MEASUREMENT & VERIFICATION

This measure produces savings based on reduced power consumption with the installation of newer technology. Loggers will be installed to record pre and post lighting run hours.

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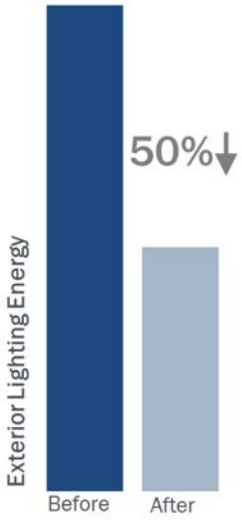
ECM 1.2 | Street Lighting

Applies to: Town Wide [OPTIONAL]



INVESTIGATION

The Town of Camp Verde has street lighting System that is currently maintain by APS. APS is discontinuing the service for standard lamps. APS is mandating that all lamps must be upgraded to LED upon failure.

The current street lighting technologies deployed use Omni-directional lamps in directional fixtures to direct light to the desired area to be illuminated. The choice of technology for the past 20 years has been the high pressure sodium fixture due to its high lumen per watt efficiency and lower lumen degradation. Light Emitting Diode (LED) street lights have made improvements in design, efficiency, life span and affordability bringing them to the forefront of street lighting technologies. LED lights also provide a higher Color Rendering Index (CRI) than high pressure sodium lamps which enables the human eye to perceive colors better at night, increasing visibility and safety. This investigation focuses on the energy efficiency, operation and maintenance savings that can be achieved for the Town under current street lighting tariffs.

Existing System

The Town of Camp Verde has street lights with various types of HID lamps throughout the town. The town's fixture stock consists of Cobraheads and a decorative fixtures that are on Main Street and throughout the adjoining neighborhood. The Town's street lighting can be broken down into three categories.

- Category 1 | Unmetered, Utility Maintained, Town Owned
- Category 2 | Metered, Utility Maintained, Town Owned
- Category 3 | Unmetered, Utility Owned & Maintained

Example existing induction streetlight.

Wendel surveyed the fixture and leveraged information available to develop the following inventory. Please note that the inventory of lighting and ancillary assets will be updated during design with input from APS. The following is a brief summary of the number of lights per type:

- Category 1 | (1) 250W HPS; (13) 100W HPS; (19) 175W MV
- Category 2 | (23) 250W HPS; (58) 80W IND
- Category 3 | (4) 250W HPS

Abbreviations defined as follows:

- HPS | High pressure sodium
- MV | Mercury Vapor
- IND | Induction
- W | Watt

The lamps on Main Street are an induction fluorescent technology and the parts for replacement are becoming difficult to obtain.

Proposed System

The proposed system would retrofit all existing styles of HID & Induction lights to LED fixtures while maintaining as close to existing lighting conditions as allowable within good design practices. Energy savings were calculated based on the existing fixture wattages and proposed LED fixture wattages displayed in the calculations. Operational

Street light charges
Charges for electricity services

Cost of electricity you used

20000 Mv - Frozen (1 units) at $2.79 per unit	$2.79
30000 HPS Cobra/Roadway (2 units) at $2.79 per unit	$5.58
7000 Mv - Frozen (10 units) at $2.79 per unit	$27.90
9500 HPS Cobra/Roadway (22 units) at $2.79 per unit	$61.38
Energy charge 1,980.00 kWh at $0.06088 per kWh	$120.54
Environmental benefits surcharge	$22.17
Federal environmental improvement surcharge	$0.32
System benefits adjustment	-$1.01
Power supply adjustment*	-$2.67
Federal transmission cost adjustment*	$7.64
Four-Corners adjustment	$4.43
Cost of electricity you used	$249.07

Taxes and fees

Regulatory assessment	$0.59
State sales tax	$14.26
County sales tax	$1.91
City sales tax	$4.86
Franchise fee	$4.99
Cost of electricity with taxes and fees	$275.68
Total charges for electricity services	**$275.68**

** These services are currently provided by APS but may be provided by a competitive supplier.*

Bill showing current maintenance charges.

& maintenance (O&M) material cost savings are likely. Since LED fixtures have a useful life that is 2 to 3 times longer than current HID lamps and ballasts, the frequency of material replacements is reduced. However, given the availability of qualified service technicians in the area may be limited, we did not include maintenance savings since we believe any savings would be offset by increased labor or contracting costs.

Design & Construction Considerations

Street lighting is custom designed to match the existing mounting system and to provide adequate lighting for the application. Typically, light modelling is completed to ensure the new LED lighting meets or exceeds the current lighting.

Final counts for existing lights need to be verified by requesting the information from APS.

RECOMMENDATION

This measure has a longer payback but is recommended for implementation as the town will have to change out the lights to LED per the APS requirement. Implementing the LED lights under the energy program will give the town more flexibility over design and the decorative fixture that will need to match the new LED.

MEASUREMENT & VERIFICATION

This measure produces savings based on reduced power consumption with the installation of newer technology. Run hours will be based on the utility tariff for non-metered systems and metered data for the metered systems.

ECM 1.3 | Sports Field Lighting

Applies to: Butler Park [NR]

Investigation

Current exterior lighting technologies deployed use Omni-directional lamps in directional fixtures to direct light to the desired area to be illuminated. The choice of technology for the past 20 years has been the metal halide fixture due to its color rendering capabilities, though this typically comes at a cost for low watt per lumen efficiency. Light Emitting Diode (LED) fixtures have made improvements in design, efficiency, life span, and affordability bringing them to the forefront of sports lighting lighting fixture design. LED lights also provide an equivalent or better quality of light than metal halide lamps enabling the human eye to recognize colors better at night. This investigation focuses on the energy efficiency, operation and maintenance savings that can be achieved for the Town of Camp Verde.

Existing System

The Town of Camp Verde facilities have eighty metal halide fixtures at 1500 watts each, mounted on 14 separate poles located at Butler Park. These provide lighting for the sports fields during dusk and night time hours. The existing utility bills for the field were used to estimate the total number of hours that the lighting is turned on during the year. Based on these utility bills, it was estimated that the lights are used for approximately 726 hours throughout the year or approximately 2 hours per day on average.

Proposed System

The focus of this measure will be to replace existing lighting with new high wattage sports specific LED lighting. The new proposed LED lights would use approximately 50 to 60 percent of the existing fixture wattage (~800 watts). Lighting is specifically designed to suit the existing installation conditions and provide lighting that meets sports field industry standards.

Recommendation

Due to the relatively low annual runtime hours, the energy savings are small compared to the cost of the upgrades. This measure is not recommended due to unfavorable project economics and an extended payback period.

ECM 2.1 | HVAC | Set Point Adjustments

Applies to: All buildings

"You can save as much as 10% a year on heating and cooling by simply turning your thermostat back…"
https://energy.gov/energysaver/thermostats

INVESTIGATION

Wendel reviewed the operation of the HVAC systems. One focus of the investigation was how the system operated during unoccupied periods. Programmable thermostats reduce the building temperature set points when the building is unoccupied. This reduces energy costs without sacrificing building comfort. Our team reviewed the schedules and set points to identify opportunities for improvements.

Existing System

Programmable thermostats should be set to heat to the lowest temperature and cool to the highest temperature while still providing a comfortable environment for occupants.

Wendel was provided with a list of current HVAC system set points as follows:

Building	*Heat (occupied/unoccupied)*	*Cool (occupied/unoccupied)*
Gym	65 / 71	71 / 75
Public Works	68 – 70 / 68 – 70	72 – 75 / 72 – 75
Community Development	64 / 64	75 / 79
Economic Development	72 / 68	74 / 78
Council Chambers	72 / 68	78 / 78
Administration	72 / 68	75 / 78
Greeting Center	70 / 62	78 / 82
Marshals Office	68 / 68	75 / 72 **
Library	70 / 67	72 / 75
Magistrates Court	*	76 / 85

**Recently renovated area, set points have to yet been programmed as the building has not entered a heating season yet.*
***Wendel identified this item to facilities as a potential error in programming (system should cool to a higher temperature during unoccupied periods). Facilities has updated the thermostat to correct temperatures.*

Proposed System

The set points were found to be generally reasonable for the applications found with only a few minor changes to optimize energy savings. Changes to the thermostats can be completed by facilities maintenance personnel.

RECOMMENDATIONS

The following changes in set points are recommended:

1. **Economic Development** – Reduce unoccupied heating temperature to 65.
2. **Council Chambers** – Reduce unoccupied heating temperature to 65.
3. **Administration** - Reduce unoccupied heating temperature to 65.
4. **Public Works** - Reduce unoccupied heating temperature to 65, increase occupied cooling temperature to 75, increase unoccupied cooling temperature to 80.
5. **Library** – Reduce unoccupied cooling temperature to 65

ECM 2.2 | HVAC | AC Unit Replacement

Applies to: Marshal's office [NR]

INVESTIGATION

Throughout the facilities included in the project there were specific equipment upgrades that were discussed with facility staff and noted for further investigation. These identified upgrades were motivated by the potential opportunity for energy savings and the opportunity to replace equipment nearing the end of its useful life.

Existing System

The Camp Verde Marshal's office is provided with five (5) outdoor condensing units providing cooling for building. These units feed cooling coils installed on forced air furnace units located in the attic space for the building. It was noted that the units currently installed are aging and of inefficient technology utilizing R-22 refrigerant that is not environmentally friendly. The Energy Efficiency Ratio (EER) for these units is 10, compared to newer units which can have EERs in excess of 14.

The Montreal Protocol is an international treaty that was created to protect the ozone layer by phasing out the production of ozone depleting substances. As a result of the treaty, Congressional Amendments to the U.S. Clean Air Act in 1990 and 1998 required that the Environmental Protection Agency (EPA) develop regulations for responsible management of ozone depleting substances in the United States. One of the requirements of these regulations is that the production of hydrochlorofluorocarbons (HCFC), which includes refrigerant R-22, be phased out by January 1, 2020.

Proposed System

The proposed measure includes the following scope of work:

- Demolition and removal of the existing condensing units, associated piping and indoor cooling coils
- Disposal of existing R-22 refrigerant in accordance with hazardous materials handling procedures.
- Installation of new energy efficient outdoor units and cooling coils utilizing R-134 refrigerant.
- Testing and commissioning.

RECOMMENDATIONS

This measure will provide some savings due to utilization of more efficient technology. However, due to the extended payback period, this measure is not recommended at this time. When it becomes necessary to replace the units, installation of high-efficiency equipment will provide energy savings or minimum standard equipment.

ECM 2.3 | HVAC | Replace Evaporative Coolers

Applies to: Seniors Center [NR]

INVESTIGATION

Throughout the facilities included in the project there were specific equipment upgrades that were discussed with facility staff and noted for further investigation. These identified upgrades were motivated by the potential opportunity for energy savings and the opportunity to replace equipment nearing the end of its useful life.

Existing System

The Seniors Center utilizes Evaporative Cooling Units, also known as "Swamp" coolers, in order to provide some cooling during the summer months. Swamp units work by forcing air over a water soaked medium, causing the water to evaporate. The warm, dry air is transformed to cool humid air during this process. Though swamp coolers are energy efficient, they can only provide a limited amount of temperature control. On hotter days they may not provide a cool enough environment, which could have negative effects for older populations. This building also uses electric baseboard units to provide heating which are a costly heating source.

Proposed System

In order to provide enough capacity to cool the building on hot summer days, active cooling such as ductless split AC/heat pump units are recommended. These units would be provided to incorporate heating capability in order to eliminate the need for the baseboard heating. Several of these units would be required in order to provide enough capacity to heat and cool the building. Split units are recommended in order to avoid the ducting that would be required for a rooftop style air handling unit. These units would use more energy for cooling the building than a swamp unit, but would save some energy during the heating months compared with electric baseboard heating.

RECOMMENDATIONS

Though this measure will provide some savings due to utilization of more efficient technology, the addition of cooling required in this climate zone exceeds the savings during the heating season by eliminating baseboard heating. This measure is not recommended at this time.

ECM 2.4 | HVAC | GYM Occupancy Control

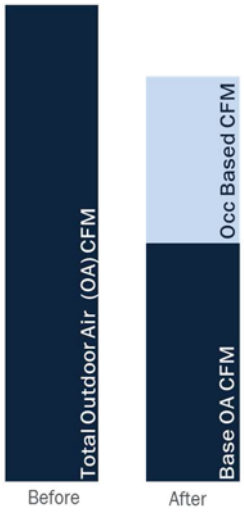
Applies to: 300 Building [NR]

INVESTIGATION

The conditioning of ventilation air is one of the most energy intensive processes within a facility. Building spaces require outdoor air to ventilate during occupied times. The ventilation rate can be controlled based on the occupancy of the space by monitoring CO_2 or other key contaminates.

Existing System

The Gym space is sporadically occupied but during normal building operating times the room is conditioned and ventilated continuously. The Town inquired if an occupancy control system for HVAC units serving this area would reduce operating costs. The units appear to operate to maintain static temperature set points within the gym.



Based on current building codes, ventilation rates can be reduced up to 30% using demand controlled ventilation systems.

Proposed System

Wendel looked at implementing a demand controlled ventilation system for the gym air handling units. This system will reduce the amount of outdoor air drawn into air handling units (AHUs) by modulating dampers located at the intake for the outdoor air. A minimum outdoor air flow will be maintained as required by current building codes and/or exhaust requirements. Additional outdoor air (above the code minimum) will be based on sensors located in the spaces and/or return ducts. Additionally the system would go to an "unoccupied" temperature set point when no occupancy has been detected by sensors for over 20 minutes.

The challenge with this type of system is that when the space is utilized (occupancy detected) the system will need 30min to 60min to "recover" the room and bring it back to an "occupied" space temperature. The long duration is due to the volume of air that must be conditioned by the units. The occupants may not be satisfied that the space is properly conditioned when they go to use the space.

This trade-off between energy and occupant comfort is important since the Town will not realize the savings projected for their investment if users override the system or are dissatisfied with its operation.

RECOMMENDATIONS

Though this measure will provide some savings due to utilization of occupancy controls the application for temperature setback may result in an undesirable space condition. This measure is not recommended at this time.

ECM 3 | Pumps Upgrades

Applies to: Main Street Lift Station

INVESTIGATION

The existing pumping equipment in service at the Main Street Lift Station (MSLS) was evaluated to investigate potential opportunities for energy and operational efficiency improvements under ECM 3–Pumps Upgrades. The potential improvements evaluation included rehabilitation and replacement of pumping equipment; and operational changes. Potential energy and operational modifications that were identified and evaluated.

The existing pumping equipment performance curve, MSLS operational information, and WWTP data provided by the Town were evaluated.

Existing System

The MSLS was constructed approximately in 2003 and is located at the intersection of Camp Verde-Peyson Highway (Arizona State Route 260) and East Salt Mine Road. Three dry-pit submersible pumps are in operation at the MSLS and convey flows to the Town's WWTP through a 12-inch diameter force main that is approximately 11,000-feet long. The MSLS force main is the primary source of influent flow to the WWTP. A summary of information on the existing pumping equipment is presented below:

MSLS Pumping Equipment Information	
Manufacturer/Model	Fairbanks-Morse/4-D5434WD
Type	Dry-Pit Submersible
Motor Horsepower	100
Motor Speed	1785 revolutions per minute (rpm)
Design Duty Point Flow/Total Dynamic Head (TDH)	700 gallons per minute (gpm) at 205-feet TDH
Pump Efficiency at Design Duty Point	62%
Best Efficiency Point	67%
Best Efficiency Point Flow	1,600 gpm (approximate)
Impeller Diameter	14.25-inches

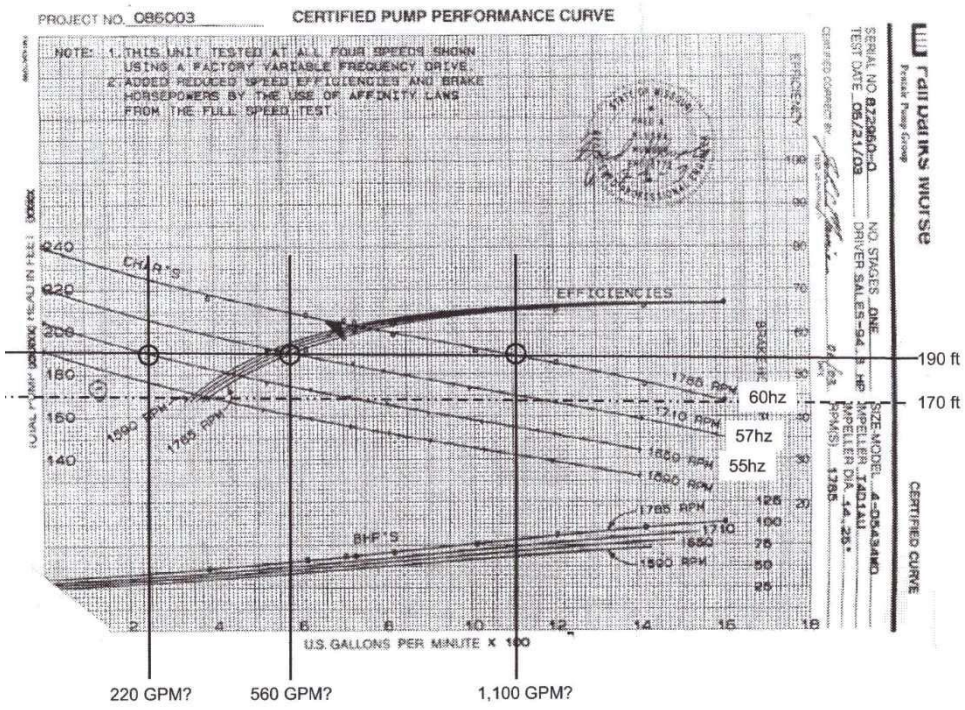
The pumping equipment was originally driven by variable frequency drive (VFD) equipment to provide variable speed pumping. The Town reported; however, that the VFD equipment is no longer in operation and the pumping equipment is currently operated as constant speed. Operation of the pumping equipment is based on water levels in the wet well, which turn the pumps on and off. The Town reported that each pump is operated an average of approximately 100 hours per month. Designation of the lead operating pump is rotated to evenly distribute pump run-time.

Based on a review of the certified performance curve information, the pumping equipment is operating outside of the preferred operating range (POR) as defined by the Hydraulic Institute in ANSI/HI 9.6.3 Rotodynamic (Centrifugal and Vertical) Pump, Guideline for Allowable Operating Region, as being between 70-percent and 120-percent of best efficiency point (BEP) flow. Operating outside of the POR can increase internal hydraulic loading and flow-induced vibration, which can result in a reduction

in efficiency and the design service life of the equipment and its components, specifically the impeller, bearings, and mechanical seals.

The velocity in the existing force main at the design duty point flow of 700 gpm is 1.9 feet per second (fps), which is slightly less than the recommended minimum of 2 fps.

RPM = Hz * 120 / Poles



Pump efficiency degrades over time as containments erode the impeller and pump housing.

As indicated previously, each of the existing pumps operates approximately 100 hours per month to convey flow to the WWTP, which corresponds to a total of 3,600 hours of pumping annually. If the pumps operated at their design duty point flow of 700 gpm, this would result in conveyance of a total volume of approximately 151 million gallons per year to the WWTP. Flow data that were evaluated for the previous three years for the WWTP; however, indicate that the WWTP receives an average of approximately 82 million gallons per year (i.e., average daily flow of 0.22 mgd), which is significantly less than the anticipated volume if the pumps are operating at their design duty point flow of 700 gpm.

Assuming the existing pumping equipment is only conveying a total of 82 million gallons per year, consistent with the WWTP data, over 3,600 hours of operation results in a flow rate of approximately 380 gpm. Utilizing this flow rate along with the electrical energy usage of approximately 180,000 kWh for the MSLS for the previous 12-months, it is estimated that the existing pumping equipment are potentially operating at a pump efficiency as low as 43-percent. Additionally, the pumps are operating with an estimated effective impeller diameter of 13.85-inches, assuming they are operating approximately at the design TDH of 205-feet. For comparison, the design duty point the pumping equipment in accordance with the performance curve information is 700 gpm at an efficiency of 62%, with an impeller diameter of 14.25-inches.

Proposed System [Multiple Options]

The evaluation of proposed improvements to the pumping equipment focused on identifying opportunities to improve pumping efficiency with the goal of restoring it to original design conditions, at a minimum. The following alternatives were evaluated:

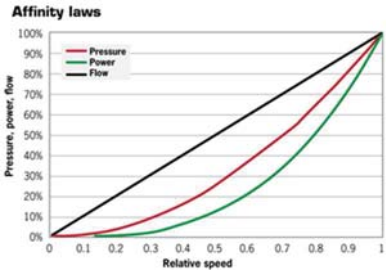
- **Alternative No. ECM 3.1.1** | Rehabilitate the Pumping Equipment;
- **Alternative No. ECM 3.1.2** | Replace the Pumping Equipment;
- **Alternative No. ECM 3.1.3** | Convert Lift Station Operation from Constant Speed to Variable Speed; and
- **Alternative No. ECM 6.1.4** | Install Smaller Variable Speed Pumping Equipment.

Alternative No. ECM 3.1.1–Rehabilitate the Pumping Equipment

This alternative consists of rehabilitating each of the existing pumps including replacement of the impeller, mechanical seals, and bearings; and application of a high-efficiency coating to the impeller and volute. The application of the high efficiency coating, at a minimum, provides protection against corrosion, including erosion of material, to maintain efficiency. The coating also has the potential of increasing pump efficiency by a few percentage points beyond the efficiencies published by the manufacturer. For the purposes of this evaluation; however, we have assumed that implementation of this ECM would restore pump efficiency back to its original design value of 62%. These improvements will also extend the anticipated service life of the equipment.

Alternative No. ECM 3.1.2–Replace the Pumping Equipment [NR]

This alternative consists of replacing each of the existing pumps with the same or similar type of equipment. The new pumps would also be specified to include application of a high-efficiency coating to the impeller and volute. Similar to Alternative No. ECM 3.1.1 above, the coating also has the potential of increasing pump efficiency by a few percentage points beyond the efficiencies published by the manufacturer. For the purpose of this evaluation; however, we have assumed that implementation of this ECM would restore pump efficiency back to its original design value of 62%.



$BHP_1 / BHP_2 = (RPM_1/RPM_2)^3$
BHP = Break horse power
PPM = Speed of fan

Replacement of the existing pumps with more efficient equipment is preferred. However, based on a cursory review of several manufacturers, it is not likely that there is pumping equipment readily available that would have a significantly higher efficiency at the required operating conditions for the MSLS. Additionally, there would not be equipment with a high enough efficiency, under the current MSLS operating conditions, that would provide a preferred payback period. For example, if pumping equipment with an unrealistically high efficiency of 90-percent was available that could replace the existing pumping equipment, the result would be a payback in excess of 30-years under current MSLS operating conditions.

Alternative No. ECM 3.1.3–Convert Lift Station Operation from Constant Speed to Variable Speed [NR]

Currently the lift station operation is constant speed, with start/stop of pumping equipment based on water level in the wet well. This ECM consists of installation of VFD equipment to convert the operation of the pumping equipment to variable speed, consistent with the original design and operation of the MSLS. A single VFD could be installed and connected to each of the three pumping units, since only a single unit

would be required to be operating at any given time. Each of the existing pumps would be rehabilitated, similar to Alternative ECM 3.1.1-Rehabilitate the Pumping Equipment as outlined above.

Alternative ECM 3.1.4 – Install Smaller Variable Speed Pumping Equipment [NR]
This ECM consists of replacement of two of the existing pumps with smaller capacity equipment designed to operate in variable speed operation. The two new pumps would operate in a lead/lag operation designed to convey the entire range of anticipated flows influent to the MSLS (i.e., estimated to range from average daily flow of 150 gpm to peak hourly flow of 500 gpm). The third existing pump would remain in place and serve as a backup. Installation of new VFD equipment for each of the new pumps would be included. The third existing pump would also be rehabilitated, similar to Alternative ECM 3.1.1-Rehabilitate the Pumping Equipment as outlined above.

Based on a cursory review of several manufacturers, new pumping equipment for the anticipated operating conditions would likely have an efficiency ranging from 30-percent to 60-percent. Assuming the most optimal pumping efficiency would provide a payback period in excess of 80-years, which is not acceptable. Conversion to variable speed would also reduce the average velocity in the force main to approximately 0.4 fps, which would likely result in increased deposition of solids in the pipe and increased operation and maintenance costs. For these reasons, this ECM was not evaluated further.

RECOMMENDATIONS

Prior to implementing any ECM or other improvements, it is recommended that a detailed evaluation of influent flow data to the MSLS be conducted to establish existing conditions. Potential future growth and/or flow contributions to the MSLS in the Town should then be evaluated to estimated additional flows and establish future design operating conditions for the MSLS. Wendel would conduct this evaluation during the design phase of an EPC. Establishing accurate future design operating conditions for the MSLS is a critical first step to implementation of improvements. Field testing of the existing pumping equipment should also be conducted to determine the actual wire-to-water efficiency of the existing pumps.

Normalized: this means to adjust a variable outside of our control to a constant value. Example more residents will require more flow, we will adjust (normalize) the usage pattern to account for more flow that way we are comparing apples to apples

It is recommended to proceed with Alternative No. ECM 3.1.1-Rehabilitate the Pumping Equipment, pending review of the established future operating conditions.

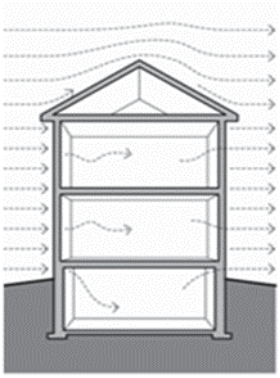
MEASUREMENT & VERIFICATION

This measure produces savings based on reduced energy consumption from the improvement of pumping efficiency. Since these are the only devices on the local electric meter we will use that meter to compare existing and proposed operation normalized for annually changes in used due to flow rates and system requirements.

ECM 4.1 | Weatherization Improvements

Applies to: Seniors Center, Town Hall Complex, Archaeology Center

INVESTIGATION



Wind Effect

The building envelope is a critical part of a facility's energy efficiency. A component of the building envelope's efficiency is the amount of convective heat transfer (airflow), also known as infiltration or exfiltration. This is where outdoor air infiltrates the facility or conditioned air escapes through cracks in the building envelope. These cracks develop over time, increasing the amount of infiltration, resulting in additional load on the building's HVAC system.

During the site visit, Wendel's team surveyed the building envelope at the facilities to identify deficiencies which will cause unintended air flow based on wind forces. Wind forces act on all buildings, typically creating a positive pressure on the windward face and negative (suction) pressures on the leeward side. For air flow to occur there must be both, a pressure difference between two points, and a continuous flow path or opening connecting the points. This opening is typically seen on the perimeter of doors and window frames.

Seniors Center

Weather-stripping

Existing Conditions

The Seniors Center includes three single doors and one double door that all have incomplete weather stripping. Although this building is cooled by evaporative coolers during the summer, installation of proper weather stripping will improve energy efficiency during the winter heating season, as the building is heated by inefficient electric baseboard heaters.

Proposed Conditions

Complete weather stripping will be installed on all doors at this building.

Town Hall Complex (100 Building)

Door Bottom Sweep

Existing Conditions

Several doors were found to have missing bottom sweeps and/or weather stripping. Additionally, there is one (1) old composite door that is in need of replacement and improperly sealed along with one (1) steel door that is in poor condition and in need of replacement.

Proposed Conditions

Complete weather stripping and bottom sweeps will be installed on all doors at this building. Replace two (2) older doors.

Town Hall Complex (200 Building)

Existing Conditions

One (1) door was found to be in need of a new bottom sweep.

Proposed Conditions

Install a bottom sweep for one (1) door.

Example of a gap at the top of the door.

Town Hall Complex (300 Building) [NR]

Existing Conditions

All doors at this building were found to be in acceptable condition and adequately sealed.

Proposed Conditions

Not applicable.

Archeology Center

Existing Conditions

One (1) door was found to be in need of a new bottom sweep.

Proposed Conditions

Install bottom sweep for one (1) door.

RECOMMENDATIONS

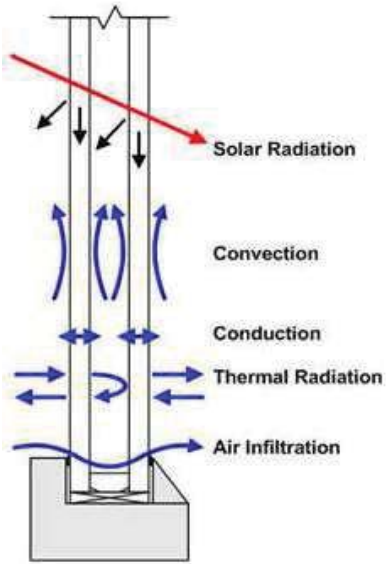
Installation of bottom sweeps and weather stripping as described above is recommended. These measures are low cost items that have reasonable payback periods.

MEASUREMENT & VERIFICATION

It is recommended that the energy savings associated with this ECM will be stipulated. A test procedures utilized for commercial weatherization is called blower door testing. This test requires the building's HVAC system to temporarily modified and pressurized using large fans. The cost for this testing is disproportionate to the annual savings.

ECM 4.2 | Window Replacements

Applies to: Town Hall Complex,



INVESTIGATION

The building envelope is a critical part of a facility's energy efficiency. Thermal energy is transferred through the building's exterior skin in several ways. The largest single component is conductive heat transfer through the wall, windows, roof and other external surfaces. This energy loss is most notably mitigated by insulation installed during construction. The next form of energy transfer is through radiation. This is energy that is absorbed by the building through the windows or other surface and radiated from the building to the outdoors.

Town Hall Complex (100 Building) [NR]

Existing Conditions

The windows at the 100 building are in generally poor condition. Most windows appear to be original to the building and are of single pane construction. A limited amount windows have been replaced with new glass block type fixtures in order to provide improved insulation.

Proposed Conditions

Replace windows with double-pane glass units. Window replacements rarely result in favorable payback periods, but may improve occupant comfort.

Town Hall Complex (200 Building) [NR]

Existing Conditions

The windows at the 200 building are in generally poor condition. Most windows appear to be original to the building and are of single pane construction. A limited amount windows have been replaced with new double pane glass with aluminum frames in order to provide improved insulation.

Proposed Conditions

Replace windows with double-pane glass units. Window replacements rarely result in favorable payback periods, but may improve occupant comfort.

Town Hall Complex (300 Building) [NR]

Existing Conditions

The windows at the 300 building are in generally poor condition. Most windows appear to be original to the building and are of single pane construction. A limited amount windows have been replaced with new double pane glass with aluminum frames in order to provide improved insulation. Roll shades have also been installed over some windows which provide shading and protection of windows.

Proposed Conditions

Replace windows with double-pane glass units. Window replacements rarely result in favorable payback periods, but may improve occupant comfort.

RECOMMENDATIONS

Window replacements are not recommended as the cost to replace is very high compared to the energy savings potential. Selected windows could be replaced as part of an EPC project at the Town's discretion depending on the overall project cashflow.

ECM 5.1 | Water Conservation | Plumbing

Applies to: Town Hall Complex [NR]

Investigation

High efficiency plumbing devices are available that reduce water consumption while maintaining the same level of convenience and service. These devices, referred to as "low flow" (water saver), will result in both energy and cost savings. Sinks retrofitted with faucet aerators will realize a reduction in hot water usage resulting in energy savings at the domestic water heaters.

Existing

The following were identified as opportunities for improvements at the 100 building.

- (6) Tank Top Water Closets (3.5 GPF)
- (4) Full Height Urinals (3.5 GPF)
- (4) Bathroom Sinks (2.0 GPM)

Proposed

The proposed improvements will retrofit faucet aerators currently rated at 2.0 gallons per minute (GPM) with .5 GPM aerators. Urinals will be replaced with new urinals (both the china and flush valve) that are designed to operate with "one pint" or .128 gallons per flush. Water closets will be replaced (both china and flush valve) with 1.28 gallon per flush models.

RECOMMENDATIONS

While typically these improvements are a great opportunity, they are subject to the frequency of use and usage pattern of occupants. The usage pattern is relatively low, for these facilities and this measure is not recommended to be included in the project.

Note other buildings were investigated for the ECM as well. They either found to already have "low flow" fixtures or lower usage patterns than the Town Hall Complex.

MEASUREMENT & VERIFICATION

This measure produces savings based on reduced water consumption from the installation of newer equipment. Factory calibrated equipment will be field tested to assure the post installation equipment is operating within specification.

ECM 5.2 | Water Conservation | Pool

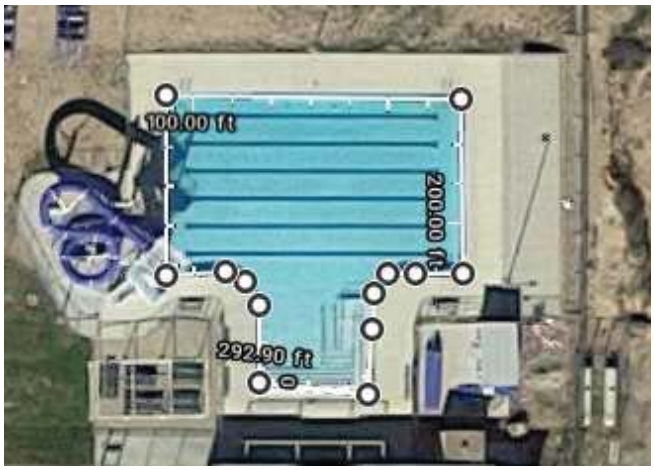
Applies to: Pool [NR]

INVESTIGATION

When pools are uncovered there are significant water losses due to evaporation. The water lost has to be replaced with fresh water that requires heating and chemical treatment. Installation of an automated pool cover will allow the pools to easily be covered when not being utilized. This will substantially reduce evaporation loss, resulting in energy savings, water savings and chemical savings.

Existing System

The pool is open Memorial day weekend through mid September. The pool remains uncovered during this period. The pool is chemically treated and heated.



Proposed System

There are several styles of pool covers and deployment systems. The final application will be vetted with the pool operations staff to determine the appropriate style to minimize disruptions and maximize ease of use. The initial selection is a semi-automatic pool cover that can me moved into place by staff then deployed.

RECOMMENDATIONS

A pool cover is <u>not</u> recommended as the cost of installation is high compared to the energy & water savings potential.

ECM 6 | Aeration Upgrades

Applies to: Wastewater Treatment Plant

INVESTIGATION

The existing aeration system facilities at the wastewater treatment plant (WWTP) were evaluated to investigate potential opportunities for energy and operational efficiency improvements under ECM 6–Aeration Upgrades. The potential improvements evaluated included equipment and process modifications that would provide more efficient transfer of oxygen as well as increasing the flexibility of the process to reduce excess levels of aeration. The analysis evaluated the aeration system holistically including diffuser, blower, and control strategy combinations.

A site visit was conducted at the WWTP to assess existing conditions, obtain WWTP operational information, and discuss current operating procedures with WWTP personnel.

Existing System

The existing WWTP is the SEQUOX system as manufactured by Aero-Mod, Inc and consists of two treatment trains designated "A" (south side) and "B" (north side) each designed for a maximum flow of 0.65 mgd. Each train consists of a First Stage Aeration Tank, Second Stage Aeration Tank, Aerobic Digester, and Secondary Clarifier. The process also includes Headworks, a Selector Tank, and a WAS/Septage Receiving Tank, which are common to both treatment trains. The existing average daily flow for the WWTP is approximately 0.22 mgd and only treatment train "A" is being utilized, along with both Aerobic Digester Tanks A and B. The treatment train "B" process tanks are currently kept full with water reportedly to balance the structural loading on the common walls between treatment train A and B. The water is from the potable water supply at the WWTP, and is continually chlorinated and intermittently aerated.

The existing aeration system facilities in operation at the WWTP include rotary-lobe, positive displacement type blowers equipped with variable frequency drives (VFDs), air supply piping, and diffusers. Multiple WWTP processes require process air including the following:

- Selector Tank;
- First Stage Aeration;
- Second Stage Aeration;
- WAS/Septage Receiving Tank;
- Aerobic Digestion;
- Waste Activated Sludge (WAS) Air Lift Pumps; and
- Return Activated Sludge (RAS) Air Lift Pumps.

The existing blower equipment in operation at the WWTP includes five 25-hp and two 30-hp, rotary-lobe, positive displacement type, variable speed blowers manufactured by Kaeser. Each of the blowers is equipped with a VFD. A list of the existing blower equipment is presented below:

Summary of Existing Blower Equipment Information				
Blower ID	Kaeser Model	Motor Rated Power (hp)	Design Air Flow (cfm)	Service
1	43P	25	460	Second Stage Aeration Tank A, RAS Air Lift Pumps, First and Second Stage Aeration Tanks B, Selector Tank
2	43P	25	460	Second Stage Aeration Tank A, RAS Air Lift Pumps, First and Second Stage Aeration Tanks B, Selector Tank
3	43P	25	460	Backup to Blowers 1, 2, 4, and 5
4	43P	25	460	First Stage Aeration Tank A, WAS Air Lift Pump
5	43P	25	460	First Stage Aeration Tank A, WAS Air Lift Pump
6	52P	30	680	Aerobic Digesters A and B, WAS/Septage Receiving Tank
7	52P	30	680	Aerobic Digesters A and B, WAS/Septage Receiving Tank

A combination of coarse and fine bubble diffusers are utilized in the aeration system facilities. A summary of locations for each type of diffuser is presented below:

Process	Diffuser Type
Selector Tank	Coarse
First Stage Aeration	Fine
Second Stage Aeration	Coarse
WAS/Septage Receiving Tank	Coarse
Aerobic Digesters	Coarse

The wastewater is continually aerated in the First Stage Aeration process. Aeration in the First Stage Aeration is controlled automatically to maintain a target dissolved oxygen (DO) concentration range of 1.53 to 1.58 mg/l. DO concentration measurements from a DO sensor that is located in the southwest area of the First Stage Aeration Tank A are input into the existing WWTP SCADA system, which controls the operation and speed, via the VFDs, of Blower Nos. 4 and 5 (and No. 3 if operating) to maintain the target DO concentration.

Effluent from the First Stage Aeration process flows to the Second Stage Aeration process where it is intermittently aerated. Aeration cycles on/off approximately every three hours. Operation of Blower Nos. 1 and 2 (or No. 3 if it is operating) is controlled automatically based on a timer. Both blowers are operated at full-speed when in operation.

Blower Nos. 1 and 2 (and No. 3 if operating as a backup) supply air to the water that is maintained in the treatment train "B" process tanks, as outlined above. Aeration of these tanks is provided intermittently, and cycles directly opposite to the aeration process for the Second Stage Aeration Tank A. Valves are also throttled on the aeration supply piping to the treatment train "B" process tanks to reduce the amount of air that is supplied.

Proposed System [Multiple Options]

Potential energy and process modifications that were identified and evaluated included the following:

- **Alternative No. ECM 6.1.1** | Provide Automated Blower Control System for Second Stage Aeration Tanks;
- **Alternative No. ECM 6.1.2** | Convert from Continuous to Intermittent Aeration in First Stage Aeration Tanks;
- **Alternative No. ECM 6.1.3** | Replace Existing Blowers with Higher Efficiency Equipment;
- **Alternative No. ECM 6.1.4** | Eliminate Aeration of Treatment Train B (North Side) Process Tanks.

Alternate ECM 6.1.1 – Provide Automated Blower Control System for Second Stage Aeration Tanks

As presented previously, blower speed and output is currently controlled and adjusted manually for the Second Stage Aeration. Manual operation has the potential to result in excessive aeration and associated energy usage. This proposed ECM consists of installation of an automated blower control system that would be utilized to automatically adjust the blower speed and output to maintain a DO set point in the Second Stage Aeration Tank. Installation of a minimum of one DO sensor in the Second Stage Aeration Tank A, electrical and control connections, and SCADA programming would be required to provide automated control similar to the existing DO control system for the First Stage Aeration Tanks.

Alternate ECM 6.1.2 – Convert from Continuous to Intermittent Aeration for First Stage Aeration Tanks [NR]

As presented previously, aeration in the First Stage Aeration Tanks is continuous, consistent with Aero-Mod's SEQUOX process. This proposed ECM consists of converting the aeration process in the First Stage Aeration Tank A from continuous to intermittent. This type of operation represents a modification to Aero-Mod's SEQUOX process known as SEQUOX-Plus. Aeration of the First Stage Aeration Tank A would cycle on/off opposite of the intermittent aeration cycle for the Second Stage Aeration Tank A. Conversion from continuous to intermittent aeration would generally consist of modifications to the SCADA programming.

The use of intermittent aeration cycling opposite of the Second Stage Aeration Tanks would reduce aeration of in the First Stage by 50-percent. Based on the current organic loading to the WWTP, this would likely require an increase in blower usage during the aeration cycle to maintain the current level of treatment required, which would minimize any cost savings due to reduction in energy usage. For this reason, this ECM does not appear to be feasible or cost efficient and was not evaluated further.

Alternate ECM 6.1.3 – Replace Existing Blowers with More Efficient Equipment [NR]

As presented previously, the blower equipment consists of five 25-hp and two 30-hp rotary lobe, positive displacement type blowers. The existing blower equipment has been in operation for approximately eight years. WWTP personnel report high reliability of the existing blower equipment, and minimal problems with operation and maintenance.

This would consist of replacing all of the existing blowers, including VFDs, with new more efficient type of equipment such as turbo-type or hybrid-type blowers. An increase in efficiency has the potential to decrease the energy usage required for aeration, which would result in a cost savings.

The existing blower equipment has provided high reliability, low maintenance operation for the previous eight years, which is less than half of their anticipated service life of 20-years. Although there may be blower equipment available with higher operating efficiencies, it is not cost efficient to replace the existing blower equipment at this time. For this reason, this ECM was not evaluated further.

Alternate ECM 6.1.4 – Eliminate Aeration of Treatment Train B (North Side) Process Tanks [NR]

As presented previously, the water in the unused treatment train "B" (north side) process tanks is currently aerated intermittently. The purpose is to prevent it from becoming stagnant and to provide mixing for the chlorine feed.

This would consist of eliminating the process of aerating the unused treatment train "B" tanks, and draining them. This would require an alternate method of offsetting the structural loads exerted on the common walls between the two treatment trains, which could include construction of temporary supports and bracing inside the empty treatment train "B" tanks. An alternate method of water storage for fire protection for the existing maintenance/storage building at the WWTP would also be required, since the water in the treatment train "B" tanks currently serves this purpose. Construction of a temporary or permanent storage tank, or similar facility, would be required.

Eliminating the aeration system, which would require installation of temporary supports and bracing in the existing treatment train "B" tanks, and construction of a water storage tank for fire protection, is not cost efficient. For this reason, this ECM was not evaluated further.

RECOMMENDATIONS

It is recommended to proceed with ECM 6.1.1 – Provide Automated Blower Control System for Second Stage Aeration Tanks. Implementing this ECM would result in a reduction in energy usage and corresponding cost savings, and has a payback of less than three years.

Additionally, it is recommended that the DO concentration in the unused treatment train "B" tanks be monitored regularly. The DO concentration in these tanks should be minimized so that aeration and resulting energy usage is minimized. Minimizing the amount of aeration in these tanks will also help to maintain the desired chlorine residual, potentially reducing chemical usage.

OPTIONS INVESTIGATED AND NOT PURSUED

Replace Existing Blowers with More Efficient Equipment [NR]

As presented previously, the blower equipment consists of five 25-hp and two 30-hp rotary lobe, positive displacement type blowers. The existing blower equipment has been in operation for approximately eight years. WWTP personnel report high reliability of the existing blower equipment, and minimal problems with operation and maintenance.

This would consist of replacing all of the existing blowers, including VFDs, with new more efficient type of equipment such as turbo-type or hybrid-type blowers. An increase in efficiency has the potential to decrease the energy usage required for aeration, which would result in a cost savings.

The existing blower equipment has provided high reliability, low maintenance operation for the previous eight years, which is less than half of their anticipated service life of 20-years. Although there may be blower equipment available with higher operating efficiencies, it is not cost efficient to replace the existing blower equipment at this time. For this reason, this ECM was not evaluated further.

Eliminate Aeration of Treatment Train B (North Side) Process Tanks [NR]

As presented previously, the water in the unused treatment train "B" (north side) process tanks is currently aerated intermittently. The purpose is to prevent it from becoming stagnant and to provide mixing for the chlorine feed.

This would consist of eliminating the process of aerating the unused treatment train "B" tanks, and draining them. This would require an alternate method of offsetting the structural loads exerted on the common walls between the two treatment trains, which could include construction of temporary supports and bracing inside the empty treatment train "B" tanks. An alternate method of water storage for fire protection for the existing maintenance/storage building at the WWTP would also be required, since the water in the treatment train "B" tanks currently serves this purpose. Construction of a temporary or permanent storage tank, or similar facility, would be required.

Eliminating the aeration system, which would require installation of temporary supports and bracing in the existing treatment train "B" tanks, and construction of a water storage tank for fire protection, is not cost efficient. For this reason, this ECM was not evaluated further.

MEASUREMENT & VERIFICATION

The recommended ECM 6.1.1 produces savings based on reduced energy consumption from the installation of a control system. Blower operation and

corresponding energy usage after implementation of the ECM can be compared to existing conditions to verify energy savings.

ECM 7 | Biosolids Drying and Disposal

Applies to: Wastewater Treatment Plant

INVESTIGATION

The existing biosolids handling processes at the wastewater treatment plant (WWTP) were evaluated to investigate potential opportunities for energy and operational efficiency improvements under ECM 7.1 – Biosolids Drying and Disposal. Various options for implementing a biosolids drying process to reduce the total volume of biosolids required for disposal were evaluated. Reducing the total volume of biosolids requiring disposal, will result in a reduction in disposal costs.

A site visit was conducted at the WWTP to assess existing conditions, obtain WWTP operational information, and discuss current operating procedures with WWTP personnel.

Select WWTP operating data were provided and evaluated, including the following:

- Daily average influent flow, pH, and total suspended solids concentration (TSS) for the period January 1, 2014 through February 17, 2017;
- Daily effluent flow, pH, temperature, ammonia nitrogen concentration, nitrate concentration, TSS concentration, turbidity, chlorine residual, and fecal coliform for the period January 1, 2014 through February 17, 2017;
- Daily average aeration tank (first stage) pH, temperature, settled sludge volume (SSV), mixed liquor suspended solids (MLSS), mixed liquor volatile suspended solids (MLVSS), and sludge volume index (SVI) for the period January 1, 2014 through February 17, 2017; and
- Daily volume and mass (pounds) of waste activated sludge (WAS) removed from the first stage aeration tank for the time period January 1, 2014 through February 17, 2017.

Discussions with wastewater treatment equipment vendors were conducted and recommendations and budget proposals were obtained.

Existing System

The WWTP currently maintains a minimum MLSS concentration target range of approximately 3,800 to 4,000 milligrams per liter (mg/l) in the First Stage Aeration Tank, which is used to control the biological treatment process. Waste activated sludge (WAS) is generated by wasting mixed liquor suspended solids (MLSS) from the first stage aeration tank. Sludge wasting is initiated when the MLSS concentration reaches 5,000 mg/l. An air lift pump is then operated to convey MLSS from the First Stage Aeration Tank to the aerated WAS/Septage Receiving Tank where it is combined with septage and other WAS received from outside haulers. The air lift pump is operated until the MLSS concentration in the First Stage Aeration Tank decreases to the target operating range of 3,800 to 4,000 mg/l. The combined WAS and septage in the WAS/Septage Receiving Tank is then conveyed to either Aerobic Digester A or B, which are currently operated in parallel, via a submersible pump. The digesters are aerated approximately six hours and allowed to settle and decant approximately four to six hours during the daily hours of operation. Digesters are decanted every day they receive WAS from the First Stage Aeration Tank. When a digester reaches capacity, digested sludge is conveyed by gravity to the belt filter press feed pump. The belt filter

press is used to dewater digested biosolids to produce a cake with typical percent solids (by weight) ranging between 16% and 18%, as reported by WWTP personnel. Dewatered biosolids are currently transported to the old lagoons associated with the former WWTP for staging.

WWTP personnel report that the operation of the aerobic digesters is not efficient and they do not function as designed. The solids retention time for the digesters is typically significantly less than the original design value of 30-days. Accordingly, the digesters appear to function more like biosolids holding tanks rather than digesters. This results in a significant reduction in biosolids digestion and anticipated destruction of volatile solids, which would reduce the total amount of biosolids that would be required to be dewatered and disposed.

Return activated sludge (RAS) is withdrawn from the secondary clarifiers using an air lift pump, which is continuously cycled six minutes on, followed by 30-minutes off. RAS is conveyed to the Selector Tank where it is combined with the influent flow. The clarifiers do not appear to be functioning efficiently. The amount of RAS removed appears to be minimal. Based on field observations and reports by WWTP personnel, the settled RAS is removed quickly and completely approximately within the first two or three minutes of the air lift pumping cycle. Clarified effluent is essentially conveyed to the Selector Tank during the remaining portion of the air lift pumping cycle.

Baseline Costs

Since the start of operation of the WWTP in 2009, dewatered biosolids have been staged in the old lagoons associated with the former WWTP. Accordingly to date, the Town has not incurred any significant biosolids disposal costs, nor have these costs been included in annual budgeting.

The Town is currently cleaning and remediating the old lagoons to properly close them in accordance with ADEQ requirements. This includes removal and disposal of the biosolids that have been staged there over the years. Once the lagoons have been formally closed, the Town will be required to transport dewatered biosolids directly to the Grey Wolf Regional Landfill (Landfill) located in Dewey, AZ for disposal without staging them first. The Landfill is located approximately 16 miles southwest of the WWTP.

For the purpose of this evaluation, we have assumed the following to establish a baseline annual biosolids disposal cost for comparison to the proposed alternative ECMs:

Baseline Cost Assumptions – Disposal of Biosolids	
Total Annual Biosolids Generated at WWTP	170 Dry Tons
Dewatered Biosolids Percent Solids (By Weight)	16% to 18%
Total Annual Dewatered Biosolids Generated at WWTP	1,000 Wet Tons
Landfill Unit Tipping Fee	$46/Ton
Transportation Fee	$112/Truckload (14 CY)
Loader Equipment Rental	$6,200/Month; $300/Day

Estimated Baseline Annual Biosolids Disposal Cost	$ 55,100

Proposed System

The evaluation of proposed improvements to the biosolids handling process focused on identifying opportunities for disposal cost savings for the calculated disposal baseline, specifically reducing the total weight of biosolids that require disposal. Implementing a biosolids drying process would remove a significant amount of water and associated weight from the biosolids prior to disposal, which would reduce disposal costs. The following three alternatives for biosolids drying and weight reduction were evaluated:

- **Alternative No. ECM 7.1.1** | Construct Conventional Drying Beds for Dewatered Biosolids;
- **Alternative No. ECM 7.1.2** | Construct Solar Drying Bed System for Dewatered Biosolids; and,
- **Alternative No. ECM 7.1.3** | Construct Conventional Drying Beds for Un-Dewatered Biosolids.

Assumptions for Alternatives Evaluation	
Total Annual Digested Solids Produced at the WWTP	170 Dry Tons
Dewatered Biosolids Percent Solids (By Weight)	16% to 18%
Un-Dewatered Biosolids Percent Solids (By Weight)	0.6% to 0.8%
Total Annual Dewatered Biosolids Produced at the WWTP	1,000 Wet Tons
Total Annual Un-Dwatered Biosolids Produced at the WWTP (Combined WAS/Septage)	27,500 Wet Tons

Alternative No. ECM 7.1.1 | Construct Conventional Drying Beds - Dewatered Biosolids

This alternative consists of constructing conventional sludge drying beds to dry dewatered biosolids generated by the WWTP's existing belt filter press equipment. The construction of the sludge drying beds would be cast-in-place concrete with an asphalt base. The existing biosolids dewatering process via the belt filter press equipment would remain the same. Dewatered biosolids would be transported and deposited into the sludge drying beds using the existing dump truck equipment. Turning and mixing of the deposited biosolids utilizing a small front-end loader would be required on a bi-weekly basis to facilitate the drying process. Dried biosolids would be removed from the drying beds once per year, and transported to the Landfill for disposal. The target minimum percent solids (by weight) of the dried biosolids is 65%. The minimum sludge drying bed area required to achieve this target percent solids is 11,000 square feet. The preliminary configuration of the proposed sludge drying beds would consist of three cells each 100-foot long by 40-foot wide.

Alternative No. ECM 7.1.2 | Construct Solar Drying Bed System for Dewatered Biosolids [NR]

This alternative consists of constructing a solar drying bed system to dry dewatered biosolids generated by the WWTP's existing belt filter press equipment. The solar drying bed system would be provided by an equipment manufacturer such as the Thermo-System® Active Solar Drying System as manufactured by Parkson, or equivalent. The system would consist of an approximate 42-foot by 180-foot drying chamber constructed of cast-in-place concrete walls, asphalt or cast-in-place concrete floor, and building structure constructed of polycarbonate installed over framing (similar to a greenhouse). The building would be equipped with an air exchange ventilation system consisting of exhaust fans, ceiling fans, and air inlet flaps and louvers. Automatic sludge mixing equipment would also be installed to facilitate the drying process. Dewatered biosolids would be transported and deposited into the drying chamber using the existing dump truck equipment. Dried biosolids would be removed from the drying beds once per year, and transported to the Landfill for disposal. The target minimum percent solids (by weight) of the dried biosolids is 65%. The minimum sludge drying bed area required to achieve this target percent solids is approximately 7,600 square feet, which is approximately 30-percent less area compared to conventional sludge drying beds as outlined in Alternative No. ECM 7.1.1 above. Operation of the system, however, would result in an increase in energy usage at the WWTP due to the ventilation and biosolids mixing equipment associated with the solar sludge drying system.

Alternative No. ECM 7.1.3 |Construct Conventional Drying Beds for Un-Dewatered Biosolids [NR]

This alternative consists of constructing conventional sludge drying beds to dry un-dewatered waste biosolids. The biosolids would not be dewatered using the belt filter press equipment. Instead, the waste biosolids would be pumped to the sludge drying beds from the digesters, bypassing the belt filter press dewatering equipment.

The construction of the sludge drying beds would be cast-in-place concrete with an asphalt base similar to Alternative No. ECM 7.1.1. The sludge drying beds would also be equipped with a decant and drainage system to facilitate the drying process since there will be an excess amount of water due to the significantly lower solids concentration of the biosolids compared to Alternative No. ECM 7.1.1. The minimum sludge drying bed area required to achieve the target percent solids of 65% would be approximately 120,000 square feet, or 10 times the area that would be required for drying dewatered biosolids as outlined in Alternative No. ECM 7.1.1 above. The preliminary configuration of the proposed sludge drying beds would consist of 12 cells each 200-foot long by 50-foot wide. A new submersible pumping station and force main would be constructed adjacent to the digesters to convey the digested and decanted biosolids to the sludge drying beds. Turning and mixing of the deposited biosolids utilizing a small front-end loader would be required on a weekly basis to facilitate the drying process. Dried biosolids would be removed from the drying beds once per year, and transported to the Landfill for disposal.

RECOMMENDATIONS

The recommended alternative is Alternative No. ECM 7.1.1 Construct Conventional Drying Beds for Dewatered Biosolids. This alternative has the lowest estimated project cost and the shortest estimated payback period.

MEASUREMENT & VERIFICATION

This measure produces cost savings from reduced disposal costs resulting from a reduction in total weight of biosolids produced by the drying process. Verification can be made by comparing the percent solids of the dewatered biosolids and the dried biosolids, and calculating the volume reduction based on the total amount of water removed from the biosolids.

ECM 8 | Photovoltaic (PV)

Applies to: WWTP, Lift Station

INVESTIGATION

PV solar panels allow for the conversion of underutilized roof and or ground space into small power plants. PV modules utilize sunlight to generate direct current (DC) electric power. This renewable and local energy generation system offsets energy consumption within the building. Inverters transform DC power into usable alternating current (AC) power. PV systems are synchronized with electricity provided by the utility for a seamless interface into the building's electrical system.

The size of a PV system is dependent on many factors; the first being the intended use of the system. If a system is intended to be for demonstration purposes the system size will likely be determined by the cost of the system and available incentives. This assumes that the building's energy consumption far exceeds the potential system energy output.

If the intent of the system is to produce as much energy as possible, the limiting factors would be the facility's peak demand, the physical space available, the number of utility meters on site, and state laws governing net metering. More often than not, the capital cost of the system will prove to be the determining factor. As such a cost benefit analysis is preformed, which in many cases takes the form of a simple payback.

The energy production of a photovoltaic system is dependent on several factors:

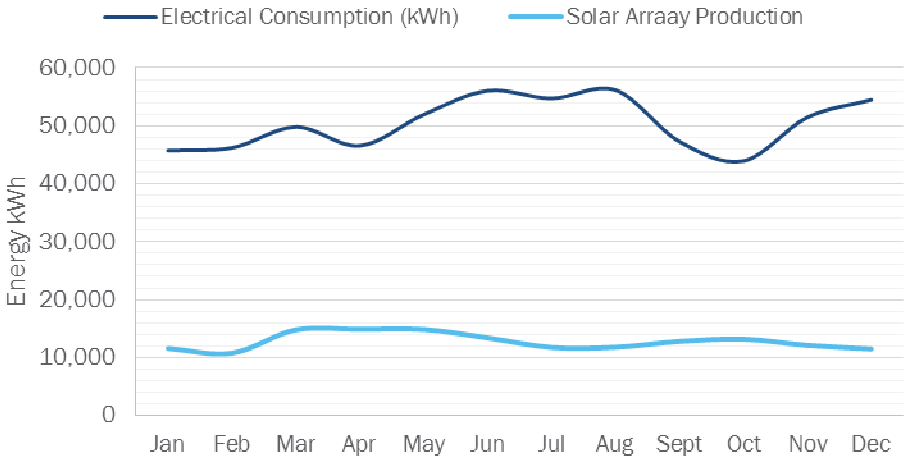
- The geographic location
- The amount of interference from nearby structures or trees
- The type of system
- The mounting type of the system
- The angle of the system

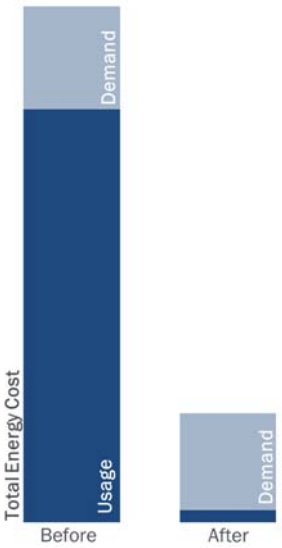
Photovoltaic systems can often last for 25 to 30 years, with most manufacturers having equipment warranties lasting 20 years. Although the equipment may continue to perform beyond the warranty period, the system's energy production will decrease over time. A general rule of thumb is that a 25 year old system will produce roughly 80% of its initial energy output.

The financial impact a PV system has on utility costs is complex for customers with a demand billing system. The peak demand of a facility is the largest 15 minute interval of power consumption during a billing period. A PV system over the course of the year will offset consumption but may not offset the peak demand. If during a 15 minute period it is raining, or if the peak is set at night, early in the morning or in the afternoon the PV system will have a minimal impact on demand. As such only a fraction of the annual demand costs can be reasonably be projected as offset by a PV system.

ECM 8.1.1 | WWTP 80% of peak demand

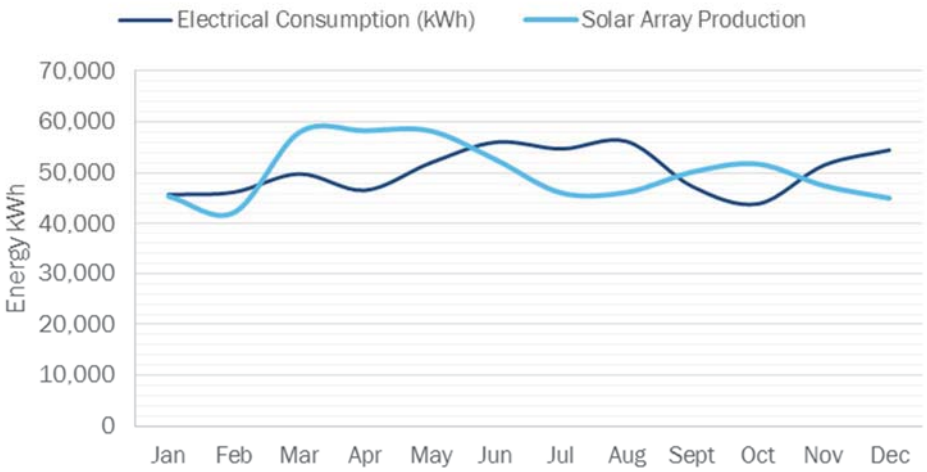
This option would be a smaller array that would be sized to be below the facilities smallest demand month by 20%. By sizing the array this way, the customer will avoid having to install more costly bidirectional metering or having the electrical service size increased. The system would be smaller and offset about 25% of the consumption. The option will not fit on existing roof tops.





ECM 8.1.2 | WWTP 100% of consumption[NR]

The array will be sized to offset the current electrical consumption for the Waste Water Treatment Plant. This will be oversized after the conservation project but will allow for added production that will offset the new town park that will be built. This option is sized to be a ground mount system. Though this system will offset the annual kWh consumption of the facility on an annual basis, but it will operate with very large swings in power production. During peak production during the day, the array will meet all onsite power needs and still deliver a substantial surplus to the grid. At night, production will cease and all power for the plant will be pulled from the grid. As a result of this sizeable kW variation, the existing service connection to the WWTP would have to be upgraded to accommodate the additional transmission.



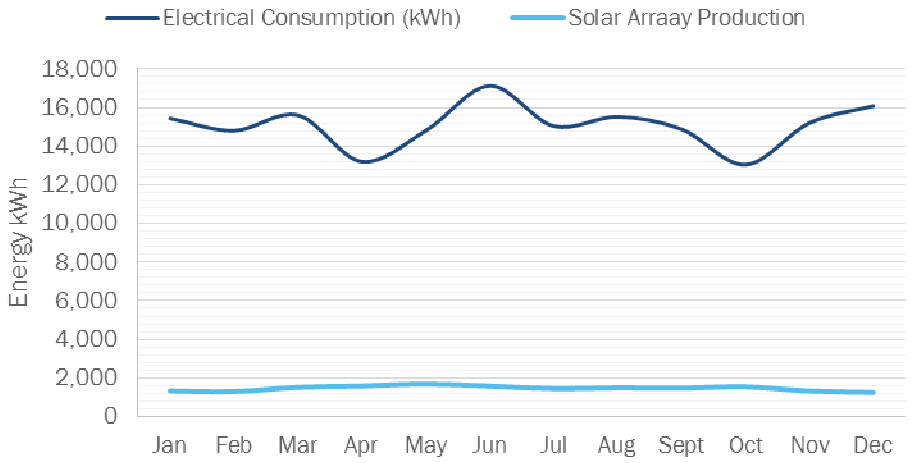
Energy Cost Impact

	Supply	Demand
Current	$53,054	$13,231
After	$1,583	$12,455

The above chart and table show the financial impact of a PV system sized of offset the WWTP's usage "option 2".

ECM 8.2 | Lift Station 100% of available roof area[NR]

Lift Station: The lift station array is sized to cover the south facing portion of the roof.



Design & Construction Considerations

Structural support, physical space and electrical interconnects are the key factors in design and implementation of the photovoltaic arrays.

Operation & Maintenance

Photovoltaic systems have limited annual maintenance requirements. In general, the system will produce the projected energy with only minor preventative maintenance tasks. The best way to protect your investment over the life of the system is start with a professionally designed system. A system designer will incorporate equipment and require construction practices that limit the owner's risk.

Professionally designed systems will require I-V curve testing of the system. This testing will give the owner a performance curve of the system upon completion of construction. This information is critical should a module fail and a warranty claim is made.

Professionally designed systems also incorporate silicone irradiance sensors and string level monitoring technology. These systems allow the owner to compare the systems performance to its designed performance. These systems will quickly identify problems and locations of poor performing components.

MEASUREMENT & VERIFICATION

The recommended M&V approach for this ECM would be to install systems that have integral metering of the produced energy. A solar irradiance sensor will trend available irradiance and compare that to system performance.

ADDITIONAL OPERATIONAL RECOMMENDATIONS

Applies to: WWTP

Additional recommendations for implementation of modifications to various WWTP processes and systems to improve operational efficiency are presented below.

Process Control

As outlined above, the MLSS concentration in the First Stage Aeration Tank is utilized to control the biological treatment process. Typically for treatment processes similar to the existing WWTP, the solids retention time (SRT) (also referred to as "mean cell residence time" or "sludge age") is used as the process control parameter rather than MLSS. Utilizing SRT would require that a set amount of WAS is removed from the First Stage Aeration Tank every day, regardless of MLSS concentration.

Currently, the amount of WAS (i.e., MLSS) removed from the First Stage Aeration Tank varies from 0 to 42,000 gallons per day, based on a review of WWTP data. This results in a constantly varying SRT, and inconsistent conveyance of WAS to the digesters. For the previous two years, the treatment process is averaging an SRT of approximately 45-days although it varies significantly throughout the year due to the current method of sludge wasting. Also for comparison, the original Aero-Mod design SRT is reportedly 20-days for a flow rate of 0.65 mgd.

Providing a more consistent WAS feed to the digesters would likely improve their operation and efficiency. The digesters SRT would also likely increase, which would increase destruction of volatile solids and result in a reduction in the overall volume of biosolids that would require dewatering and disposal. The WWTP is achieving good performance at the current average SRT of approximately 45-days. Conversion of process control to SRT from MLSS concentration would require that approximately 14,500 gallons of WAS (i.e., MLSS) be removed daily from the First Stage Aeration Tank, to maintain the existing average SRT of 45 days. This is based on an MLSS concentration of approximately 4,000 mg/L in the First Stage Aeration Tank.

Flow Meter for Belt Filter Press Feed

Installation of a flow meter on the feed pipe to the belt filter press would assist with WWTP operation and control by providing accurate data on the amount of bioslids that are dewatered for disposal. This would also provide valuable data for preparing the annual budget for the WWTP.

RAS Withdrawal Modification

Shortening the duration of RAS withdrawal and/or increasing the time period between RAS withdrawals may improve the sludge settling performance of the Secondary Clarifiers. This would improve operational efficiency by increasing the RAS solids concentration and minimizing the amount of clarified effluent that is unnecessarily recycled back to the First Stage Aeration Tank. As indicated previously, the RAS air lift pumps are currently operated for six minute on/30-minute off cycle. It is recommended that the WWTP personnel experiment with adjustment of the current settings for this cycle to determine a cycle that produces a more efficient RAS withdrawal. For example, one potential adjustment to try would be to decrease the on cycle to 4-minutes and increase the off cycle to 40-minutes.

Section F

Project Approach & Next Steps

Project Approach & Next Steps

Approach to EPCs

Wendel used a Professionally Led approach to the Energy Savings Performance Contracting process. Given our seven decades of municipal engineering experience, and our knowledge of the traditional energy savings performance contract (ESPC) approach, we developed an approach that strikes a balance between traditional project delivery methods and ESPC models. Wendel's Professionally Led Performance Contracting Approach is an open book, transparent, "stepped approach" to developing and implementing an ESPC project. Our projects are developed in phases and we seek our client's input and collaboration during each phase.

Step 1 | Investment Grade Audit

Completed

This is where we are now

Scope Selection Process

Following the completion of the Investment Grade Audit (IGA), we have presented a draft report for your review and comment. As part of this process we have made recommendations for ECMs that should be included in the project. However these are only initial selections, you know your goals, facilities, needs and restrictions. As such we invite collaboration on selecting the ECMs that you feel comfortable moving forward with.

Next Step

Project Development Agreement

Following the selection of the project we will present the Town with a project development agreement. This document establishes the scope that will be further developed into Professionally Engineered Design & Construction Documents. The fees for this phase will be based on a mutually agreed portion of Wendel's overall % mark-up on Labor and Material.

Step 2 | Design

Wendel generally develops either 30%, 60%, 90% and 100% documents or 60%, 90% and 100% documents (depending on preference). Since the IGA serves as a 30% design, that milestone can be skipped. For purposes of further expediting the design process, Wendel recommends consolidating its design effort, and providing a 50% and 100% design submission. If the 50% and 100% design submission approach is taken, Wendel would expect each package to include the following:

Fifty Percent Design

The fifty percent (50%) design effort will include, but not be limited to, the following activities and deliverables:

- Project overview/general facility layout drawing.
- Design assumptions.
- Acknowledgement of a complete review of all applicable codes and standards.
- Demolition design drawings.

- Site plan.
- Estimated cost (equipment and installation labor) of project implementation.
- Estimated cost of hazardous material abatement.
- Schematics (electrical/mechanical/structural).
- Timeline with major milestones and critical path items identified.
- Preliminary specifications and cut sheets.
- Summary of all major changes from the IGA.
- Updated detailed cost savings and life cycle cost estimates with a comparison to, and explanation of any major changes since, the IGA.

Final Design

The final (100%) design effort will include the following activities and deliverables:

- Update to the project description and magnitude overview.
- Facility layout outlining all proposed rigging and staging.
- Material and installation labor bid documents.
- Equipment specifications and cut sheets.
- Construction specifications.
- Drawings and technical specifications (electrical/mechanical/structural).
- Identification of any potential impact to the facility and/or its operation with proposed solutions/work-arounds.
- Final abatement design with an updated estimate of abatement costs.
- Updated project timeline with major milestones and critical path items identified.
- Updated design changes associated with the Town's review of the 50% submission.
- Written summary of any changes since the 50% design submission.
- Updated detailed cost savings and life cycle cost estimates with a comparison to, and explanation of any major changes since, the 50% design submittal.

Step 3 | Competitive Transparent & Open Pricing

Selection of Qualified Local Subcontractors

Once the final design/construction documents are complete and approved, Wendel will prepare an invitation for bid. Wendel's approach is to obtain competitive pricing from multiple local contractors, ensuring fair market pricing, and use of local construction trades and contractors. We will jointly develop the bidder list based of pre-qualified local contractors.

Potential subcontractors must demonstrate that they:

- Have a history of performing the types of services requested,
- Have the proper insurance and bonding limits for the requested services,
- Have an outstanding safety record.

Open Book Accounting
+ Fully Transparent Pricing
+ Competitive Bidding
+ Qualified Subcontractors
= Best Project Value

Competitive Solicitation of Pricing

The "fully transparent pricing" offered by Wendel, will review the bid results and final pricing with the Town. A summary of the bids received will be provided, including the selected bidder.

Wendel's fees will then be applied to the lowest possible costs for construction, with no hidden markups or profit added, thereby providing the Town with the best value for the energy savings received. The lower the installed cost to the Town, the more energy saving measures that can be implemented.

You are under no obligation to move beyond Step 3 and there are no penalties for not proceeding to Step 4.

Step 4 | Financing

The Town of Camp Verde essentially has two financing options to implement an EPC project. These options are:

1. Fund project using traditional bonding.
2. Fund project using a municipal lease.

1 | Bonding

Pros:

- Favorable interest rates.
- Long term (i.e., 20 to 25 years).
- Can be used to fund a larger comprehensive project that can pay for itself through savings over the term of the financing.
- Comprehensive project can leverage quick payback items to offset the cost of longer payback items.

Cons:

- Impact on borrowing capacity.
- Legal and fiscal services required.

2 | Municipal Leases

Pros:

- More flexible loan repayment options than bonding (i.e. repayments can start off low and grow as the project generates savings).
- Easier and quicker to finance than bonding (no legal and underwriting fees).
- No penalty for early buyout.
- Termination for non-appropriation.
- Generally lower long term financing maintenance costs.

Cons:

- Typically interest rates slightly higher than bonding.
- Typically finance term is 15 years or less.

Grants, Rebates & Incentives

As mentioned previously, Wendel will leverage the energy calculations and prepare the applications required to secure financial incentives that may be available from relevant

programs offered by APS. Wendel has reviewed incentive opportunities with APS, during the IGA, to discuss the potential measures and understand program requirements. Wendel will constantly communicate with APS during design development to monitor and capture any changes that may occur in their programs or in the incentive value. Wendel will then meet with APS post construction and provide the required documentation for support and assistance with post inspection activities for incentive acquisition.

Step 5 | Implementation

A Project Build Agreement will be presented once you are satisfied with the scope of work, total project cost and financing arrangement that were presented in the previous steps.

Construction Activities

Wendel's Construction Manager will have overall responsibility for managing the on-site project activities during implementation. This includes all demolition, construction, equipment start-up, commissioning, project close-out and final client acceptance and approval.

Wendel's Project Manager will oversee and support the Construction Manager's efforts, provide managerial and technical direction, and assign additional on-site construction administration support as needed. We will ensure that all work performed will not interfere with normal business operations at the facility and if necessary, we will perform our work during a time period that is different from the normal operating hours at Town buildings.

Wendel will also ensure that it never leaves the Town buildings without necessary electrical systems and will always provide ample notification if an electrical system needs to be made inoperable during normal work hours. In this instance, if that is not possible, we will either re-schedule the work activities or will provide temporary service during the period of inoperability.

Within two weeks after authorization to proceed to construction, Wendel will perform the following initial activities:

- Secure all required permits, licenses and filings.
- Develop a Schedule of Values.
- Develop a critical path method (CPM) schedule with all major milestones and critical path items identified.
- Develop a list of all installation subcontractors and contact information and lines of communication for all involved parties.
- Develop a Site Safety Plan.
- Develop anticipated List of Submittals and a Submittal Log.
- Prepare material vendor and installation labor subcontractor purchase orders.
- Schedule pre-construction kick-off meeting with contractors, building personnel, and the Town.

Upon completion of the above activities, Wendel will then begin construction.

The Project Manager's and Construction Manager's responsibilities during the implementation phase will include, but not be limited to:

- Establishing and enforcing the protocols associated with overall coordination of the workforce, job-site access, site conditions and other issues affecting the involved parties.
- Scheduling and leading on-site construction status meetings.
- Preparing and distributing meeting minutes.
- Preparing a report on progress (i.e. work in progress, coordination efforts, open items, potential problems, etc.) and a two week look-ahead schedule.
- Coordinating approval of, and the activities associated with, equipment rigging (if required) or staging.
- Overseeing daily construction activities to ensure that work is in compliance with all codes and the original design intent.
- Ensuring proper disposal of all waste (hazardous or otherwise) and all other decommissioned systems and/or equipment and, maintaining all applicable logs and following all State and Town specific standards and policies.
- Preparing and maintaining logs (i.e.; daily manpower log, equipment status log, change order log, etc.).
- Reviewing out of scope change order requests and processing for approval.
- Quality Assurance and Control.
- Updating and maintaining the CPM schedule.
- Coordinating the resolution of any installation problems and processing all RFI's.
- Maintaining a mark-up of all changes to any effected drawings.
- Coordinating activities with local utilities for connecting, disconnecting and/or providing new service.
- Coordinating equipment start-up and commissioning.
- Coordinating project close-out; developing and resolving punch list items; obtaining final client acceptance.

Closeout Activities

At the completion of the implementation effort, Wendel will ensure that:

- All facility personnel have received the proper training on the operation of the installed systems.
- Ensure that all training and operation and maintenance manuals are provided to the facility operations personnel.
- Provide complete and updated As-Built Drawings to reflect the installed condition of all equipment and systems.
- All other changes that may have been made to the facility.

To manage this process and document completion dates, Wendel will utilize standard and project customized closeout checklists, substantial completion forms and final completion forms. The substantial completion form will be executed by Wendel and the Town once the scope of work is considered substantially complete. This will trigger the start of the warranty period.

Invoicing

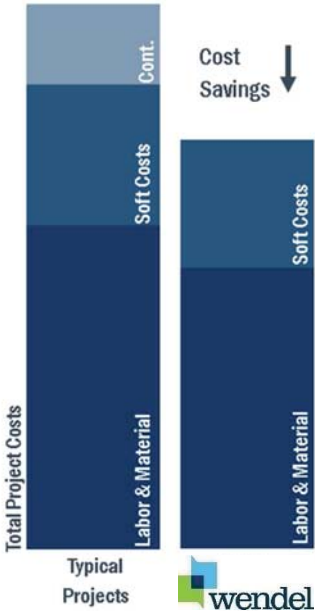
Transparent monthly invoicing from each subcontractor will include; completed AIA invoices with schedule of values and percentage completed, certified payroll, OSHA training documentation, waiver of lien, and active insurance confirmation. Subcontractor invoices will be reviewed by Wendel and then processed with Wendel's overall AIA payment application to the Town for review and final approval.

First Class Communication & Change Management

The success of any project is often built on a foundation of clear, concise and well documented communication amongst all parties. First class communication is one of the key pillars behind our firm's growth and continued success. We pride ourselves on working collaboratively with both our clients and subcontractors. We work together with no hidden agenda to resolve issues and develop opportunities. Wendel has many tools that assist us in this endeavor, but what differentiates us is our execution. The idea of partnership transcends any process or tool. The foundation of first class communication starts with our open book and transparent policy on costs and project accounting. We believe that if we are transparent, finding resolution to issues will be easier since there is no hidden agenda. The solutions will always be in the client's best interest.

We all know questions will arise, things will be different than expected and issues will come up. When a question arises, we will document them utilizing a Request for Information Process (RFI). Many times this may be able to be answered by Wendel, other times we may send this to the client to provide an answer or direction. If something was missed during our pricing we will address it utilizing our transparent reserve fund. Wendel will self-generate an internal request for proposal to document any changes that move money from our reserve fund to our implementation fund. This is described in more detail below.

In the event that the scope of work needs to change, Wendel will discuss the options with the client and provide suggested solutions. We will work through any issues together to find the best mutually beneficial solution.



Wendel will keep the client updated on progress with bi-weekly meetings, progress updates, two-week look ahead schedules and overall project schedules. All documented communication, including RFIs, RFPs, meeting minutes, punch lists, etc. will be generated utilizing a software package referred to as Procore. The Town will be well informed regarding progress of the work.

First class communication is also vital to expediting the project and staying on schedule. It is in no one's interest for construction to take longer than anticipated. We will work as a team with our subcontractors to find solutions but also hold them accountable to staying on schedule and meeting targeted milestones. The sooner a project is completed, the sooner the Town can start seeing the savings.

Reserve Fund

The concept of the Reserve Fund is one of the more unique aspects to Wendel's delivery model. This is what makes our approach truly open book! The idea of a transparent reserve fund sheds light on a hidden aspect that exists in every construction project.

As much and as hard as we all work to do our upfront due diligence, things will be missed during pricing and conditions will not be as expected. When any entity sets a guaranteed maximum price, some sort of allocation is made to account for these two basic principles. However, this is usually not discussed nor is it disclosed. The ESCO will account for this in their pricing but hide it. It's in there but you won't see it.

Instead they will use it to cover their mistakes and file change order requests for every minor deviation in the scope of work. The result often is that guaranteed maximum price turns into guaranteed maximum profits for the ESCO. That is not open book. That is not how Wendel chooses to work with our clients.

Wendel sets aside a percentage of the project in this reserve fund. As issues arise we will move money from the reserve fund to the implementation costs. When we do this the client will be informed of:

- What the issue was.
- What the cost was to address the issue (with back-up documentation showing detailed invoices.)
- How much money is remaining in the reserve fund and how much has been moved to implementation costs.

At the end of the project any funds remaining in the reserve fund are turned over to the client. This means that more often than not, by using Wendel, your Guaranteed Max Price project will be completed for less than the Guaranteed Max Price!

Commissioning

Without this step, the energy savings may not materialize. The objective is to confirm the new equipment and systems are operating as intended to achieve the guaranteed energy savings, and provide a comfortable environment for the building occupants. We follow the industry standards regarding the development, execution, and reporting of the commissioning process. We are very familiar with process and procedures as outlined by the US Department of Energy (USDOE), Portland Energy Conservation Inc. (PECI) and American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Guide 0.

Warranty Period

Remember when a batch order of ballasts would go bad six months after being installed? We do as well! That will NOT be your problem if it happens on our project. Wendel will work with suppliers and installers to provide proper warranties on all material, workmanship and labor. For material suppliers, the warranty period will be no less than 1 year and for many products will be much longer. For installation labor, we will require a one year warranty period for installation labor. For the example given above, if the ballasts went bad on our project both the ballasts and the labor to reinstall the ballasts would be covered in the first year.

Measurement & Verification

Wendel will propose an approach/methodology for the Measurement and Verification Plan during the design phase of the project. Wendel uses the U.S. Department of Energy's International Performance Measurement & Verification Protocol (IPMVP) for performance contracts as its basis for developing the M&V plan. Wendel will perform all M&V activities and will generate annual M&V reports summarizing the results of this activity. Wendel understands, the Town may utilize an independent firm to review energy savings reports.

Training of On-Site Staff

Training requirements for each energy conservation measure will be reviewed with the Town prior to finalizing the construction documents and obtaining final pricing. Training of facility personnel will be conducted by factory-trained representatives and may consist of both classroom and hands-on training. Equipment operations and maintenance manuals and as-built documentation will be used for both training sessions and left with the facility staff at each building for future reference and use.

Appendix 1

Utility Summaries

Facility Description

Bldg No.	Building name	Address	SQFT	Year Built	Executed Contract Location Name
1	Archaeology Center	385 S Main St. Camp Verde, AZ 86322	3,569	1,970	Archeology Center
2	Library	130 Black Bridge Camp Verde, AZ 86322	17,000	2,015	Library
3	100 BLDG	473 S Main St. Camp Verde, AZ 86322	7,129	1,950	Town Hall Complex
4	200 BLDG	435 S Main St. Camp Verde, AZ 86322	7,034	1,950	Town Hall Complex
5	300 BLDG	395 S Main St. Camp Verde, AZ 86322	23,401	1,940	Town Hall Complex
6	Butler Park	290 W Apache Trl Camp Verde, AZ 86322	3,203	1,983	Community Parks
7	CVMO	646 S 1st St. Camp Verde, AZ 86322	8,029	1,971	Marshal's Office
8	WWTP	1000 Pine Payson Hwy Camp Verde, AZ 86322	20,000	1,980	Wastewater Treatment Facilities
9	Ramada	75 Hollamon St. Camp Verde, AZ 86322	3,200	N/A	Town Hall Complex
10	Maintenance Shop	412 Nichols St Camp Verde, AZ 86322	2,146	1,970	Town Hall Complex
11	Public Works Yard (Streets)	1498 W Peterson Rd. Camp Verde, AZ 86322	5,750	1,971	Streets Yard
12	Hallet Plaza	Main St. Plaza Camp Verde, AZ 86322	0	N/A	Town Hall Complex
13	Well House	354 Wood St. Camp Verde, AZ 86322	300	N/A	Town Hall Complex
14	WWTP Lift Station	24 E St. Rt 260 Camp Verde, AZ 86322	0	N/A	Wastewater Treatment Facilities
15	Traffic Signals	Camp Verde, AZ 86322	0	N/A	-
16	Irrigation	Camp Verde, AZ 86322	0	N/A	-
17	WWTP Fire Hydrant	Wood & Turner Camp Verde, AZ 86322	0	1,982	-
18	Pool/Skate Park	401 Camp Lincoln Rd Camp Verde, AZ 86322	2,238	0	Swimming Pool/Skate Park
19	Senior Center	263 Maryvale Dr, Camp Verde, AZ 86322	5,760	0	Senior Center

Utility Description

Bldg No.	Building name	Electric Service Provider	Electric Account Number	Fossil Fuel Service Provider	Fossil Fuel Account Number	Water Service Provider	Water Account Number
1	Archaeology Center	APS	942757289	Unisource	9309830000	Camp Verde Water System	503
2	Library	APS	912920288	Unisource	2977122894	Camp Verde Water System	1754
3	100 BLDG	APS	152730280	Unisource	1385840000	Camp Verde Water System	26
4	200 BLDG	APS	468252285	Unisource	2621720000	Camp Verde Water System	N/A
5	300 BLDG	APS	311730281	Unisource	4236240000	Camp Verde Water System	297
6	Butler Park	APS	630633287	Flame Propane	202019006	Camp Verde Water System	N/A
7	CVMO	APS	088855284	Unisource	3215160000	Camp Verde Water System	1369
8	WWTP	APS	384278286	N/A	N/A	Camp Verde Water System	1131
9	Ramada	APS	265325280	N/A	N/A	Camp Verde Water System	2854
10	Maintenance Shop	APS	667730289	Unisource	7804520000	Camp Verde Water System	314
11	Public Works Yard (Streets)	APS	200267282	N/A	N/A	Camp Verde Water System	1533
12	Hallet Plaza	APS	550612283	N/A	N/A	Camp Verde Water System	295
13	Well House	APS	108903281	N/A	N/A	Camp Verde Water System	N/A
14	WWTP Lift Station	APS	028868284	N/A	N/A	Camp Verde Water System	N/A
15	Traffic Signals	APS	052403281	N/A	N/A	Camp Verde Water System	N/A
16	Irrigation	N/A	N/A	N/A	N/A	Camp Verde Water System	158
17	WWTP Fire Hydrant	N/A	N/A	N/A	N/A	Camp Verde Water System	2208
18	Pool/Skate Park	APS	242766280	N/A	N/A	Camp Verde Water System	N/A
19	Senior Center	APS	643730282	N/A	N/A	Camp Verde Water System	0

Utility Rates

Bldg No.	Building name	Elec Demand $/kW	Elec Usage $/kWh	Fossil Fuel $/mmBtu	Water $/kGal
1	Archaeology Center	$0.00	$0.149	$8.01	$4.06
2	Library	$8.93	$0.113	$7.57	$24.49
3	100 BLDG	$0.00	$0.116	$8.03	$9.94
4	200 BLDG	$0.00	$0.147	$7.98	N/A
5	300 BLDG	$9.83	$0.118	$7.93	$3.19
6	Butler Park	$9.51	$0.139	N/A	N/A
7	CVMO	$9.83	$0.095	$7.95	$2.40
8	WWTP	$9.08	$0.086	N/A	$4.34
9	Ramada	$0.00	$0.149	N/A	$4.52
10	Maintenance Shop	$0.00	$0.153	$8.07	$3.84
11	Public Works Yard (Streets)	$0.00	$0.148	N/A	$4.74
12	Hallet Plaza	N/A	$0.150	N/A	$4.85
13	Well House	$0.00	$0.151	N/A	N/A
14	WWTP Lift Station	$9.80	$0.108	N/A	N/A
15	Traffic Signals	$0.00	$0.148	N/A	N/A
16	Irrigation	N/A	N/A	N/A	$3.69
17	WWTP Fire Hydrant	N/A	N/A	N/A	$3.92
18	Pool/Skate Park	$0.15	$0.148	N/A	N/A
19	Senior Center	$6.49	$0.173	N/A	N/A

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TOWN OF CAMP VERDE
logo
Town Manager
EMPLOYMENT AGREEMENT

This Employment Agreement ("**Agreement**") is made and entered into this 20th of September by and between the Town of Camp Verde, an Arizona municipal corporation, (hereinafter called either the "**Town** " or "**Employer**") and Russell "Russ" A. Martin, (hereinafter called the "**Manager**" or "**Employee**").

RECITALS

WHEREAS, the Camp Verde Town Council (the "**Council**") and the Employee believe that an employment agreement negotiated between the Council on behalf of the Employer, and the Manager can be mutually beneficial to the Town , the Employee and the Town they serve;

WHEREAS, when appropriately structured, the Council and the Manager believe an employment agreement can strengthen the Council-Manager relationship by enhancing the excellence and the continuity of the management of the Town for the benefits of its citizens;

WHEREAS, the Town desires to employ the services of the Manager as the Town Manager of the Town pursuant to the terms, conditions and provisions of this Agreement;

WHEREAS, the Employee has agreed to continue or accept employment as the Town Manager, subject to the terms, conditions and provisions of this Agreement.

NOW, THEREFORE, the Town and the Manager, for and in consideration of the terms, conditions and provisions hereinafter established have agreed, and do hereby agree as follows:

Section 1: Term

Version A

The term of this Agreement shall be for an initial period of three (3) years from September 20, 2017 to September 20, 2020. Thereafter, until terminated by either party as provided herein, this Agreement shall automatically renew on its anniversary date for terms of one (1) year unless either party gives written notice of its intention not to renew ninety (90) days before the expiration of the current term.

Version B

This Contract shall take effect not later than September 20, 2017 and shall be binding upon the Town and the Town Manager for five (5) years from that date, subject to sooner termination as set forth below: (moved to other sections below for direct comparison)

Version C

A. The term of this Agreement shall continue for a period of five (5) years from the effective date unless otherwise terminated in accordance with Section 3 below.

B. Nothing in this Agreement shall prevent, limit, or otherwise interfere with the right of the Council to te1minate the services of the Town Manager at any time. Because the Town Manager serves at the pleasure of the Council and may be removed without cause as provided in A.R.S. § 9-303(C), nothing herein shall be construed to prevent, limit or otherwise restrict or interfere with the Council's right to terminate the services of the Town Manager at any time without notice, subject only to the provisions of law and Section 3 below.

C. Nothing in this Agreement shall prevent, limit, or otherwise interfere with the right of the Town Manager to resign at any time from his position as Town Manager.

Version D

The term of this Agreement and shall be retroactive to January 27th, 2016 and shall conclude on January 27th, 2019, subject to continuation or termination as set forth in Section 8. Nothing in this Agreement shall prevent, limit or otherwise interfere with the right of the Town Council to terminate the services of Employee at any time, subject only to the provisions set forth in Section 9 of this Agreement.

In the event that neither the Employer nor Employee provides written notice to the other at least six (6) weeks prior to the termination date as hereinabove provided, which may be provided with or without cause, this Agreement shall be extended on the same terms and conditions as herein provided for an additional period of one year.

Section 2: Duties and Authority

Version A

Employer agrees to employ the Employee as Town Manager to perform the functions and duties specified in The Code of the Town of Camp Verde, Arizona ("**Camp Verde Town Code**"), and to perform other legally permissible and proper duties and functions. As the Chief Executive Officer of the Town, the Manager shall comply with Federal and State laws, the Camp Verde Town Code, all Town Policies, rules, regulations, contracts and Ordinances as they exist or may hereinafter be amended; and, all lawful Council directives. All duties assigned to the Manager shall be discharged consistent with the professional role and responsibility of the Town Manager position.

Version B

The Manager shall be the chief administrative officer of the Town and shall have those duties and responsibilities as are set forth in the Town ordinances and resolutions, the Camp Verde Town Code, and the statutes of the State of Arizona, and as directed by the Town Council. The Manager shall be responsible to the Town Council and shall supervise the administration of the affairs of the Town and shall exercise overall supervision and control over Town employees and their work**.**

Version C

A. The Town hereby employs _____ ("the Town Manager") to perform the functions and duties of Town Manager as set forth in the Town Code, as well as such other legally permissible and proper duties and functions required by law, ordinance or code or as the Council shall from time to time assign. The Town Manager shall serve at the pleasure of the Council, shall be subject to the direction, supervision and control of the Council, and may be removed by an affirmative vote of four members of the Council with or without cause as provided for in _____ of the Town Code and A.RS. § 9-303(C).

B. The job of Town Manager is a salaried position for which the work week is not necessarily limited to 40 hours per week. Moreover, the parties recognize that the Town Manager must devote a great deal of time outside normal office hours to the business of the Town. It is therefore agreed and understood that the Town Manager shall work full time but that the he shall be allowed to adjust his office hours as reasonable and necessary to conduct the business and affairs of the Town so that Town Manager is able, for example, to attend all board meetings and council meetings.

Version D

Section 3: Compensation

Version A

The Employer agrees to pay Employee an annual base salary of _____ for the first year of this Agreement. The Employer agrees to pay the Employee in equal installments on a bi-weekly basis during the term of this Agreement. After the first six months of this Agreement, the Employer may determine Employee's salary as part of the Town's annual budget process.

Version B

The Town shall pay to the Manager $_____ annual compensation plus any cost of living, merit raises or step raises that may be approved from time to time by the

Council of the Town of Camp Verde. Manager agrees that in the event of an equal across the board reduction in pay for all Town employees, his annual compensation will be adjusted by the same salary reduction percentage.

Version C

The Town agrees to pay the Town Manager an annual base salary of $127,107.43 for the first year of the Agreement, effective as of the Effective Date (the "Annual Base Salary"). The Annual Base Salary shall be increased each year, effective on the anniversary date, by a cost of living increase factor of 1.5 per cent. In addition, from time to time during the period this Agreement is in effect, the Council may, within its sole discretion, grant the Town Manager such increases in salary as the Council deems appropriate, if any. Payment of this compensation shall be prorated and made on a bi-weekly basis, commencing with the first pay period after the Effective Date of this Agreement.

In addition to the Annual Base Salary, Town Manager shall receive, as regular pay, prorated and paid to Town Manager over the salary year, $10,000 for purposes of additional retirement funding and $5,450 in additional health care benefits to offset the cost of providing health insurance to his family. These amounts shall not be counted as part of the Annual Base Salary for purposes of calculating the severance amount set forth in Section 3.C, above. (Other health covered versions in Section 4 below)

Version D

Employer shall pay Employee for his services under this Agreement an annual base salary of $166,970.80, payable in installments at the same time as other Town employees of the Employer are paid.

In addition, Employer may, in its sole and sound discretion, increase Employee's base salary and/ or other benefits during the term of this Agreement in such amounts and to such extent as the Town Council may determine desirable on the basis of any performance review and evaluation of Employee as set forth in Section 11 below.

Section 4: Health, Disability and Life Insurance Benefits

As a condition precedent to employment on _____, no later than _____, Employee shall undergo and complete a pre-employment physical and drug test, paid for by the Employer. Employee may at Employee's election decide not to provide the results of such physical and drug test to the Employer in which case the term of this Agreement shall not commence, and this Agreement shall terminate. If the results of the employment physical are provided to the Employer and demonstrate that the Employee is not fit to serve as the Town Manager, or if the results of the drug test are provided to the Employer and demonstrate that the Employee has taken a controlled substance, at the sole discretion of the Employer, the term of this Agreement shall not commence, and this Agreement shall terminate.

Version A

Upon commencing employment, the Employer agrees to provide and to pay the premiums for health, hospitalization, surgical, vision, dental and comprehensive medical insurance for the Employee and his dependents equal to that which is provided to all other full-time employees of the Employer.

Similarly, the Employer agrees to put in force and to make required premium payments for short term and long term disability insurance coverage for the Employee while this Agreement is in force and consistent with the benefits provided to all other full-time employees of the Employer. The Employer shall also pay the amount due for term life insurance as provided to all other full-time employees of the Employer. The Employee shall have the right to choose the beneficiary on such policies.

Version B

The Manager shall receive the benefits of health, accident and life insurance programs which are now or which may hereinafter be in effect for all Town employees, on the same terms and conditions that are applicable to such employees.

Version C

Addressed above in compensation. ("$5,450 in additional health care benefits to offset the cost of providing health insurance to his family.")

Version D

Employer shall provide family health and dental care insurance coverage available to and at the same cost as paid by its other appointed employees.

Employer shall enroll Employee in the life insurance program available to its other appointed employees and shall pay the premium costs.

Section 5: Vacation, and Sick Leave

Version A

The Employee shall be entitled to a total of fifteen (15) days of vacation each year, exclusive of holidays recognized by the Employer, which the Employee shall also be entitled to. The Employee may accrue unused vacation time of up to two hundred and eighty (280) hours. Upon commencing employment, three (3) days of vacation shall be immediately available. The vacation accrual rate of fifteen (15) days per year shall remain constant for the first two (2) employment years unless the amounts are changed by the Employer as a result of the performance review of the Manager.

Additionally, upon commencing employment, the Employee shall accrue sick leave on an annual basis at the rate of 3.7 hours per pay period. Employee shall be entitled to accrue nine hundred and sixty (960) hours of sick leave each year, equal to that which is provided to all other full-time employees of the Employer.

In the event of termination, either voluntarily or involuntarily, the Employee shall be compensated for all accrued and unused sick and vacation time as of the date of termination.

Version B

The Manager shall receive and accrue holidays and sick leave in accordance with the Town of Camp Verde's personnel policy, and a total of 240 hours of vacation time annually. (The 240 hours of vacation time includes all forms of leave except holidays and sick leave.)

Version C

Vacation Leave. The Town Manager shall be entitled to accrue and use vacation leave at the rate and under the terms and conditions which apply to other Town employees pursuant to the Town of Personnel Policy and Administrative Guideline Manual ("Personnel Manual") with the exception that upon written request by the Town Manager, the Town Manager shall be paid his accrued but unused vacation time, subject to all IRS and state tax regulations and deductions.

Upon termination of employment, the Town shall pay the Town Manager for his accrued but unused vacation leave.

B. Sick Leave. The Town Manager shall be entitled to accrue and use sick leave, to participate in the sick leave bank, and upon the termination of employment shall be paid for unused sick leave.

The Town Manager shall accrue sick leave as per Town Personnel Manual. The accrued sick leave hours may be "banked" or converted into vacation time in accordance with the town's policies and procedures applicable to other full time employees. On December 31st of each calendar year, an employee who has accrued sick leave in excess of 192

hours may convert such time to vacation in accordance with the terms and conditions of the Personnel Policy and Administrative Guideline Manual.

C. Holidays. The Town Manager shall also be afforded with paid holidays according to the Personnel Policy and Administrative Guideline Manual then in effect.

Version D

Employee will accrue vacation time at the rate of 25 days per year. Employee will accrue other sick, holiday, floating holiday, and other leave in the same manner as Employer' s other exempt appointed employees.

Section 6: Automobile and Monthly Expense Allowance

Version A

Employee's duties will require that he use his personally owned vehicle for Employer business. Employer has recognized this by agreeing to pay to Employee $400.00 per month to reimburse Employee for the business use of his vehicle. Employee shall be responsible for paying for liability, property damage, and comprehensive insurance, and for the purchase, operation, maintenance, repair, and regular replacement of said automobile. Employer shall be named an additional insured on such insurance policy.

Version C (not offered in Version B contract**)**

The Town shall provide Town Manager with a vehicle allowance of $400.00 per month for each month of his employment. The sum shall be paid by separate check each month. Town Manager shall retain and maintain a vehicle that is clean, mechanically sound and suitable for such use as may be required for Town business. Town Manager shall also be responsible for providing insurance coverage on his vehicle in such amounts adequate to provide protection to the Town in the event of an accident while the vehicle is being used for Town purposes. When travel outside of Yavapai County for Town business is required, Town Manager will be reimbursed at the then current IRS rate after submission by Town Manager of a reimbursement request.

Version D

The Employee will be paid an automobile allowance in the amount of four hundred fifty and no/100 ($450.00) dollars per month. The employee shall be paid a cellular phone allowance in the amount of eighty and no/100 ($80.00) dollars per month.

Section 7: Retirement

Version A

The Employer agrees to enroll the Employee into the Arizona State Retirement System (ASRS) and during the life of this Agreement to make all matching contributions required by Arizona State Law. Additionally, the Employer agrees to execute all necessary agreements for the Employee to participate in the Town sponsored Section 457 Plan.

Version B

The Manager's membership in the Arizona State Retirement System shall be on the same basis as all other Town employees, and the Town's contribution thereto shall be on the same basis as for all other Town employees.

Version C

The Town shall pay into Manager's ICMA Deferred Compensation Code 457 Account the sum of $6,000.00 annually. (If the direct payment of such sums to the ICMA Account will trigger adverse tax or other consequences to Manager or the Town, the Town may elect in its sole discretion to pay such sums to Manager as are necessary to overcome such negative adverse tax or other consequences.) These sums shall become due and shall be paid on a pro-rata basis with Manager's bi-weekly paychecks.

Version D

Employer shall enroll Employee in the Arizona State Retirement System and shall pay the contribution in the same manner as it does with its other appointed employees.

Section 8: Termination

Version A

For the purpose of this Agreement, termination shall occur when one of the following occurs:

1. The majority of the Town Council votes to terminate the Employee pursuant to Article 3-12 of the Camp Verde Town Code, as amended from time to time;

2. Retirement or death of the Employee;

3. Mutual agreement of the Council and Employee in writing signed by the Employee and the Town;

4. Expiration of the term of the Agreement;

5. If the Employer, citizens or legislature acts to amend any provisions of the Camp Verde Town Code, ordinances or appropriate enabling legislation pertaining to the role, powers, duties, authority, responsibilities of the Employee's position that substantially

changes the form of government from a Manager-Council form of government to a strong Mayor form of government, the Employee shall have the right to declare that such amendments constitute termination;

6. Breach of any term of this Agreement declared by either party after providing the other party with a thirty (30) day cure period for either Employee or Employer. Written notice of a breach of contract shall be provided in accordance with the provisions of Section 19;

7. In the event that Employer at any time during the term of this Agreement reduces the salary, compensation or other financial benefits to Employee in a greater percentage than an applicable across-the-board reduction of all Employees, unless such reduction is done with the specific consent of Employee; or

8. Employee resigns following a suggestion, whether formal or informal, by a majority of the Council that he resign; then, in that event, Employee may, at his option, be deemed to be "terminated."

Version B
(from terms section above Version B)

The Town and the Manager agree that in the event the Manager commits malfeasance or misfeasance of office, commits any illegal act involving personal gain, is convicted of a felony or of a crime involving moral turpitude, or commits any intentional violation of State or Federal regulations regarding employment rights or civil rights, or in the event of physical incapacity, the Town shall have the right to terminate this Contract. The Town shall also have the right to terminate this contract for failure of the Manager to perform as directed by the Council, or pursuant to a performance evaluation after the thirty-day cure period passes without the inadequate performance being cured by the Manager.

Version C

Termination By Either Party. Either party to this Agreement may terminate it pursuant to the following terms:

1. ·The Town Manager may terminate this Agreement for any reason or no reason at all. The Town Manager agrees that if he intends to terminate this Agreement, he shall provide written notice of his intent to terminate at least sixty (60) days in advance of the actual termination date unless the parties mutually agree to a shorter time period. Once Manager gives such notice, the Town may determine that this Agreement will terminate on the 60th day.

2. The Council may terminate this Agreement at any time with good cause or as provided by statute or ordinance, with the affirmative vote of four members of the Council at any regular or special meeting, and upon written notice setting forth the grounds for and the date of the termination.

3. The Town Council, by the affirmative vote of four members of the Council, at any regular or special meeting, may terminate this Agreement without cause and without notice and shall, in that event, establish a date of termination and pay all benefits to which the Town Manager is entitled.

Termination By The Town Manager. If the Town Manager terminates this Agreement, then the following provisions shall apply.

l. On the date of termination all salary payable to the Town Manager under this Agreement shall cease, except that the Town shall pay to the Town Manager all salary earned but not paid as of the date of termination. In addition, the Town shall pay to the Town Manager all amounts due and owing for vacation leave and sick leave. The Town shall make such payments not later than seven (7) days after the date of termination. The Town Manager shall be entitled to no additional compensation or additional benefits after the date of termination other than COBRA benefits.

2. For a period of three (3) months following the effective date of termination, the Town Manager shall make himself available to the Town at reasonably convenient times and places for the purpose of consulting with and assisting the Town in making the transition to a new town manager. However, such consultation and assistance shall not materially impair the Town Manager's ability to seek or perform other employment.

Termination By The Town. If the Town terminates this Agreement, it shall comply with the following terms and conditions.

1. Any Separation From Service By The Council. Separation of service may be accomplished through Town Code or by negotiated resignation.

2. Termination for Cause. If the Town terminates this Agreement for good cause, the Town shall only be required to pay such salary as the Town Manager has earned but not been paid as of the date of termination, together with any additional amounts due and owing for accrued vacation leave and sick leave under the Town's personnel policies and procedures then in effect with regard to other full time employees within seven (7) days following the date of termination. The Town Manager shall be entitled to no additional benefits after the date of termination other than COBRA benefits. Good Cause includes material act(s) or omission(s) on the part of the Town Manager which is/are recognizable as a conflict of interest, a criminal act, a violation of law or misconduct or behavior constituting grounds for termination of a contract under Arizona statutes or case law. Good cause shall include the consistent, if intermittent, failure to perform the job of Town Manager in a reasonable and adequate fashion which continues or reoccurs after 10 days written notice such that the failure is willful in nature. Good cause will include the inability to perform the job. The Town Manager shall be deemed unable to perform if Town Manager shall become permanently

physically or otherwise disabled or suffer from injury, condition or illness which renders or is expected to render Town Manager, after reasonable accommodation, unable to perform the job of Town Manager for a period of in excess of 120 days.

3. Termination Without Cause Plus Severance Pay/Settlement. In the event the Town Manager is terminated by the Council (or forced to resign) without cause, the Town agrees to pay the Town Manager a severance payment equivalent to one (1) year of the Town Manager's Annual Base Salary and COBRA premiums for the Manager and Dependents (less applicable state and federal deductions), herein, either in a lump sum within thirty (30) days of the termination, or in equal monthly payments over six (6) months, as determined the by Council in its sole discretion. The Town Manager shall also be paid any accrued vacation and sick leave due as of the date of termination.

4. Execution And Delivery Of Settlement Agreement And Release. As a condition precedent to receiving any severance pay, the Town Manager shall execute and deliver to the Town an appropriate severance agreement and release acceptable to both parties, but which shall include the Town Manager's: (i) full release of the Town, the Town Council members, and all agents, representatives and employees of the Town of and from any and all claims and causes of action including, but not limited to, any and all actual or potential claims, demands, damages, causes of action or liability arising out of the Town Manager's employment or termination of employment with/by the Town, including any discrimination claims or actions; and (ii) an agreement not to initiate or cause to be initiated any lawsuit, claim, grievance, proceeding or investigation of any kind against the Town arising out of his employment.

5. For purposes of complying with this section, appropriations held as unencumbered fund balances in any fund or account of the Town shall be deemed to be available and authorized for the transfer to the appropriate salary and benefit expenditure account to ensure fulfillment of the provisions of this Agreement.

6. Notice. Should the Town elect not to pursue renewal of the existing agreement or negotiations for a new agreement with the Town Manager at the termination of this agreement, Town shall provide the Town Manager with sixty (60) days' notice indicating its decision not to pursue renewal or negotiation of a new agreement with the Town Manager.

Version D

As authorized by the Town Code, the Employee shall serve at the pleasure of the Town Council, who may suspend or terminate the Employee from the position of Town Manager during the term of this Agreement, but only pursuant to the terms of the Town Code and this Section.

In the event Employee is suspended or terminate by the Town Council during such time that Employee is willing and able to perform their duties under this Agreement, then in that event Employer agrees to pay Employee the compensation and benefits Employee would otherwise have received for one year of Service had the Council not suspended or terminated Employee, either in a lump sum or on the same basis on which Employee is currently compensated, in Employer' s discretion.

In the event the Employee resigns following a request, whether formal or informal, by at least four (4) members of the Town Council, then, in that event, Employee may at his option deem himself to be terminated at the date of such request to resign, within the meaning and context of this Agreement.

In the event the Employee voluntarily resigns his position with Employer before expiration of term of employment as provided above, then Employee shall give Employer at least six (6) weeks prior notice thereof, unless the parties otherwise agree; and the Employer shall not then be obligated to provide severance pay as provided herein.

Section 9: Severance

Version A

Severance shall be paid to the Employee when employment is terminated as defined in Section 8 unless this Agreement is terminated because of (i) Employee's retirement, resignation or death or (ii) Employee's material breach of this Agreement, wherein no severance would be paid. Severance shall equal six (6) months' salary at the current rate of pay and shall be paid pursuant to this Section in equal installments on a bi-weekly basis.

In the event of any termination, the Employee shall also be compensated for all accrued vacation and sick time.

For a minimum period of six (6) months following termination, the Employer shall pay its portion of the cost to continue the following benefits as part of the Town's regular benefit program:

1. Health insurance for the employee and all dependents (if any) equal to that which is provided to all other full-time employees of the Employer; and
2. Life insurance.

During the time that severance is paid pursuant to this Section, if Employee is employed in a substantially similar position or for substantially similar pay, then Employee's right to severance pay shall terminate within thirty (30) days of the Employee obtaining the new employment. In no event, shall Employee receive more than six (6) months of severance pay. "Substantially similar position" shall mean any position as a director of a department or higher within a municipality or other governmental agency, and

"substantially similar pay" shall mean a salary no less than 80% of Employee's current salary.

If the Employee is terminated for cause, then the Employer is not obligated to pay severance under this Section. "Cause" means a cause that bears any reasonable relationship to Employee's unfitness to discharge his duties assigned or is in a reasonably objective sense detrimental to the Town. Cause includes, but is not limited to, the following:

1. Commission of a felony or serious misdemeanor;
2. Conduct constituting moral turpitude, which shall be conduct where Employee acts with fraudulent intent, or acts intentionally dishonest for personal gain or other corrupt purpose;
3. Breach of any provision of this Agreement;
4. Fraud, misrepresentation, or active concealment of material facts;
5. Commission of an act of gross insubordination by refusing to take a legal, valid action that is clearly within the scope of his employment when specifically directed to do so by a majority of the Council at a duly posted public meeting;
6. Severely damaging the reputation of the Town or the Council or otherwise substantially impairing the Town's ability to maintain or attract business.

As a condition precedent to receiving the severance payment, Employee and the Town shall execute a severance agreement containing a mutual release acceptable to both parties, which shall include the parties' (i) full release of each other and all of their respective agents, employees, and elected officials from any and all claims, including but not limited to, demands, damages, causes of action or liability arising out of Employee's employment or termination of employment with the Town, and (ii) an agreement not to initiate or cause to be initiated any lawsuit, claim, grievance proceeding or investigation of any kind, under any contract, law or regulation, pertaining (a) to his employment with the Town or (b) related to any Town acts or omissions. If the parties cannot agree on terms for a severance agreement, Town shall be relieved of any and all obligation to pay any severance under this Agreement.

Version B
(from terms section above Version B)

In the event the Manager is terminated by or asked to resign by the Town Council other than for cause as defined in paragraph 2a above when Manager is willing and able to perform the duties of Town Manager, then, in that event, the Town Council agrees to pay Manager all salary and benefits pursuant to this contract for the remaining term of this contract.

Version C (addressed above in section 8**)**

Version D(addressed above in section 8**)**

Section 10: Resignation

Version A

In the event that the Employee voluntarily resigns his position with the Employer, the Employee shall provide a minimum of thirty (30) days written notice unless the parties agree otherwise. If the Employee resigns under this Section, Employee shall not be entitled to Severance pay under Section 9.

Version B
(from terms section above Version B)

Nothing in this Contract shall prevent, limit or otherwise interfere with the right of the Manager, upon providing to the Town sixty (60) days notice in writing, to resign at any time from his position with the Town. Upon the effective date of resignation, all Town compensation and benefits earned shall be paid to Manager, but no further compensation will be paid to Manager.

Version C (addressed above in section 8**)**
Version D (addressed above in section 8**)**

Section 11: Performance Evaluation

Version A

Employee shall prepare and present to Council for their approval a performance plan that specifies benchmark areas of accomplishment for the first six months, the first year, the second and the third years of the Agreement and any renewal years. Such plan, which shall be subject to annual review and change as deemed necessary by Council, shall be the basis for annual performance reviews. The first such plan shall be submitted to Council for approval no later than six (6) months after commencement of employment and after that, said plan shall be submitted to Council for approval prior to the next scheduled performance evaluation.

Employer may review Employee's job performance at least once annually during each employment year. The first review shall be no later than February 2017, and subsequent annual reviews shall occur during the month of February of each year thereafter. If Employer fails to conduct an annual review by the end of February, Employee has the right to request Employer to conduct a review. If Employee fails to request a review by the end of February, the parties, by their action, will be deemed to have waived the review for that year of the Agreement.

Version B

The Town shall provide annual performance evaluations for the Manager annually for the duration of this Contract on a date during the month of January or February mutually agreeable to the Town Council and the Manager. Said evaluation shall be conducted by the Town Council during which process the Manager will be advised of any areas of his performance that require improvement with reasonable goals for such improvement including time for achievement of the goals and the substance of the goals. The Manager shall have at least 30 days to cure any inadequate performance raised by the Council.

Version C

The Council shall review and evaluate the performance of the Town Manager on or about the first week of April of each calendar year during the period this Agreement is in effect. The review shall be in accordance with specific criteria developed jointly by the Council and the Town Manager. Said criteria may be added to or deleted as the Council may from time to time determine, in consultation with the Town Manager.

Annually, the Council and the Town Manager shall jointly define such goals and performance objectives that they determine" necessary for the proper operation of the Town, and in the attainment of the Council's policy objectives and shall further establish a relative priority among those various goals and objectives; said goals and objectives to be reduced to writing.

Version D

The Town Council may review and evaluate the Employee's performance annually or more or less frequently, in Council's sole discretion. The Employer shall provide adequate opportunity for Employee to discuss his evaluation with the Town Council.

Section 12: Hours of Work

It is recognized that the Employee must devote a great deal of time outside the normal office hours on business for the Employer, and to that end Employee shall be allowed to establish an appropriate work schedule, which may occasionally include time out of the office during normal business hours for personal matters. The Employee, however, acknowledges the proper performance of the Town Manager's duties require the Manager to generally observe normal business hours and will also often require the performance of necessary services outside of normal business hours. The Employee agrees to devote such additional time as is necessary for the full and proper performance of the Town Manager's duties and that the compensation herein provided includes compensation for the performance of such services. Employee shall devote full time and effort to the performance of the Town Manager's duties.

Section 13: Outside Activities

The employment provided for by this Agreement shall be the Employee's sole employment. Recognizing that certain outside consulting or teaching opportunities provide indirect benefits to the Employer and the community, the Employee, with the prior consent of the Council, may elect to accept limited teaching, consulting or other business opportunities with the understanding that such arrangements shall not constitute interference with nor a conflict of interest with his responsibilities under this Agreement.

Section 14: Moving and Relocation Expenses

The Council desires that the Town Manager become a resident of the Town of Camp Verde. However, the Employer recognizes the difficulty the Employee might have finding suitable housing. In addition, the Employer recognizes that the spouse of the Employee will be seeking new employment, the timing of which might affect the ability of the Employee and family to relocate.

The Employer will pay normal and usual moving expenses not to exceed Three Thousand ($3,000) for the relocation of the Employee's belongings and household items to a residence in the Town of Camp Verde. The Employer will either pay a moving company or reimburse the Employee for these expenses after submittal of receipts. The employee agrees to make all best efforts to relocate to the Town of Camp Verde by _____.

Section 15: Dues, Subscriptions and Professional Development

Version A

A. Employer agrees to budget and to pay for professional dues and subscriptions of Employee necessary for this continuation and full participation in national, regional, state, and local associations and organizations necessary and desirable for his continued professional participation, growth, and advancement, and for the good of the Employer. Said dues and subscriptions shall include, but not be limited to, Arizona Town/County Management Association, International Town/County Management Association, American Planning Association, Arizona Planning Association, and Association of State Floodplain Managers.

B. Employer hereby agrees to budget for and to pay for travel and subsistence expenses of Employee for professional and official travel, meetings, and occasions adequate to continue professional development of Employee, including the Winter and Summer conferences of the Arizona Town/County Management Association, and to adequately pursue necessary official functions for Employer. Employer also agrees to budget for and to pay for travel and subsistence expenses of Employee for short courses, institutes and seminars that are necessary for his professional development and for the good of the Employer. Employee must receive approval of Council prior to enrolling in such a professional development course, institute, seminars, or other professional development that will result in travel and subsistence expenses to the Town.

Version B

The Town shall pay for all of the Manager's memberships in such professional organizations as he may deem appropriate, and the Manager shall obtain, at the expense of the Town, any training that the Town may deem to be necessary. The Town shall also pay for fees or dues for the Manager to be involved in other civic organizations.

Version C

The Town also agrees to assist the Town Manager in personal and professional development in his profession and shall annually set aside an amount allocated for the Town Manager's dues and membership fees in three (3) professional organizations such as the International City/ County Management Association ("ICMA") and the Arizona City-County Managers Association ("ACMA"). The Town shall also pay for the Town Manager to attend up to three (3) conferences sponsored or held by such organizations or similar organizations. The Town shall also pay the reasonable costs for the Town Manager to attend relevant or necessary educational conferences and seminars that will advance the business interests or affairs of the Town, or will enhance the Town Manager's professional knowledge, judgment, or performance. Examples of such conferences and seminars are those sponsored or held by the League of Arizona Cities and Towns, the ICMA, ACMA, and such others as the Council may approve.

Version D

Employer agrees, subject to other budgeting constraints, to budget for and to pay the professional dues and subscriptions of Employee.

Employer agrees, subject to other budgeting constraints, to budget for and to pay the travel and subsistence expenses, per the Town's travel policy, for professional and official travel, meetings and occasions adequate to continue the professional development of the Employee. Employer also agrees, subject to other budgeting constraints, to budget and to pay for the travel and subsistence expenses of Employee for short courses, institutes and seminars that are necessary for his professional development and for the good of the Employer.

Section 16: Indemnification

Employer shall defend, save harmless and indemnify Employee against any tort, professional liability claim or demand or other legal action, whether groundless or otherwise, arising out of an alleged act or omission occurring in the performance of Employee's duties as Town Manager or resulting from the exercise of judgment or discretion in connection with the performance of program duties or responsibilities, unless the act or omission involved willful or wanton conduct or gross negligence. The Employer shall indemnify Employee against any and all losses, damages, judgments, interest, settlements, fines, court costs and other reasonable costs and expenses of legal

proceedings including reasonable attorney's fees, and any other liabilities incurred by, imposed upon, or suffered by such Employee in connection with or resulting from any claim, action, suit, or proceeding, actual or threatened, arising out of or in connection with the performance of his duties not arising out of any act or omission of Employee involving willful or wanton conduct or gross negligence.. Any settlement of any claim must be made with prior approval of the Employer in order for indemnification, as provided in this Section, to be available. Employee recognizes that Employer shall have the right to compromise and settle any claim or suit.

Section 17: Bonding

Employer shall bear the full cost of any fidelity or other bonds required of the Employee under any law or ordinance.

Section 18: Other Terms and Conditions of Employment

The Employer shall fix any such other terms and conditions of employment, as it may determine from time to time, relating to the performance of the Employee, provided such terms and conditions are not inconsistent with or in conflict with the provisions of this Agreement, the Town of Camp Verde Town Code or any other law.

Section 19: Notices

Notice pursuant to this Agreement shall be given by depositing in the custody of the United States Postal Service, postage prepaid, addressed as follows or to such other address provided by the parties:

(1) EMPLOYER: Mayor Town of Camp Verde, 463 S. Main Street, Camp Verde, AZ 86322

(2) EMPLOYEE: Mr. Russell A. Martin, 2329 N. Private Drive, Camp Verde, AZ 86322

Alternatively, notice required pursuant to this Agreement may be personally served on Employer by hand-delivering the notice to the Town Clerk or on the Employee by hand-delivering the notice to the Employee. Notice shall be deemed given as of the date of personal service or as the date of deposit of such written notice in the course of transmission in the United States Postal Service.

Section 20: General Provisions

A. Integration. This Agreement and any attachments represent the entire agreement between Employer and Employee relating to the employment of Employee by the Employer and supersede all prior negotiations, representations or agreements, either

expressed or implied, written or oral. It is mutually understood and agreed that no alteration or variation of the terms and conditions of this Agreement shall be valid unless made in writing and signed by the parties hereto. Written and signed amendments shall automatically become part of this Agreement, and shall supersede any inconsistent provision therein; provided, however, that any apparent inconsistency shall be resolved, if possible, by construing the provisions as mutually complementary and supplementary.

B. Binding Effect. This Agreement shall be binding on the Employer and the Employee as well as their heirs, assigns, executors, personal representatives and successors in interest.

C. Severability. If any part, term or provision of this Agreement shall be held illegal, unenforceable or in conflict with any law, the validity of the remaining portions and provisions hereof shall not be affected.

D. Arbitration. In the event that there is a dispute hereunder which the parties cannot resolve between themselves, the parties agree to attempt to settle the dispute by nonbinding arbitration before commencement of litigation. The arbitration shall be held under the rules of the American Arbitration Association. The matter in dispute shall be submitted to an arbitrator mutually selected by Employer and Employee. In the event that the parties cannot agree upon the selection of an arbitrator within seven (7) days, then within three (3) days thereafter, the Employer and Employee shall request the presiding judge of the Superior Court in and for the County of Yavapai, State of Arizona, to appoint an independent arbitrator. The cost of any such arbitration shall be divided equally between the Employer and Employee. The results of the arbitration shall be nonbinding on the parties, and any party shall be free to initiate litigation subsequent to the final decision of the arbitrator.

E. Governing Law and Venue. The terms and conditions of this Agreement shall be governed by and interpreted in accordance with the laws of the State of Arizona. Any action at law or in equity brought by either party for the purpose of enforcing a right or rights provided for in this Agreement shall be tried in a court of competent jurisdiction in Yavapai County, State of Arizona.

F. Attorney's Fees and Costs. In the event either party shall bring suit to enforce any term of this Agreement or to recover any damages for and on account of the breach of any term or condition in this Agreement, it is mutually agreed that the prevailing party in such action shall recover all costs including: all litigation and appeal expenses, collection expenses, reasonable attorney's fees, necessary witness fees and court costs to be determined by the court in such action.

G. Conflict of Interest. The provisions of A.R.S. §38-511 relating to cancellation of contracts due to conflicts of interest shall apply to this Agreement.

TOWN OF CAMP VERDE, an Arizona municipal corporation

Russell A. Martin

By_____
Mayor

By_____
Russell A. Martin

ATTEST:

_____
Judy Morgan, Town Clerk

APPROVED AS TO FORM:

_____
Bill Sims, Town Attorney