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Discovery Bay Waste Water Treatment Plant, Byron, CA
Proposed Solar Syetem, Case 1 - Fixed Ground Mount
Cash Flow, Simple Payback and Return on Investment

4/19/2018

System Size, kW: 1,250

System Generation, kWh/yr: 1,931,250

Approx. Avg. Energy Cost during solar generation, $/Kwh: 0.1

System Cost, $/W: 1.45

Item	Year										
	0	1	2	3	4	5	6	7	8	9	10
Cash Investment	-$1,812,500										
PV Generation, kWh/year		1,931,250	1,921,594	1,911,986	1,902,426	1,892,914	1,883,449	1,874,032	1,864,662	1,855,338	1,846,062
Value of generated energy		$193,125	$197,924	$202,843	$207,883	$213,049	$220,463	$228,135	$236,074	$244,290	$252,791
Other Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$18,750	-$19,313	-$19,892	-$20,489	-$21,103	-$21,736	-$22,388	-$23,060	-$23,752	-$24,464
Cash Flow	-$1,812,500	$174,375	$178,612	$182,951	$187,395	$191,946	$198,727	$205,747	$213,014	$220,538	$228,327
Cumulative Cash Flow	-$1,812,500	-$1,638,125	-$1,459,513	-$1,276,563	-$1,089,168	-$897,222	-$698,495	-$492,749	-$279,734	-$59,196	$169,130

Item	Year										
		11	12	13	14	15	16	17	18	19	20
Cash Investment											
PV Generation, kWh/year		1,836,831	1,827,647	1,818,509	1,809,417	1,800,369	1,791,368	1,782,411	1,773,499	1,764,631	1,755,808
Value of generated energy		$261,588	$270,692	$280,112	$289,859	$299,947	$310,385	$321,186	$332,363	$343,930	$355,898
Carport Rental @ $10/month		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SMUD Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$25,198	-$25,954	-$26,733	-$27,535	-$28,361	-$29,212	-$30,088	-$30,991	-$31,921	-$32,878
Cash Flow		$236,390	$244,737	$253,379	$262,324	$271,586	$281,173	$291,098	$301,372	$312,009	$323,020
Cumulative Cash Flow		$405,520	$650,257	$903,636	$1,165,960	$1,437,546	$1,718,719	$2,009,816	$2,311,189	$2,623,198	$2,946,218
Simple Payback = 9+ years											
Return on Investment =	0.08127498										

Assumptions:

1. As a public entity, assumes no extra revenue sources, no incentives, and no Federal and State tax deductions and credits.
2. Assumes an annual system degradation of 0.5%, which is standard in the industry.
3. Assumes the average annual cost of energy from PG&E is $0.10/kWh, with a 3% annual growth based on history.
4. Assumes a system installation cost of $1.45/W with competitive bidding.
5. Assumes $0.015/W for annual operation and maintenance, which is typical for a well run system

Conclusion: The simple payback is between the 9th and 10th year and the ROI is 0.0812 or 8.12%

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Discovery Bay Waste Water Treatment Plant, Byron, CA
Proposed Solar Syetem, Case 2 - Single Axis Tracker
Cash Flow, Simple Payback and Return on Investment

4/19/2018

System Size, kW: 1,000

System Generation, kWh/yr: 1,904,235

Approx. Avg. Energy Cost during solar generation, $/Kwh: 0.1

System Cost, $/W: 1.70

Item	Year										
	0	1	2	3	4	5	6	7	8	9	10
Cash Investment	-$1,700,000										
PV Generation, kWh/year		1,904,235	1,894,714	1,885,240	1,875,814	1,866,435	1,857,103	1,847,817	1,838,578	1,829,385	1,820,238
Value of generated energy		$190,424	$195,156	$200,005	$204,975	$210,069	$217,379	$224,944	$232,772	$240,873	$249,255
Other Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$15,000	-$15,450	-$15,914	-$16,391	-$16,883	-$17,389	-$17,911	-$18,448	-$19,002	-$19,572
Cash Flow	-$1,700,000	$175,424	$179,706	$184,092	$188,584	$193,186	$199,990	$207,033	$214,324	$221,871	$229,683
Cumulative Cash Flow	-$1,700,000	-$1,524,577	-$1,344,871	-$1,160,779	-$972,195	-$779,009	-$579,019	-$371,985	-$157,661	$64,210	$293,893

Discovery Bay Waste Water Treatment Plant, Byron, CA
Proposed Solar Syetem, Case 2 - Single Axis Tracker
Cash Flow, Simple Payback and Return on Investment

4/19/2018

System Size, kW: 1,000

System Generation, kWh/yr: 1,904,235

Approx. Avg. Energy Cost during solar generation, $/Kwh: 0.1

System Cost, $/W: 1.70

Item	Year										
		11	12	13	14	15	16	17	18	19	20
Cash Investment											
PV Generation, kWh/year		1,811,137	1,802,082	1,793,071	1,784,106	1,775,185	1,766,309	1,757,478	1,748,690	1,739,947	1,731,247
Value of generated energy		$257,929	$266,905	$276,193	$285,805	$295,751	$306,043	$316,693	$327,714	$339,119	$350,920
Carport Rental @ $10/month		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SMUD Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$20,159	-$20,764	-$21,386	-$22,028	-$22,689	-$23,370	-$24,071	-$24,793	-$25,536	-$26,303
Cash Flow		$237,770	$246,141	$254,807	$263,777	$273,062	$282,673	$292,623	$302,921	$313,582	$324,617
Cumulative Cash Flow		$531,664	$777,805	$1,032,612	$1,296,389	$1,569,451	$1,852,124	$2,144,747	$2,447,668	$2,761,250	$3,085,868
Simple Payback = 8+ years											
Return on Investment =	0.09076082										

Assumptions:

1. As a public entity, assumes no extra revenue sources, no incentives, and no Federal and State tax deductions and credits.
2. Assumes an annual system degradation of 0.5%, which is standard in the industry.
3. Assumes the average annual cost of energy from PG&E is $0.10/kWh, with a 3% annual growth based on history.
4. Assumes a system installation cost of $1.70/W with competitive bidding.
5. Assumes $0.015/W for annual operation and maintenance, which is typical for a well run system

Conclusion: The simple payback is between the 8th and 9th year and the ROI is 0.0907 or 9.07%

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Discovery Bay Waste Water Treatment Plant, Byron, CA
Proposed Solar Syetem, Case 1 - Fixed Ground Mount
Cash Flow, Simple Payback and Return on Investment

4/19/2018

System Size, kW: 1,250

System Generation, kWh/yr: 1,931,250

Approx. Avg. Energy Cost during solar generation, $/Kwh: 0.13

System Cost, $/W: 1.45

Item	Year										
	0	1	2	3	4	5	6	7	8	9	10
Cash Investment	-$1,812,500										
PV Generation, kWh/year		1,931,250	1,921,594	1,911,986	1,902,426	1,892,914	1,883,449	1,874,032	1,864,662	1,855,338	1,846,062
Value of generated energy		$251,063	$257,301	$263,695	$270,248	$276,964	$286,602	$296,576	$306,897	$317,577	$328,628
Other Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$18,750	-$19,313	-$19,892	-$20,489	-$21,103	-$21,736	-$22,388	-$23,060	-$23,752	-$24,464
Cash Flow	-$1,812,500	$232,313	$237,989	$243,803	$249,760	$255,861	$264,866	$274,187	$283,837	$293,825	$304,164
Cumulative Cash Flow	-$1,812,500	-$1,580,188	-$1,342,199	-$1,098,395	-$848,636	-$592,775	-$327,909	-$53,722	$230,115	$523,940	$828,104

Item	Year										
		11	12	13	14	15	16	17	18	19	20
Cash Investment											
PV Generation, kWh/year		1,836,831	1,827,647	1,818,509	1,809,417	1,800,369	1,791,368	1,782,411	1,773,499	1,764,631	1,755,808
Value of generated energy		$340,065	$351,899	$364,145	$376,817	$389,931	$403,500	$417,542	$432,072	$447,109	$462,668
Carport Rental @ $10/month		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SMUD Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$25,198	-$25,954	-$26,733	-$27,535	-$28,361	-$29,212	-$30,088	-$30,991	-$31,921	-$32,878
Cash Flow		$314,866	$325,945	$337,412	$349,282	$361,570	$374,288	$387,454	$401,082	$415,188	$429,790
Cumulative Cash Flow		$1,142,970	$1,468,915	$1,806,327	$2,155,609	$2,517,178	$2,891,467	$3,278,920	$3,680,002	$4,095,190	$4,524,979
Simple Payback =7+ years											
Return on Investment =	0.12482702										

Assumptions:

1. As a public entity, assumes no extra revenue sources, no incentives, and no Federal and State tax deductions and credits.
2. Assumes an annual system degradation of 0.5%, which is standard in the industry.
3. Assumes the average annual cost of energy from PG&E is $0.13/kWh, with a 3% annual growth based on history.
4. Assumes a system installation cost of $1.45/W with competitive bidding.
5. Assumes $0.015/W for annual operation and maintenance, which is typical for a well run system

Conclusion: The simple payback is between the 7th and 8th year and the ROI is 0.1248 or 12.48%

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Discovery Bay Waste Water Treatment Plant, Byron, CA
Proposed Solar Syetem, Case 1 - Fixed Ground Mount
Cash Flow, Simple Payback and Return on Investment

4/19/2018

System Size, kW: 1,250

System Generation, kWh/yr: 1,931,250

Approx. Avg. Energy Cost during solar generation, $/Kwh: 0.13

System Cost, $/W: 1.45

Item	Year										
	0	1	2	3	4	5	6	7	8	9	10
Cash Investment	-$1,812,500										
PV Generation, kWh/year		1,931,250	1,921,594	1,911,986	1,902,426	1,892,914	1,883,449	1,874,032	1,864,662	1,855,338	1,846,062
Value of generated energy		$251,063	$257,301	$263,695	$270,248	$276,964	$286,602	$296,576	$306,897	$317,577	$328,628
Other Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$18,750	-$19,313	-$19,892	-$20,489	-$21,103	-$21,736	-$22,388	-$23,060	-$23,752	-$24,464
Cash Flow	-$1,812,500	$232,313	$237,989	$243,803	$249,760	$255,861	$264,866	$274,187	$283,837	$293,825	$304,164
Cumulative Cash Flow	-$1,812,500	-$1,580,188	-$1,342,199	-$1,098,395	-$848,636	-$592,775	-$327,909	-$53,722	$230,115	$523,940	$828,104

Item	Year										
		11	12	13	14	15	16	17	18	19	20
Cash Investment											
PV Generation, kWh/year		1,836,831	1,827,647	1,818,509	1,809,417	1,800,369	1,791,368	1,782,411	1,773,499	1,764,631	1,755,808
Value of generated energy		$340,065	$351,899	$364,145	$376,817	$389,931	$403,500	$417,542	$432,072	$447,109	$462,668
Carport Rental @ $10/month		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SMUD Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$25,198	-$25,954	-$26,733	-$27,535	-$28,361	-$29,212	-$30,088	-$30,991	-$31,921	-$32,878
Cash Flow		$314,866	$325,945	$337,412	$349,282	$361,570	$374,288	$387,454	$401,082	$415,188	$429,790
Cumulative Cash Flow		$1,142,970	$1,468,915	$1,806,327	$2,155,609	$2,517,178	$2,891,467	$3,278,920	$3,680,002	$4,095,190	$4,524,979
Simple Payback =7+ years											
Return on Investment =	0.12482702										

Assumptions:

1. As a public entity, assumes no extra revenue sources, no incentives, and no Federal and State tax deductions and credits.
2. Assumes an annual system degradation of 0.5%, which is standard in the industry.
3. Assumes the average annual cost of energy from PG&E is $0.13/kWh, with a 3% annual growth based on history.
4. Assumes a system installation cost of $1.45/W with competitive bidding.
5. Assumes $0.015/W for annual operation and maintenance, which is typical for a well run system

Conclusion: The simple payback is between the 7th and 8th year and the ROI is 0.1248 or 12.48%

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Discovery Bay Waste Water Treatment Plant, Byron, CA
Proposed Solar Syetem, Case 1 - Fixed Ground Mount
Cash Flow, Simple Payback and Return on Investment

4/19/2018

System Size, kW: 1,250

System Generation, kWh/yr: 1,931,250

Approx. Avg. Energy Cost during solar generation, $/Kwh: 0.15

System Cost, $/W: 1.45

Item	Year										
	0	1	2	3	4	5	6	7	8	9	10
Cash Investment	-$1,812,500										
PV Generation, kWh/year		1,931,250	1,921,594	1,911,986	1,902,426	1,892,914	1,883,449	1,874,032	1,864,662	1,855,338	1,846,062
Value of generated energy		$289,688	$296,886	$304,264	$311,825	$319,574	$330,695	$342,203	$354,112	$366,435	$379,187
Other Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$18,750	-$19,313	-$19,892	-$20,489	-$21,103	-$21,736	-$22,388	-$23,060	-$23,752	-$24,464
Cash Flow	-$1,812,500	$270,938	$277,574	$284,372	$291,336	$298,470	$308,958	$319,815	$331,052	$342,683	$354,722
Cumulative Cash Flow	-$1,812,500	-$1,541,563	-$1,263,989	-$979,617	-$688,281	-$389,810	-$80,852	$238,963	$570,014	$912,697	$1,267,419

Discovery Bay Waste Water Treatment Plant, Byron, CA
Proposed Solar Syetem, Case 1 - Fixed Ground Mount
Cash Flow, Simple Payback and Return on Investment

4/19/2018

System Size, kW: 1,250

System Generation, kWh/yr: 1,931,250

Approx. Avg. Energy Cost during solar generation, $/Kwh: 0.15

System Cost, $/W: 1.45

Item	Year										
		11	12	13	14	15	16	17	18	19	20
Cash Investment											
PV Generation, kWh/year		1,836,831	1,827,647	1,818,509	1,809,417	1,800,369	1,791,368	1,782,411	1,773,499	1,764,631	1,755,808
Value of generated energy		$392,382	$406,037	$420,167	$434,789	$449,920	$465,577	$481,779	$498,545	$515,894	$533,848
Carport Rental @ $10/month		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SMUD Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$25,198	-$25,954	-$26,733	-$27,535	-$28,361	-$29,212	-$30,088	-$30,991	-$31,921	-$32,878
Cash Flow		$367,184	$380,083	$393,434	$407,254	$421,559	$436,365	$451,691	$467,554	$483,974	$500,969
Cumulative Cash Flow		$1,634,603	$2,014,686	$2,408,120	$2,815,375	$3,236,934	$3,673,299	$4,124,990	$4,592,544	$5,076,518	$5,577,487
Simple Payback = 6+ years											
Return on Investment =	0.15386171										

Assumptions:

1. As a public entity, assumes no extra revenue sources, no incentives, and no Federal and State tax deductions and credits.
2. Assumes an annual system degradation of 0.5%, which is standard in the industry.
3. Assumes the average annual cost of energy from PG&E is $0.15/kWh, with a 3% annual growth based on history.
4. Assumes a system installation cost of $1.45/W with competitive bidding.
5. Assumes $0.015/W for annual operation and maintenance, which is typical for a well run system

Conclusion: The simple payback is between the 6th and 7th year and the ROI is 0.1538 or 15.38%

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Discovery Bay Waste Water Treatment Plant, Byron, CA
Proposed Solar Syetem, Case 2 - Single Axis Tracker
Cash Flow, Simple Payback and Return on Investment

4/19/2018

System Size, kW: 1,000

System Generation, kWh/yr: 1,904,235

Approx. Avg. Energy Cost during solar generation, $/Kwh: 0.15

System Cost, $/W: 1.70

Item	Year 0	1	2	3	4	5	6	7	8	9	10
Cash Investment	-$1,700,000										
PV Generation, kWh/year		1,904,235	1,894,714	1,885,240	1,875,814	1,866,435	1,857,103	1,847,817	1,838,578	1,829,385	1,820,238
Value of generated energy		$285,635	$292,733	$300,008	$307,463	$315,103	$326,069	$337,416	$349,158	$361,309	$373,882
Other Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$15,000	-$15,450	-$15,914	-$16,391	-$16,883	-$17,389	-$17,911	-$18,448	-$19,002	-$19,572
Cash Flow	-$1,700,000	$270,635	$277,283	$284,094	$291,072	$298,221	$308,680	$319,505	$330,710	$342,307	$354,311
Cumulative Cash Flow	-$1,700,000	-$1,429,365	-$1,152,081	-$867,987	-$576,915	-$278,695	$29,985	$349,491	$680,201	$1,022,508	$1,376,819

Item	Year	11	12	13	14	15	16	17	18	19	20
Cash Investment											
PV Generation, kWh/year		1,811,137	1,802,082	1,793,071	1,784,106	1,775,185	1,766,309	1,757,478	1,748,690	1,739,947	1,731,247
Value of generated energy		$386,894	$400,357	$414,290	$428,707	$443,626	$459,064	$475,040	$491,571	$508,678	$526,380
Carport Rental @ $10/month		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SMUD Incentive		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Federal Investment Tax Credit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fed Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Accelerated Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
O&M costs		-$20,159	-$20,764	-$21,386	-$22,028	-$22,689	-$23,370	-$24,071	-$24,793	-$25,536	-$26,303
Cash Flow		$366,735	$379,594	$392,904	$406,679	$420,937	$435,695	$450,969	$466,779	$483,141	$500,077
Cumulative Cash Flow		$1,743,554	$2,123,148	$2,516,051	$2,922,731	$3,343,668	$3,779,363	$4,230,332	$4,697,111	$5,180,252	$5,680,330
Simple Payback = 5+ years											
Return on Investment =	0.16706852										

Assumptions:

1. As a public entity, assumes no extra revenue sources, no incentives, and no Federal and State tax deductions and credits.
2. Assumes an annual system degradation of 0.5%, which is standard in the industry.
3. Assumes the average annual cost of energy from PG&E is $0.15/kWh, with a 3% annual growth based on history.
4. Assumes a system installation cost of $1.70/W with competitive bidding.
5. Assumes $0.015/W for annual operation and maintenance, which is typical for a well run system

Conclusion: The simple payback is between the 5th and 6th year and the ROI is 0.1670 or 16.70%