

From: Cray, Steven A Maj Gen USAF NG VTANG (US) [steven.a.cray.mil@mail.mil]
Sent: Tuesday, April 12, 2016 12:59 PM
To: Springer, Darren
CC: Allen, Susan; Heston, Michael T BG USARMY (US); Gingras, Robert J COL USARMY NG VTARNG (US); Pinacho, Gonzalo MAJ USARMY NG VTARNG (US)
Subject: FW: Business Case for Westminster Solar (UNCLASSIFIED)
Attachments: Business case for Westminster Solar.pdf

CLASSIFICATION: UNCLASSIFIED

Darren,
Attached is the business case for the Westminster solar project.

v/r,

Maj Gen Cray

-----Original Message-----

From: Gingras, Robert J COL USARMY NG VTARNG (US)
Sent: Tuesday, April 12, 2016 12:00 PM
To: Cray, Steven A Maj Gen USAF NG VTANG (US) <steven.a.cray.mil@mail.mil>
Cc: Lovejoy, Mark S BG USARMY NG VTARNG (US) <mark.s.lovejoy.mil@mail.mil>; Pinacho, Gonzalo MAJ USARMY NG VTARNG (US) <gonzalo.pinacho.mil@mail.mil>
Subject: FW: Business Case for Westminster Solar

Good Morning Sir:

The attached charts illustrate the business case for the VTARNG and the State Military Department for the Westminster Project. The first chart (provided to me from Spencer) shows a savings of 1.2 Million dollars in 20 years if GMP's rates do not increase during that 20 year period. I have recreated these spreadsheets.

The second chart shows a savings of 1.4 Million dollars if GMP averages a 2% growth in rates in the 20 years.

Of all these savings, I would guess that about 15 to 20% will be State General Fund savings.

Robert Gingras, P.E.
COL, EN, VTARNG
w: 802-338-3041
c: 802-999-9745

-----Original Message-----

From: Gingras, Robert [<mailto:Robert.Gingras@partner.vermont.gov>]
Sent: Tuesday, April 12, 2016 11:45 AM
To: Gingras, Robert J COL USARMY NG VTARNG (US) <robert.j.gingras2.mil@mail.mil>
Subject: [Non-DoD Source] Business Case for Westminster Solar

Robert Gingras, P.E.

COL, EN

Construction and Facilities Manager

VTARNG

802-338-3041

CLASSIFICATION: UNCLASSIFIED

NMC Rate Discount ¹			13.41%									
Current Cost of Electricity			\$ 0.13478									
Electricity Escalator per year			0.00%									
Solar Credit Adder for 2016 ²			\$ 0.04000									
Current Base Rate from GMP ³			\$ 0.13975									
Total Credit Year 1 NMC (\$/kWh)			\$ 0.17975									
Year	Production ⁴	Solar Credit Adder (\$/kWh)	Base Rate (\$/kWh)	NMC (\$/kWh) ⁵	Total Credit (B*E)	Current Use of Electricity	Current Price of Electricity (\$/kWh)	Current Cost of Electricity (H*G)	Discounted NMC Price to Guard (\$/kWh) (E Less Discount)	Discounted NMC Cost to Guard (B*J)	Savings (F-K)	Guard Cost per kWh (H+E-J)
1	2,936,312	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 527,802	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 457,031	\$ 70,771	\$ 0.11068
2	2,921,630	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 525,163	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 454,746	\$ 70,417	\$ 0.11068
3	2,907,022	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 522,537	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 452,472	\$ 70,065	\$ 0.11068
4	2,892,487	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 519,924	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 450,210	\$ 69,715	\$ 0.11068
5	2,878,024	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 517,325	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 447,959	\$ 69,366	\$ 0.11068
6	2,863,634	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 514,738	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 445,719	\$ 69,019	\$ 0.11068
7	2,849,316	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 512,165	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 443,491	\$ 68,674	\$ 0.11068
8	2,835,069	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 509,604	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 441,273	\$ 68,331	\$ 0.11068
9	2,820,894	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 507,056	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 439,067	\$ 67,989	\$ 0.11068
10	2,806,790	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 504,520	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 436,871	\$ 67,649	\$ 0.11068
11	2,792,756	\$ -	\$ 0.13975	\$ 0.13975	\$ 390,288	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 337,956	\$ 52,332	\$ 0.11604
12	2,778,792	\$ -	\$ 0.13975	\$ 0.13975	\$ 388,336	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 336,266	\$ 52,070	\$ 0.11604
13	2,764,898	\$ -	\$ 0.13975	\$ 0.13975	\$ 386,394	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 334,584	\$ 51,810	\$ 0.11604
14	2,751,073	\$ -	\$ 0.13975	\$ 0.13975	\$ 384,463	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 332,912	\$ 51,551	\$ 0.11604
15	2,737,318	\$ -	\$ 0.13975	\$ 0.13975	\$ 382,540	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 331,247	\$ 51,293	\$ 0.11604
16	2,723,631	\$ -	\$ 0.13975	\$ 0.13975	\$ 380,627	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 329,591	\$ 51,037	\$ 0.11604
17	2,710,013	\$ -	\$ 0.13975	\$ 0.13975	\$ 378,724	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 327,943	\$ 50,782	\$ 0.11604
18	2,696,463	\$ -	\$ 0.13975	\$ 0.13975	\$ 376,831	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 326,303	\$ 50,528	\$ 0.11604
19	2,682,981	\$ -	\$ 0.13975	\$ 0.13975	\$ 374,947	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 324,672	\$ 50,275	\$ 0.11604
20	2,669,566	\$ -	\$ 0.13975	\$ 0.13975	\$ 373,072	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.12101	\$ 323,048	\$ 50,024	\$ 0.11604
Total	56,018,670	\$ 0.04000	\$ 0.13975		8,977,056	78,322,280	\$ 0.13478	10,556,040	\$ 0.13833	7,773,360	\$ 1,203,696	\$ 0.11336
	NMC Credit	8,977,056										
	NMC Cost	7,773,360										
	NMC Savings	1,203,696										
Notes												
1 Adjusted to account for the smaller base rate and smaller system.												
2 This is based on expected 2016 Residential Rate of \$0.15/kWh from the PSD Evaluation Report												
3 This rate came directly from Pam Allen at GMP.												
4 Production has been adjusted to system size to match the Total Credit dollars to the Current Electricity cost \$527,802. This is from Peter Tousley.												
5 NMC is calculated by adding the "solar credit" to the base rate given above for the first 10 years and escalated at 0.00%. The solar adder stops in year 11.												

NMC Rate Discount ¹			13.41%									
Current Cost of Electricity			\$ 0.13478									
Electricity Escalator per year			2.00%									
Solar Credit Adder for 2016 ²			\$ 0.04000									
Current Base Rate from GMP ³			\$ 0.13975									
Total Credit Year 1 NMC (\$/kWh)			\$ 0.17975									
Year	Production ⁴	Solar Credit Adder (\$/kWh)	Base Rate (\$/kWh)	NMC (\$/kWh) ⁵	Total Credit (B*E)	Current Use of Electricity	Current Price of Electricity (\$/kWh)	Current Cost of Electricity (H*G)	Discounted NMC Price to Guard (\$/kWh) (E Less Discount)	Discounted NMC Cost to Guard (B*J)	Savings (F-K)	Guard Cost per kWh (H+E-J)
1	2,936,312	\$ 0.04000	\$ 0.13975	\$ 0.17975	\$ 527,802	3,916,114	\$ 0.13478	\$ 527,802	\$ 0.15565	\$ 457,031	\$ 70,771	\$ 0.11068
2	2,921,630	\$ 0.04000	\$ 0.14255	\$ 0.18255	\$ 533,329	3,916,114	\$ 0.13747	\$ 538,358	\$ 0.15807	\$ 461,817	\$ 71,512	\$ 0.11300
3	2,907,022	\$ 0.04000	\$ 0.14540	\$ 0.18540	\$ 538,950	3,916,114	\$ 0.14022	\$ 549,125	\$ 0.16054	\$ 466,684	\$ 72,266	\$ 0.11536
4	2,892,487	\$ 0.04000	\$ 0.14830	\$ 0.18830	\$ 544,666	3,916,114	\$ 0.14303	\$ 560,108	\$ 0.16305	\$ 471,634	\$ 73,032	\$ 0.11778
5	2,878,024	\$ 0.04000	\$ 0.15127	\$ 0.19127	\$ 550,479	3,916,114	\$ 0.14589	\$ 571,310	\$ 0.16562	\$ 476,668	\$ 73,812	\$ 0.12024
6	2,863,634	\$ 0.04000	\$ 0.15430	\$ 0.19430	\$ 556,391	3,916,114	\$ 0.14880	\$ 582,736	\$ 0.16824	\$ 481,787	\$ 74,604	\$ 0.12275
7	2,849,316	\$ 0.04000	\$ 0.15738	\$ 0.19738	\$ 562,401	3,916,114	\$ 0.15178	\$ 594,391	\$ 0.17092	\$ 486,991	\$ 75,410	\$ 0.12531
8	2,835,069	\$ 0.04000	\$ 0.16053	\$ 0.20053	\$ 568,513	3,916,114	\$ 0.15482	\$ 606,279	\$ 0.17364	\$ 492,284	\$ 76,230	\$ 0.12793
9	2,820,894	\$ 0.04000	\$ 0.16374	\$ 0.20374	\$ 574,727	3,916,114	\$ 0.15791	\$ 618,404	\$ 0.17642	\$ 497,664	\$ 77,063	\$ 0.13059
10	2,806,790	\$ 0.04000	\$ 0.16701	\$ 0.20701	\$ 581,045	3,916,114	\$ 0.16107	\$ 630,772	\$ 0.17926	\$ 503,135	\$ 77,910	\$ 0.13331
11	2,792,756	\$ -	\$ 0.17035	\$ 0.17035	\$ 475,758	3,916,114	\$ 0.16429	\$ 643,388	\$ 0.14751	\$ 411,966	\$ 63,792	\$ 0.14145
12	2,778,792	\$ -	\$ 0.17376	\$ 0.17376	\$ 482,847	3,916,114	\$ 0.16758	\$ 656,255	\$ 0.15046	\$ 418,104	\$ 64,743	\$ 0.14428
13	2,764,898	\$ -	\$ 0.17724	\$ 0.17724	\$ 490,042	3,916,114	\$ 0.17093	\$ 669,381	\$ 0.15347	\$ 424,334	\$ 65,708	\$ 0.14716
14	2,751,073	\$ -	\$ 0.18078	\$ 0.18078	\$ 497,343	3,916,114	\$ 0.17435	\$ 682,768	\$ 0.15654	\$ 430,657	\$ 66,687	\$ 0.15011
15	2,737,318	\$ -	\$ 0.18440	\$ 0.18440	\$ 504,754	3,916,114	\$ 0.17784	\$ 696,424	\$ 0.15967	\$ 437,073	\$ 67,680	\$ 0.15311
16	2,723,631	\$ -	\$ 0.18809	\$ 0.18809	\$ 512,274	3,916,114	\$ 0.18139	\$ 710,352	\$ 0.16287	\$ 443,586	\$ 68,689	\$ 0.15617
17	2,710,013	\$ -	\$ 0.19185	\$ 0.19185	\$ 519,907	3,916,114	\$ 0.18502	\$ 724,559	\$ 0.16612	\$ 450,195	\$ 69,712	\$ 0.15930
18	2,696,463	\$ -	\$ 0.19568	\$ 0.19568	\$ 527,654	3,916,114	\$ 0.18872	\$ 739,050	\$ 0.16945	\$ 456,903	\$ 70,751	\$ 0.16248
19	2,682,981	\$ -	\$ 0.19960	\$ 0.19960	\$ 535,516	3,916,114	\$ 0.19249	\$ 753,831	\$ 0.17283	\$ 463,711	\$ 71,805	\$ 0.16573
20	2,669,566	\$ -	\$ 0.20359	\$ 0.20359	\$ 543,495	3,916,114	\$ 0.19634	\$ 768,908	\$ 0.17629	\$ 470,620	\$ 72,875	\$ 0.16905
Total	56,018,670	\$ 0.04000	\$ 0.16978		10,627,896	78,322,280	\$ 0.16374	12,824,200	\$ 0.16433	9,202,845	\$ 1,425,051	\$ 0.13829
	NMC Credit	10,627,896										
	NMC Cost	9,202,845										
	NMC Savings	1,425,051										
Notes												
1 Adjusted to account for the smaller base rate and smaller system.												
2 This is based on expected 2016 Residential Rate of \$0.15/kWh from the PSD Evaluation Report												
3 This rate came directly from Pam Allen at GMP.												
4 Production has been adjusted to system size to match the Total Credit dollars to the Current Electricity cost \$527,802. This is from Peter Tousley.												
5 NMC is calculated by adding the "solar credit" to the base rate given above for the first 10 years and escalated at 2.00%. The solar adder stops in year 11.												