

To: Board of Education Members

By: Eloi Richardson, CPA ~~SA~~ SBA/BS (through Dr. ~~Constance~~ Bauer, CSA)

Date: April 4, 2013

Re: **Projection—Fields/Solar Debt Service Obligations and Related District-Wide Financial Impact**

Introduction:

This analysis is intended to provide forward-looking information on Bordentown Regional School District's ("District") debt service obligations. Section I covers the period FY11 to FY25 encompassing the life of the fields/solar bonds, including expected annual: principal and interest repayments; related debt service State aid; use of unexpended bonds proceeds and/or other revenue resources; and resultant tax impact. Section II covers the period subsequent to the debt payoff as the District will continue to accrue certain benefits from the solar panels. These calculations and underlying assumptions were reviewed by the District's auditor. [See his attached review report thereon dated, April 9, 2013]. Finally, while this analysis shows comparatives to the projection used for the December 2009 referendum, it is not intended and does not explore the rationale for the referendum projection; such an undertaking would be beyond the scope of this analysis.

Background:

In December 2009 the District successfully passed an \$8.5M referendum for improvements to the high school fields and installation of a roof-top solar system on the high school. The solar arrays (which generate the energy savings and resultant S-RECS¹ revenues) became operational effective December 2010. From January 2011 through December 2012, the district has earned approximately \$230.0K in S-REC revenues, which as explained in this report, reflects a declining range of values, from \$660 per S-REC in early 2011 to a low of \$105 in late 2012.

Summary of Key Assumptions:

The following are key assumptions in developing this projection analysis:

1. Projection Period: Section I encompasses FY11 to FY25, to reflect the period of debt repayments for the fields/solar debt. Fiscal years 2011 and 2012 use actual results; fiscal years 2013 and 2014 use budgeted amounts; years thereafter are projections. Section II (for FY26-35) extends to the panels' estimated useful life after the fields/solar debts are paid off using projections from Section I, as applicable.
2. Inflation Impact: No inflation adjustments are provided for revenues or energy savings.
3. Required Annual Debt Service Repayments: Based entirely on repayment amortization schedules for each bond at time of issue and/or refinance.²
4. Debt Service Aid: Assumes that the Department of Education's calculations, at an approximate net 34% (40% @85%) of eligible annual debt service repayments, will remain unchanged.
5. Unexpended Bond Proceeds: Applied to debt service tax relief, to the extent available, to stabilize tax impact
6. Tax Levies: Residual amount, calculated net of other revenue sources, as mentioned above.
7. Solar System: The installed system, at 372.72 kWh, is assumed to generate approximately 467,000 kWh of electricity annually, reflective of its first two years of operations; this translates to 467 S-RECs annually.

¹ Solar Renewable Energy Certificates ("S-RECs"). Utility companies are required to secure a portion of their capacity from solar generators; utilities purchased S-RECs to meet their State's requirements. Each 1,000 of KW = 1 S-REC. They are sold as commodities on the open market and, therefore, are subject to the law of supply and demand.

² For the greater part of the projection period (after FY13), district-wide debt is expected to consist of only two outstanding bond issues: (1) the 2002 original bonds (original amount \$36.7M and refinanced in 2006) due in annual installments through January 2033, bearing interest rates ranging from 4.0% to 5.0% for construction of the new high school and (2) the 2010 bonds for \$8.5M, due in annual installment through March 2025, bearing interest rates ranging from 1.5% to 3.5% for the fields improvements/solar installation, which was "packaged" as a single project. Of these two issues, only the 2010 debt is eligible for debt service aid; the District received a grant for the high school construction. The 2002 and 2003 refund bonds which refinanced prior years' issues were paid off in FY12 and FY13, respectively.

8. S-RECS Revenues: Conservatively estimated using the S-RECs per above, at discounted long term commodity prices from \$660 (actual in early FY11) to \$10 (estimate FY 24 & FY 25), equating to a 26% discount factor.
9. Annual Energy Savings: Represents electricity produced internally from the solar system and, thus not required to be purchased from utility companies, using the same kWh for S-RECs, monetized at a rate of \$0.15/kWh, plus about \$5.0K per year from curtailing demand energy use when requested by the utility company.

Section I (For the period FY11 to FY25)

Table 1 below summarizes the projection of direct sources and uses, including S-RECs revenues and savings, for the debt related to the fields/solar project in comparison to the projection from the December 2009 referendum, as well as for all of the District's debts over the 15 year life (2011-2025) of the fields/solar bonds.

	For Period FY11 to FY 2025			
	2010 Bonds (a)			(a)
	Referendum Projection (b)	March 2013 Projection	Favorable (Unfavorable)	District-Wide Projected
Direct Debt Service Sources & Uses				
Sources:				
Debt Service Fund Balance	\$ -	\$ 148,285	\$ 148,285	\$ 148,285
State Aid: Fields/Solar	3,661,855	2,892,936	(768,919)	2,892,936
State Aid: Other			-	253,089
Unexpended Fields/Solar Project Proceeds: Additional Modifications	-	243,036	243,036	574,581
Unexpended Fields/Solar Project Proceeds: For Debt Service	-	1,188,442	1,188,442	1,188,442
Unexpended Cap. Proj Proceeds: New High School Project			-	450,000
			-	
Total Sources	3,661,855	4,472,699	810,844	5,507,333
Uses:				
Interest Expense	3,376,800	2,537,497	839,303	21,427,250
Principal Repayment	8,499,000	8,499,000	-	29,574,000
Additional Modifications	-	243,036	(243,036)	574,581
Total Uses	11,875,800	11,279,533	596,267	51,575,831
Net Debt Service Sources (Uses)	(8,213,945)	(6,806,834)	1,407,111	(46,068,498)
Other Sources (Uses)				
S-RECS Revenues	6,361,875	469,174	(5,892,701)	469,174
Other Energy Savings (Costs)	1,908,563	1,093,036	(815,528)	1,093,036
Repay Deficit in Debt Service Fund			-	(4)
Total Other Sources (Uses)	8,270,438	1,562,209	(6,708,229)	1,562,205
Net (Cost)	\$ 56,493	\$ (5,244,625)	\$ (5,301,118)	\$(44,506,293)

(a): See Footnote 2 on page 1 for details on these bonds; District-Wide includes the 2010 and other bonds as well
(b): Represented as the final projection (dated 9/3/2009) used for the December 2009 referendum

A. Fields/Solar Project Only:

As shown in **Table 1**, the 2009 projection assumed that S-RECs revenues and energy savings would exceed expected debt service repayments; however, this is not projected to be realized. Instead, a gap will need to be covered by: (1) available Debt Service fund balances; (2) unexpended Capital Project proceeds and/or debt service fund balances; and (3) and/or tax levies. Explanations for key favorable (unfavorable) variances are:

1. State Aid: This “unfavorable” variance (\$2.9M current projection versus initial \$3.7M) is attributable to lower than expected interest rates on the actual bonds and, thus, lower State aid. (See Annual Debt Service Payment).
2. Unexpended Capital Project Proceeds: This unanticipated resource resulted from completing the project for less than expected (\$1.4M unexpended at June 30, 2011). As shown, a portion of these unexpended funds were used for additional project field enhancements at the Board’s direction (i.e.: outfield fencing; walkway(s);paving; bleacher pads; batting cage) The remaining proceeds are applied to future debt service repayments until exhausted, which is anticipated to occur in FY16, to reduce/stabilize resulting tax levies.
3. Annual Debt Service Payments: The favorable variance is attributable to savings in interest rates. While the actual amount bonded is the same \$8.5M as anticipated for the referendum, actual interest rates at 1.50% to 3.50% are more favorable than the 4.50% used in the referendum projection. As discussed later for **Table 1a** under “District-Wide”, repayments attributable to the fields/solar project are expected to represent about 21.6% of the District’s overall total for FY11 to FY25
4. Tax Levies: The December 2009 projection did not anticipate tax levies as a revenue source, however, as referenced above and explained further below with respect to S-RECs revenues, actual results are different. As discussed later for **Table 1b** under “District-Wide”, levies attributable to the fields/solar project are expected to represent about 14.8% of the District’s overall total for FY11 to FY25.
5. S-RECs Revenues³: At an estimated \$424.1M per annum, this was the key revenue source anticipated in the December 2009 projection. This was based on a system (450 kWh) generating 12,724 S-RECs (848 annually based on 260 days x 7.25 hours per day) over a 15 year project life, monetized at \$500 each. For reasons of roof load capacity and shading, the installed system size is 372.72 kWh, but to date, it has exceeded its expected 451 S-RECs production goal.

As shown in **Table 2** below, the more significant factor (at approximately 93%) for the unfavorable variance in this revenue is the precipitous decline in S-RECs pricing (as illustrated in the drop from a high of \$660 in early 2011 to a low of \$105 for 2012) as a result of market over-saturation. Thus, the \$500 price anticipated for the referendum is not expected to be achieved, with prices expected to remain depressed.

	Referendum Projection	March 2013 Projection	Difference	
S-RECs Generated	12,724	6,804	(5,920)	
Avg Price per S-REC	\$ 500	\$ 69	\$ (431)	
S-REC Revenues Earned	\$ 6,361,875	\$ 469,174	\$ (5,892,701)	
Analysis of Change				
From Avg S-REC Prices	Diff in Price x Proj S-RECs		\$ (5,484,501)	93.1%
From # of S-RECs	Diff in S-RECs x Proj Price		(408,200)	6.9%
Net Change			\$ (5,892,701)	100.0%

³ At its February 16, 2011 meeting, the Board voted to apply S-RECs revenues to the General Fund.

Assuming for a moment that the installed system was able to produce at the annual 848 S-RECs level anticipated in the December 2009 projection, the impact of the lower pricing discussed earlier would still be materially unfavorable as shown in **Table 2a** below, albeit at \$408.2K less in this regard.

Table 2a: Change in S-RECs Revenues			
Assuming same 848 annual S-RECs	Referendum	March 2013	
	Projection	Projection	Difference
S-RECs Generated	12,724	12,724	-
Avg Price per S-REC	\$ 500	\$ 69	\$ (431)
S-REC Revenues Earned	\$ 6,361,875	\$ 877,374	\$ (5,484,501)
Analysis of Change			
From Avg S-REC Prices	Diff in Price x Proj S-RECs		\$ (5,484,501)
From # of S-RECs	Diff in S-RECs x Proj Price		-
Net Change			\$ (5,484,501)

6. Other Energy Savings: The December 2009 projection included this as another key contributor for revenues exceeding debt service repayments. Thus, given that the actual system capacity is less than anticipated for the December 2009 referendum, the resulting savings are commensurately less.

B. District-Wide:

The following are comments on the District's anticipated overall debt service obligations and related tax levies, along with their relative proportionality and respective growth rates over the relevant projection period.

1. Annual Debt Service Payments: As shown earlier in **Table 1** debt service requirements for the projection period will aggregate \$51.0M, with the fields/solar debt representing \$11.0M (approximately 21.6%) of this amount. Most of this will be funded via tax levies, which, except for the fields/solar debt, is by design. The remainder is expected to be funded from debt service aid and unexpended capital project proceeds from the new high school construction project and the fields/solar project.

As further illustrated in attached **Table 1a** total annual debt service repayments from FY12 on are generally anticipated to remain within the \$3.3M to \$3.5M range, due to several factors, including: (1) the preplanned debt repayment amortization schedule and (2) use of unexpended proceeds. Thus, the overall compounded annual growth rate is anticipated to average no higher than 1.1%

2. Tax Levies: As shown in attached **Table 1b**, tax levies for the projection period is anticipated to aggregate \$46.1M, with the fields/solar debt representing \$6.8M (approximately 14.8%) of this amount. As further illustrated, total annual tax levies are generally anticipated to remain within the \$3.1M to \$3.3M range from FY15 on. Thus, the overall compounded annual growth rate is anticipated to average no higher than 1.1%.

Moreover, combined Debt Service and General Fund tax levies (at \$46.1M and \$409.2M, respectively), are estimated to aggregate \$455.3M over the 15 year period (FY11 to FY15) of required solar debt repayments, with Debt Service's representing about 10.2% thereof (\$46.1M of \$455.3M) and the fields/solar component representing 1.5% of this grand total (\$6.1M of \$455.3M). The debt service component is estimated as explained above, while the General Fund assumes an approximate 2.0% year-over-year increase. Thus, on a combined basis, tax levies are expected to grow at a compounded 2.0% rate.

Section II (For the period FY26 to FY35):

While the analysis in Section I cover the 15 year (FY11-25) bond repayment period of the fields/solar project, it is reasonable to assume that revenues and/or savings will continue to accrue to the District beyond the FY25 maturity of these bonds. The following table illustrates the potential for approximately \$55.8K annually in continuing benefits for the remaining ten (10) year period (FY26 to FY35) of the panel's warranted productive life.

Table 3: Post Bond-Repayment Benefits

	Revenues	Savings	Total (a)
FY 25-26	\$ 729	\$ 50,022	\$ 50,750
FY 26-27	729	50,022	50,750
FY 27-28	729	50,022	50,750
FY 28-29	729	50,022	50,750
FY 29-30	729	50,022	50,750
FY 30-31	729	50,022	50,750
FY 31-32	729	50,022	50,750
FY 32-33	729	50,022	50,750
FY 33-34	729	50,022	50,750
FY 34-35	729	50,022	50,750
Total	\$ 7,287	\$ 500,218	\$ 507,505

(a) In addition to the \$50.8K annual revenue and savings noted above, the District's cash flow would be further improved, all other factors being equal, by the absence of recurring debt service repayments on the 2010 bonds after FY25, which previously averaged about \$735.8K (\$11,036,497 over 15 years) annually.

Key assumptions underlying the above analysis include the following:

1. Useful production life/production level(s): Calculated at 85% of the system's 372.72 kWh size, based on the manufacturer's (Sharp Electronics Corporation) statement that "The warranty period with respect to power output continues for a total of 25 years from date of purchase, the first 10 years at 90% minimum rated power output and the balance of 15 years at 80% minimum rated output". (Note: For its first two years of operation, the system has annually averaged about 475,000 kWh which equates to approximately 128% of its kWh size).
2. S-RECS Revenues: Conservatively estimated using the S-RECs above, at \$2.30 each.⁴
3. Annual Energy Savings: Estimated using the same kWh monetized at the rate used in Section I.

⁴ Per Code (N.J.A.C. 14:8-2.2 Definitions: "Qualification Life"), solar generating systems in NJ (i.e.: Bordentown) may only produce S-RECs for use by utilities for their solar compliance obligations for up to 15 years from the date that the system was authorized to begin operations . Once the system has been producing for 15 years, it may still continue to earn S-RECs, but these are classified as Class 1 S-RECs which are currently worth about \$2.30 each.

Conclusion(s):

As previously mentioned, this March 2013 analysis is intended to provide forward looking information on the District's debt service obligations over the life of the fields/solar bonds, not to explore the rationale for the fields/solar referendum projection. Key points from this March 2013 analysis include:

1. The installed solar system is making valuable contributions to the District's finances in its prima facie function of producing energy savings. However, the expectations of annual debt service obligations being more than fully covered by such energy savings and S-RECs sales have not and are not expected to materialize.
2. While the focus is often on the difference in size and production capacity between the system anticipated and actually installed, the major factor (approximately 93.1%) for the unfavorable variances experienced in S-RECs revenues is the depressed pricing from over-saturation of the market. This would be the case even if the system was exactly the same size and production level as initially anticipated for the December 2009 referendum.
3. By necessity, annual tax levies are and will be required to fill this gap. The effects of such levies are managed to the extent possible through: (1) the preplanned debt repayment schedules which provide for fairly stable annual repayments within the \$3.1M to \$3.5M range and (2) the use of unanticipated capital funds which are expected to help keep debt service tax levies in the \$3.1M to \$3.3M range from FY15 on. As a result of both of these factors, overall annual debt service repayment and tax levy growth rates are expected to average no higher than 1.1%, respectively, over the projection period.
4. Combined Debt Service and General Fund tax levies are anticipated to aggregate \$455.3M for the projection period, with Debt Service's representing about 10.2% thereof (\$46.1M of \$455.3M) and the fields/solar component representing 1.5% of this grand total (\$6.1M of \$455.3M).
5. As shown in Section II, after the debt service is paid off on the fields/solar bonds in FY25, the solar system is expected to still continue generating benefits (mostly energy savings) to the District, albeit at more modest levels, conservatively estimated at \$50.8K per year for the remainder of its estimated production life (FY26 to FY35). Moreover, all other factors being equal, this improvement in the District's cash flow would be further improved during this period due to the cessation of debt service repayments on the fields/solar bonds.

Finally, as repeated in the footers to these pages, this analysis makes projections concerning future events which will span over a decade. All projections are subject to uncertainties, with such uncertainties growing exponentially the longer the time frame under consideration. Accordingly, actual results could be different than those projected herein, and such differences could be material. The District will continue to evaluate its debt obligations on an ongoing basis.

Bordentown Regional School District						Date:	3/29/2013
Bond Debt Service Analysis							
Table 1a: Annual Debt Service Payments						For Period FY11 to FY 25	
	2010 Bonds	(a) Other Bonds	Total Bonds	Annual Incr (Decr)			
				Amount	Percent		
FY 11	\$ 249,174	\$ 2,668,252	\$ 2,917,426	\$ -			
FY 12	632,028	2,688,152	3,320,180	402,754	13.81%		
FY 13	651,403	2,693,262	3,344,665	24,485	0.74%		
FY 14	943,403	2,264,862	3,208,265	(136,400)	-4.08%		
FY 15	675,902	2,800,888	3,476,790	268,525	8.37%		
FY 16	739,652	2,764,638	3,504,290	27,500	0.79%		
FY 17	751,527	2,751,888	3,503,415	(875)	-0.02%		
FY 18	760,027	2,746,388	3,506,415	3,000	0.09%		
FY 19	767,777	2,737,388	3,505,165	(1,250)	-0.04%		
FY 20	774,778	2,707,575	3,482,353	(22,812)	-0.65%		
FY 21	829,465	2,666,275	3,495,740	13,387	0.38%		
FY 22	854,965	2,632,875	3,487,840	(7,900)	-0.23%		
FY 23	828,716	2,622,218	3,450,934	(36,906)	-1.06%		
FY 24	802,465	2,603,124	3,405,589	(45,345)	-1.31%		
FY 25	775,215	2,616,968	3,392,183	(13,406)	-0.39%		
	-	-					
Totals/Average Increase (Decrease)	\$ 11,036,497	\$ 39,964,753	\$ 51,001,250				1.1%
Proportionate Share	21.6%	78.4%	100.0%				
Table 1b: Annual Debt Service Tax Levies						For Period FY11 to FY 25	
	2010 Bonds	(a) Other Bonds	Total Tax Levy	Annual Incr (Decr)			
				Amount	Percent		
FY 11	\$ 100,889	2,579,620	\$ 2,680,509	\$ -			
FY 12	76,805	2,603,701	2,680,506	(3)	0.00%		
FY 13	98,867	2,613,256	2,712,123	31,617	1.18%		
FY 14	447,261	2,264,862	2,712,123	(0)	0.00%		
FY 15	302,786	2,800,888	3,103,674	391,551	14.44%		
FY 16	508,153	2,764,638	3,272,791	169,118	5.45%		
FY 17	554,533	2,701,892	3,256,425	(16,366)	-0.50%		
FY 18	560,805	2,696,388	3,257,193	768	0.02%		
FY 19	566,524	2,687,388	3,253,912	(3,281)	-0.10%		
FY 20	571,690	2,657,575	3,229,265	(24,647)	-0.76%		
FY 21	612,042	2,616,275	3,228,317	(948)	-0.03%		
FY 22	630,858	2,582,875	3,213,733	(14,584)	-0.45%		
FY 23	611,489	2,572,218	3,183,707	(30,025)	-0.93%		
FY 24	592,119	2,553,124	3,145,243	(38,464)	-1.21%		
FY 25	572,012	2,566,968	3,138,980	(6,263)	-0.20%		
		-					
Totals/Average Increase (Decrease)	\$ 6,806,834	\$ 39,261,668	\$ 46,068,502				1.1%
Proportionate Share	14.8%	85.2%	100.0%				
(a): See Footnote 2 on page 1 for details on these bonds; District-Wide includes the 2010 and other bonds as well							