

Brevard Public Schools Energy/Resource Conservation Initiatives July 2010

History

FY1998-2007

In September 1998, the District entered into self-funded, performance contracting agreements with two Energy Service Companies (ESCO) to provide facility improvements and a behavioral modification program that guaranteed utility cost reductions of \$20 million over 10 years. Upon completion of payments to the ESCO's in June 2008, the District now realizes the full benefits of these cost savings on an on-going basis. The facility improvements included lighting retrofits, HVAC equipment improvements in the form of chiller replacements and Thermal Energy Storage systems, trash compaction equipment to reduce solid waste removal costs, and low-flow flush valve kits to reduce water consumption. The behavioral modification program, staffed by two contracted specialists, taught the facility users (both staff and students) how to use energy in their facility more efficiently. As part of this effort, recycling programs for cardboard and mixed paper were initiated in all schools.

FY2008-2009:

In July 2008, the **Energy/Resource Conservation Department** (9540) was created in an effort to control, optimize and reduce consumption of energy and other natural resources, reduce waste and avoid related operating costs without impacting the educational process. Their target was to reduce electrical consumption by 10% compared to the previous year (Strategic Plan Goal). Five schools received the U.S. Environmental Protection Agency's prestigious ENERGY STAR Award.

From July 2008 thru June 2009, the District reduced electrical consumption by 14.7% with a value of \$2.1 million based on KWH reduction and current costs through the following initiatives:

- Established individual reduction targets for each facility.
- Decreased HVAC run times before and after school.
- Changed heating set points to 70 degrees (+/-2) and cooling to 76 degrees (+/-2).
- Reduced lighting to recommended minimum illumination levels.
- Conducted monthly behavioral inspections during occupied and unoccupied modes. A copy of a sample inspection form is provided as **Attachment 1**.
- Met with site-based managers regularly to review inspection results and implement corrective behavior modifications.

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- Issued monthly reports to the Leadership Team to track individual and collective performance at each facility and the District as a whole.
- Initiated holiday shutdowns and monitored compliance.
- Disconnected water heaters where not required by code.
- Disconnected refrigeration from electric water coolers.
- Promoted custodial day-cleaning procedures to reduce evening lighting and HVAC costs.
- Created a Departmental website which highlighted policy, procedure and educational values.
- Provided energy counselors to mentor Energy Action Teams (school staff) and Energy Action Patrols (students).
- Influenced active construction projects with energy-conserving concepts.

Department Staff:

- One (1) Project Manager / Team Leader
- One (1) Staff Engineer
- Three (3) Inspectors
- Two (2) Behavior Modification Consultants (one full-time / one half-time)

FY2009-2010:

The **Energy/Resource Conservation Department's** FY2009-10 target was to reduce electrical consumption by an additional 10% compared to the previous year (once again, a Strategic Plan Goal). From July 2009 thru June 2010, the District reduced electrical consumption by 4.4% with a value of \$580,000 based on KWH reduction and current costs. Charts of monthly and cumulative consumption for the District are provided as **Attachment 2 and Attachment 3**. Although this result did not meet the target due to the impact of abnormal weather conditions, it is important to note that these efforts avoided several hundred thousand dollars in weather-related energy increases (source: Metrix analysis of adjustments for normal weather patterns). Eleven schools received the U.S. Environmental Protection Agency's prestigious ENERGY STAR Award. Three schools were awarded grants to install 10 KW photovoltaic solar energy systems.

In addition to the continuation of the initiatives instituted in FY2008-09, the following energy conservation measures were implemented in FY2009-2010:

- Phase 1 Energy Conservation capital projects totaling \$738,000 with an average payback of 2.3 years were completed at eight schools with ongoing renovation projects.
 - Solar window film
 - Motion sensors for security lights
 - Exterior lighting controls
 - Zones for interior lights
 - HVAC system commissioning
 - Swimming pool covers

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- Phase 2 Energy Conservation capital projects totaling \$704,000 with an average payback of 3.1 years, funded with FPL rebates, were started at 71 facilities. These projects are in progress and will be completed by 12/31/10.
 - Solar window film
 - Motion sensors for security lights
 - Exterior lighting controls
 - Bi-level flush valves
 - Thermal energy storage system
- Miscellaneous Energy Conservation HVAC capital improvements were completed by the Plant Operations & Maintenance Department at forty schools.
 - Wireless thermostats
 - Mini-split A/C systems for food storage
 - Replacement of existing HVAC equipment with more efficient equipment
- The District's Facility Design Standards are being revised to include energy conservation strategies. This project is in progress and will be completed by 12/31/10.
- New energy conservation technologies were investigated and test installations were put in place for two products (below). These products are still in the trial phase.
 - KVAR power conditioning system (Viera HS)
 - Airless water meter valves (West Melbourne ES and Southwest MS)

Department Staff:

- One (1) Project Manager / Team Leader
- One (1) Staff Engineer
- Six (6) Inspectors (one-third time)
- One (1) Project Administrative Specialist (one-third time)

Future

FY2010-2011:

The **Energy/Resource Conservation Department** established FY2010-11 energy targets for each facility on the basis shown below. FY2009-10 results and FY2010-11 targets are provided as **Attachment 4**. Note that those facilities with targets in **red** will be analyzed for further reductions.

- Base = FY2009-10 consumption
- Adjustment #1 = Phase 1 and Phase 2 Energy Conservation capital projects
- Adjustment #2 = Miscellaneous Energy Conservation HVAC capital improvements
- Adjustment #3 = Addition or deletion of relocatable classrooms

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In addition to the continuation or completion of the initiatives instituted in FY2009-10, the following energy conservation measures will be implemented in FY2010-2011:

- Post monthly and cumulative energy consumption results for each facility and the District on the Website.
- Solicit proposals from Energy Service Companies for a new performance contracting agreement.
- Construct the photovoltaic solar energy systems at three schools with grants received from the Florida Solar Energy Center.
- Initiate a Water Conservation Program.
- Initiate a Natural Gas Conservation Program.
- Investigate a Solid Waste Program.
- Investigate new energy conservation technologies.
 - Conclude the trial phase for the KVAR and Airless water meter valves
 - Install a test installation of LED light fixtures in the ESF parking lot
- Institute policies to insure that all new buildings and additions are constructed to meet the Green Building Initiative's Green Globes rating system (Florida Statute 255.2575).

Department Staff:

- One (1) Project Manager / Team Leader (half time)
- Six (6) Inspectors (one-third time)
- One (1) Administrative Secretary (half time)

End of Report

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Energy Audit Inspection Checklist

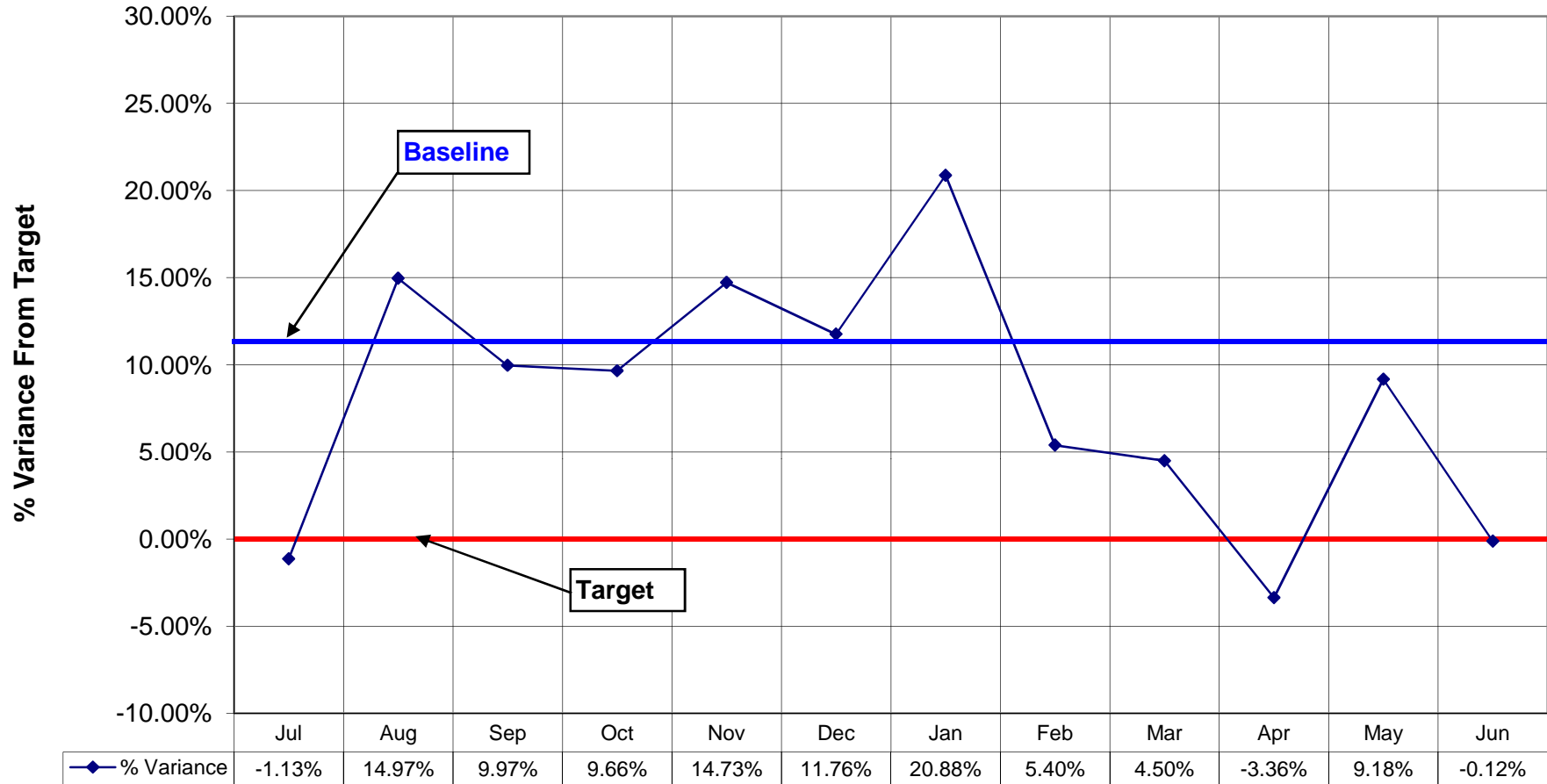
Performed by:	
Facility:	
Date:	
Time in:	
Time out:	

Unoccupied	Points Possible	Points scored	Exceptions
HVAC system off	30		
Lighting controls effective	20		
Custodial conservation	20		
Electronics off	15		
Irrigation dates and times	15		
Totals	100	0	
Score for Unoccupied Inspection	0%		
Grade for Unoccupied Inspection	F		
Comments			

Occupied	Points Possible	Points scored	Exceptions
Temperature (68 - 72 H) (74-78 C)	25		
Energy Action Team / Patrol Active	20		
Lighting levels occupied (use options)	15		
Lights off unoccupied	10		
Doors / windows closed	10		
Thermostats / grills unobstructed	5		
Filters	5		
Appliances consolidated	5		
Water use / waste	5		
Totals	100	0	
Score for Occupied Inspection	0%		
Grade for Occupied Inspection	F		
Comments			

Overall Audit Score	0%
Overall Audit Grade	F

Monthly Variance from Target Brevard Public Schools FY 2009/10

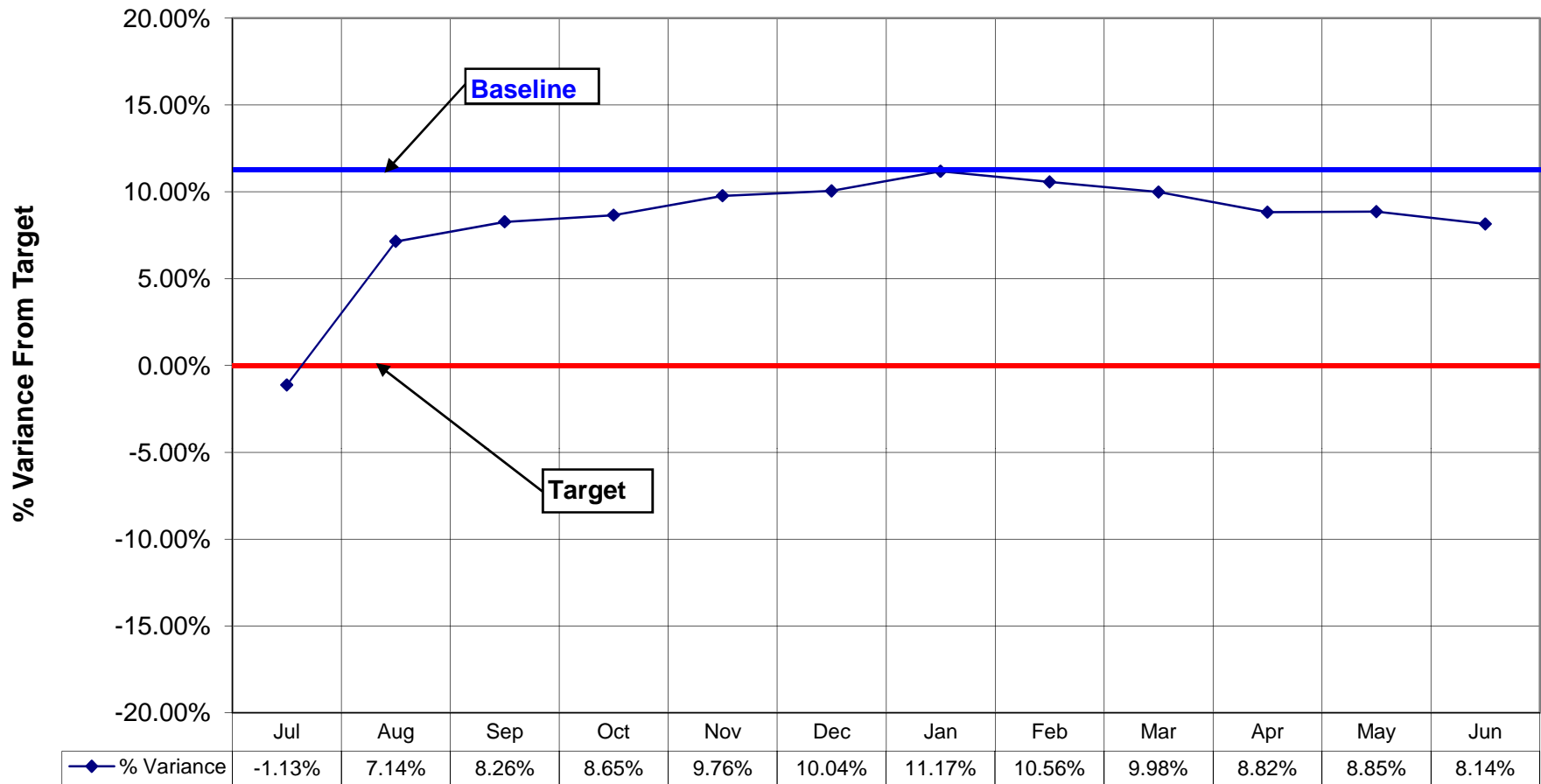


Baseline= FY 08/09 Actuals
Target = Baseline Reduced by 11.60%

Month

July 26, 2010

Cumulative Variance from Target Brevard Public Schools FY 2009/10



Baseline= FY 08/09 Actuals
 Target = Baseline Reduced by 11.60%

July 26, 2010



Actual Energy Consumption (KWH) FY 2009/10 Target Energy Consumption (KWH) FY 2010/11

Location	Consumption Year Ending 30 June 2009 (KWH)	Target Reduction (%)	Target KWH Consumption Year Ending 30 June 2010	Actual KWH Consumption Year Ending 30 June 2010	Var. (%)	Actual KWH Consumption per Sq. Ft. (FY10-11)	Base Consumption Target FY10/11 (KWH)	Facilities Improvement Adjustments (KWH)	Portables and HVAC Mods (KWH)	Target FY 10/11 (KWH)
High Schools										
Astronaut	3,152,416	9%	2,868,699	2,557,766	-10.8%	9.9	2,557,766	-8522	-45500	2,503,744
Bayside	5,400,484	14%	4,644,416	4,474,647	-3.7%	11.6	4,474,647	-146090	36360	4,364,917
Cocoa	3,025,146	10%	2,722,631	3,324,803	22.1%	13.9	3,324,803	-23018		3,301,785
Cocoa Beach Jr./Sr.	2,710,229	8%	2,493,411	2,642,639	6.0%	9.1	2,642,639	-128134		2,514,505
Eau Gallie	3,388,873	8%	3,117,763	3,755,739	20.5%	11.4	3,755,739	-47284		3,708,455
Edgewood	1,932,648	11%	1,720,057	1,911,288	11.1%	11.7	1,911,288	-34091		1,877,197
Melbourne	3,945,286	11%	3,511,305	4,104,729	16.9%	11.6	4,104,729	-83468		4,021,261
Merritt Island	4,539,594	15%	3,858,655	3,318,633	-14.0%	12.0	3,318,633	-93,935		3,224,698
Palm Bay HS	4,521,940	10%	4,069,746	4,466,109	9.7%	12.3	4,466,109	-88722		4,377,387
Rockledge	2,422,974	5%	2,301,825	2,782,686	20.9%	10.2	2,782,686	-39220		2,743,466
Satellite	3,211,082	10%	2,889,974	3,442,933	19.1%	11.7	3,442,933	-208613	-94200	3,140,120
Space Coast	3,666,520	8%	2,125,198	2,718,177	27.9%	7.6	2,718,177	-23013	-119770	2,575,394
Space Coast Chiller plant	1,600,000	0%	1,600,000	2,080,080	30.0%		2,080,080			2,080,080
Titusville	3,479,599	12%	3,062,047	3,212,217	4.9%	9.6	3,212,217	-223253	-80700	2,908,264
Viera	3,032,985	8%	2,790,346	3,010,624	7.9%	8.7	3,010,624	-136226		2,874,398
West Shore Jr./Sr.	1,931,663	13%	1,680,547	1,909,942	13.7%	13.6	1,909,942	-27827	-9090	1,873,025
Heritage (Note 1)	0	0%	3,200,000	3,588,160	12.1%	9.1	3,588,160	-109126		3,479,034
Sub-total High Schools	51,961,439	12.52%	45,456,620	49,713,012	9.4%	10.4	53,301,172	-1,420,542	-312,900	51,567,730
Note 1: Heritage consumption not included in the totals of these columns.										
Middle Schools										
Central	1,197,200	12%	1,053,536	1,149,200	9.1%	4.8	1,149,200	-53,788.00		1,095,412
Clearlake	1,096,188	14%	942,722	1,045,544	10.9%	9.6	1,045,544	-29,536		1,016,008
DeLaura	1,064,340	13%	925,976	556,260	-39.9%	4.2	556,260	-40,814	-32,000	483,446
Hoover	950,976	5%	903,427	877,536	-2.9%	8.0	877,536	-57,204	-32,000	788,332
Jackson	1,091,625	10%	982,462	940,372	-4.3%	8.4	940,372	-2,727	-22,800	914,845
Jefferson	1,080,496	8%	994,056	1,050,148	5.6%	8.5	1,050,148	-50,140	-22,800	977,208
Johnson	1,462,703	11%	1,301,806	1,407,539	8.1%	9.0	1,407,539	-17,045	-32,000	1,358,494
Kennedy	929,833	6%	874,043	1,011,649	15.7%	8.5	1,011,649	-8,182		1,003,467
Madison	1,215,632	10%	1,094,069	1,042,215	-4.7%	8.5	1,042,215	-8,932	-22,800	1,010,483
McNair Magnet	1,221,644	15%	1,038,397	1,067,107	2.8%	10.6	1,067,107	0		1,067,107
Southwest	1,360,560	8%	1,251,715	1,573,200	25.7%	6.8	1,573,200	-68,443	-78,810	1,425,947
Stone	1,720,044	9%	1,565,240	1,637,244	4.6%	9.5	1,637,244	-27,361	-32,000	1,577,883
Sub-Total Middle Schools	14,391,241	10.17%	12,927,450	13,358,014	3.3%	7.7	13,358,014	-364,172	-275,210	12,718,632
Miscellaneous Sites										
0081 N. Area Adult Ed.	254,142	5%	241,435	291,805	20.9%	5.2	291,805	0	22,800	314,605
1012 C. Area Adult Ed	115,241	5%	109,479	123,978	13.2%	10.4	123,978	0		123,978
1016 N. Area Alternative	133,860	5%	127,167	116,940	-8.0%	6.6	116,940	0		116,940
1017 C. Area Alternative	101,763	10%	91,587	90,473	-1.2%	14.8	90,473	0		90,473
1018 S. Area Alternative	135,672	5%	128,888	121,272	-5.9%	7.4	121,272	-3,909		117,363
2072 S. Area Adult Ed	114,160	0%	114,160	89,840	-21.3%	5.0	89,840	0		89,840
7100 Area II Supt	35,822	15%	30,449	39,008	28.1%	6.6	39,008	0		39,008
7300 Area I Supt.	261,739	15%	222,478	260,901	17.3%	14.4	260,901	0		260,901
9340 C. Area Trans. (520)	201,168	5%	191,110	214,382	12.2%	5.0	214,382	0		214,382
9341 N. Area Trans. (Draa)	126,698	5%	120,363	148,723	23.6%	11.1	148,723	0		148,723
9342 S. Area Trans. (Stone)	181,521	15%	154,293	191,670	24.2%	16.4	191,670	0		191,670
9344 Mid-S. Trans. (Pineapple)	61,308	10%	55,177	107,687	95.2%	14.4	107,687	0		107,687
9380 Warehouse	325,103	5%	308,848	356,241	15.3%	8.5	356,241	0		356,241
9562 Maintenance (all sites)	670,103	10%	603,093	642,465	6.5%	15.3	642,465	0		642,465
9880 ESF	2,425,680	10%	2,183,112	2,568,480	17.7%	14.3	2,568,480	-34,518		2,533,962
Sub-Total Misc	5,143,980	8.99%	4,681,638	5,363,865	14.6%	10.9	5,363,865	-38,427	22,800	5,348,238

Location	Consumption Year Ending 30 June 2009 (KWH)	Target Reduction (%)	Target KWH Consumption Year Ending 30 June 2010	Actual KWH Consumption Year Ending 30 June 2010	Var. (%)	Actual KWH Consumption per Sq. Ft. (FY10-11)	Base Consumption Target FY10/11 (KWH)	Facilities Improvement Adjustments (KWH)	Portables and HVAC Mods (KWH)	Target FY 10/11 (KWH)
Elementary Schools										
Andersen	889,569	1%	880,673	864,734	-1.8%	7.7	864,734	-15,368		849,366
Apollo	964,256	11%	858,188	937,681	9.3%	9.2	937,681	-1,704		935,977
Atlantis	1,093,296	17%	907,436	909,336	0.2%	7.4	909,336	0	3,000	912,336
Audubon	766,738	5%	728,401	640,171	-12.1%	6.9	640,171	-10,227	-32,000	597,944
Cambridge	863,988	13%	751,670	836,354	11.3%	9.4	836,354	-23,864	-78,000	734,490
Cape View	608,148	5%	577,741	511,068	-11.5%	7.5	511,068	-39,474		471,594
Challenger 7	597,480	9%	543,707	579,480	6.6%	5.1	579,480	-46,772	-32,000	500,708
Columbia	747,719	6%	702,856	807,120	14.8%	6.6	807,120	-1,025	-32,000	774,095
Coquina	621,252	7%	577,764	564,609	-2.3%	6.8	564,609	-23,990		540,619
Creel	1,721,909	19%	1,394,746	1,153,594	-17.3%	9.5	1,153,594	-26,336	12,090	1,139,348
Croton	718,968	15%	611,123	738,168	20.8%	9.9	738,168	-10,609	9,090	736,649
Discovery	1,047,187	7%	973,884	1,098,412	12.8%	7.0	1,098,412	0	-15,180	1,083,232
Endeavour	928,019	8%	853,777	878,197	2.9%	8.9	878,197	-9,845	45,450	913,802
Enterprise	947,100	13%	471,977	587,940	24.6%	4.7	587,940	0	-15,180	572,760
Fairglen	1,137,744	12%	1,001,215	1,132,224	13.1%	10.8	1,132,224	-15,408	-22,800	1,094,016
Freedom-7	502,440	19%	406,976	388,680	-4.5%	7.2	388,680	-11,584		377,096
Gardendale	741,288	12%	652,333	679,488	4.2%	9.0	679,488	-10,227	-32,000	637,261
Gemini	980,819	9%	892,545	1,040,526	16.6%	12.2	1,040,526	-4,300	-127,200	909,026
Golfview	923,659	9%	840,530	894,122	6.4%	9.7	894,122	-10,227	18,180	902,075
Harbor City	615,592	20%	492,474	632,634	28.5%	9.7	632,634	-4,767	-21,891	605,976
Holland	745,409	5%	708,139	695,880	-1.7%	8.6	695,880	-32,039	-4,600	659,241
Imperial Estates	1,164,360	8%	1,071,211	1,041,780	-2.7%	9.1	1,041,780	-10,354		1,031,426
Indialantic	980,261	13%	852,827	981,485	15.1%	9.5	981,485	-15,379	-240,900	725,206
Jupiter	925,680	16%	777,571	863,400	11.0%	6.6	863,400	0	3,000	866,400
Lewis Carroll	953,783	7%	887,018	988,638	11.5%	9.2	988,638	-34,086	-24,270	930,282
Lockmar	903,840	12%	795,379	966,000	21.5%	8.1	966,000	-23,202		942,798
Longleaf	896,640	6%	842,842	942,000	11.8%	8.4	942,000	-59,497	3,000	885,503
Manatee	1,336,800	12%	1,176,384	1,248,480	6.1%	9.4	1,248,480	-25,115	-36,360	1,187,005
McAuliffe	701,577	3%	680,530	708,506	4.1%	5.2	708,506	-51,539	-60,490	596,477
Meadowlane Primary	539,700	4%	518,112	548,725	5.9%	3.7	548,725	-13,636	3,000	538,089
Meadowlane Chiller	2,347,200	10%	2,112,480	1,992,800	-5.7%		1,992,800	0		1,992,800
Meadowlane Intermediate	518,400	11%	461,376	494,880	7.3%	3.9	494,880	-13,636	54,540	535,784
MILA	1,032,372	9%	939,459	1,071,380	14.0%	11.2	1,071,380	-18,184	-35,600	1,017,596
Mims	800,027	8%	736,025	802,184	9.0%	8.9	802,184	-12,118	-130,600	659,466
Oak Park	992,085	16%	833,351	991,620	19.0%	8.8	991,620	-6,818	-32,000	952,802
Ocean Breeze	748,939	14%	644,088	777,094	20.7%	10.2	777,094	-6,197	-32,000	738,897
Palm Bay ES	1,035,745	9%	942,528	1,088,460	15.5%	11.6	1,088,460	-15,876	-22,800	1,049,784
Pinewood	614,987	11%	547,338	564,049	3.1%	7.6	564,049	-23,990	-38,600	501,459
Port Malabar	873,657	9%	795,028	942,101	18.5%	8.5	942,101	-16,091		926,010
Quest	1,153,200	12%	1,014,816	1,081,680	6.6%	9.3	1,081,680	-22,845	9,090	1,067,925
Riverview	892,698	18%	732,012	785,300	7.3%	10.3	785,300	-3,409	-9,090	772,801
Riviera	815,400	12%	717,552	838,920	16.9%	7.4	838,920	0	3,000	841,920
Roosevelt	837,008	2%	820,268	728,136	-11.2%	6.7	728,136	0		728,136
Roy Allen	1,003,080	13%	872,680	966,120	10.7%	9.4	966,120	-22,845		943,275
Sabal	751,203	10%	676,083	744,805	10.2%	9.5	744,805	-9,150	-42,310	693,345
Saturn	857,346	10%	771,611	818,544	6.1%	8.8	818,544	-16,033	-32,000	770,511
Sea Park	578,124	14%	497,187	565,069	13.7%	9.7	565,069	-4,300	-32,000	528,769
Sherwood	944,160	15%	802,536	898,080	11.9%	9.8	898,080	-18,653	3,000	882,427
South Lake	585,576	16%	491,884	542,016	10.2%	7.6	542,016	-10,227	-22,800	508,989
Stevenson	720,708	4%	691,880	654,600	-5.4%	10.2	654,600	-12,879	-79,800	561,921
Sunrise	1,187,080	10%	1,068,372	1,253,160	17.3%	10.7	1,253,160	-47,834		1,205,326
Suntree	978,480	6%	919,771	967,440	5.2%	7.8	967,440	0	-36,360	931,080
Surfside	538,480	17%	446,938	528,441	18.2%	9.4	528,441	0	-32,000	496,441
Tropical	907,320	14%	780,295	891,888	14.3%	8.2	891,888	-13,111	-32,000	846,777
Turner	816,480	3%	791,986	808,560	2.1%	7.9	808,560	-12,716	-104,400	691,444
University Park	731,750	11%	651,258	769,075	18.1%	8.8	769,075	-12,866	-188,700	567,509
West Melbourne	674,244	15%	573,107	692,244	20.8%	9.7	692,244	-11,243	-22,800	658,201
Westside	1,302,000	14%	1,119,720	1,272,840	13.7%	11.9	1,272,840	-18,997		1,253,843
Williams	1,058,092	7%	984,026	1,044,259	6.1%	9.9	1,044,259	-17,134	-45,450	981,675
Sub-Total Elem Schools	52,861,062	11.34%	46,865,682	50,435,177	7.6%	8.7	50,435,177	-897,726	-1,579,741	47,957,710
District Totals	124,357,722	11.60%	109,931,390	118,870,068	8.1%	9.3	122,458,228	-2,720,867	-2,145,051	117,592,310



Resource Conservation Phase I & II Capital Improvements Estimated Savings / Target FY 10/11

Resource Conservation Measure (RCM)→	RCM-1			RCM-2			RCM-3			RCM-4			RCM-6			RCM-12			School Total
	Window Film			Sensors for Night Lights			Exterior Lights on BAS (Bold = Timeclocks)			Provide Multiple Lighting Circuits			Retro-Commissioning			Lighting Retrofit			
School	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	
Elem Schools																			
Andersen				6,854	75%	5,141	13,636	75%	10,227										15,368
Apollo							2,272	75%	1,704										1,704
Audubon							13,636	75%	10,227										10,227
Cambridge							31,818	75%	23,864										23,864
Cape View	10,354	100%	10,354				38,827	75%	29,120										39,474
Challenger 7							62,363	75%	46,772										46,772
Columbia							1,366	75%	1,025										1,025
Coquina	10,354	100%	10,354				13,636	100%	13,636										23,990
Creel	10,354	92%	9,526	18,272	92%	16,810													26,336
Croton							14,145	75%	10,609										10,609
Endeavour							13,127	75%	9,845										9,845
Fairglen	5,181	100%	5,181				13,636	75%	10,227										15,408
Freedom-7	5,181	92%	4,767				9,090	75%	6,818										11,584
Gardendale							13,636	75%	10,227										10,227
Gemini	5,181	83%	4,300																4,300
Golfview							13,636	75%	10,227										10,227
Harbor City	5,181	92%	4,767																4,767
Holland	5,181	92%	4,767				36,363	75%	27,272										32,039
Imperial Estates	10,354	100%	10,354																10,354
Indialantic	5,181	83%	4,300				14,772	75%	11,079										15,379
Lewis Carroll	2,152	100%	2,152	22,845	100%	22,845	12,118	75%	9,089										34,086
Lockmar							30,936	75%	23,202										23,202
Longleaf	2,025	100%	2,025	22,845	100%	22,845	34,627	100%	34,627										59,497
Manatee				22,845	100%	22,845	2,272	100%	2,272										25,117
McAuliffe	5,181	92%	4,767				62,363	75%	46,772										51,539
Meadowlane Pri													90,909	15%	13,636				13,636
Meadowlane Int.													90,909	15%	13,636				13,636
MILA							24,245	75%	18,184										18,184
Mims							12,118	100%	12,118										12,118
Oak Park							9,090	75%	6,818										6,818

Resource Conservation Measure (RCM) →	RCM-1			RCM-2			RCM-3			RCM-4			RCM-6			RCM-12			School Total
	Window Film			Sensors for Night Lights			Exterior Lights on BAS (Bold = Timeclocks)			Provide Multiple Lighting Circuits			Retro-Commissioning			Lighting Retrofit			
School	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	
Ocean Breeze							8,263	75%	6,197										6,197
Palm Bay ES	10,354	100%	10,354				7,363	75%	5,522										15,876
Pinewood	10,354	100%	10,354				18,181	75%	13,636										23,990
Port Malabar							21,454	75%	16,091										16,091
Quest				22,845	100%	22,845													22,845
Riverview							4,545	75%	3,409										3,409
Roy Allen				22,845	100%	22,845													22,845
Sabal							12,200	75%	9,150										9,150
Saturn	10,354	100%	10,354				7,572	75%	5,679										16,033
Sea Park	5,181	83%	4,300																4,300
Sherwood	2,025	75%	1,519	22,845	75%	17,134													18,653
South Lake							13,636	75%	10,227										10,227
Stevenson	10,354	75%	7,766				6,818	75%	5,114										12,879
Sunrise	2,152	100%	2,152	45,682	100%	45,682													47,834
Tropical							17,481	75%	13,111										13,111
Turner							16,954	75%	12,716										12,716
University Park							17,154	75%	12,866										12,866
West Melbourne							14,990	75%	11,243										11,243
Westside	2,025	92%	1,863	22,845	75%	17,134													18,997
Williams				22,845	75%	17,134													17,134
Middle Schools																			
Central	23,018	100%	23,018	22,845	75%	17,134							90,909	15%	13,636				53,788
Clearlake							39,381	75%	29,536										29,536
DeLaura							54,418	75%	40,814										40,814
Hoover							76,272	75%	57,204										57,204
Jackson							3,636	75%	2,727										2,727
Jefferson	40,909	92%	37,636				16,671	75%	12,503										50,140
Johnson							22,727	75%	17,045										17,045
Kennedy							10,909	75%	8,182										8,182
Madison							11,909	75%	8,932										8,932
Southwest	61,818	83%	51,309	22,845	75%	17,134													68,443
Stone							36,481	75%	27,361										27,361

Resource Conservation Measure (RCM) →	RCM-1			RCM-2			RCM-3			RCM-4			RCM-6			RCM-12			School Total
	Window Film			Sensors for Night Lights			Exterior Lights on BAS (Bold = Timeclocks)			Provide Multiple Lighting Circuits			Retro-Commissioning			Lighting Retrofit			
School	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	
High Schools																			
Astronaut							11,363	75%	8,522										8,522
Bayside	46,609	100%	46,609	58,572	100%	58,572							272,727	15%	40,909				146,090
Cocoa	23,018	100%	23,018																23,018
Cocoa Beach				9,372	100%	9,372	56,763	100%	56,763	21,090	100%	21,090	272,727	15%	40,909				128,134
Eau Gallie							63,045	75%	47,284										47,284
Edgewood J/S							45,454	75%	34,091										34,091
Heritage	51,781	75%	38,836	70,290	100%	70,290													109,126
Melbourne	34,518	83%	28,650				54,818	100%	54,818										83,468
Merritt Island	31,072	100%	31,072	18,745	100%	18,745				3,209	100%	3,209	272,727	15%	40,909				93,935
Palm Bay HS	31,072	75%	23,304				65,418	100%	65,418										88,722
Rockledge	23,018	75%	17,264				26,454	83%	21,957										39,220
Satellite	41,427	75%	31,070	46,863	100%	46,863	53,590	100%	53,590	36,181	100%	36,181	272,727	15%	40,909				208,613
Space Coast	23,018	100%	23,018																23,018
Titusville	31,072	100%	31,072	46,863	100%	46,863							272,727	15%	40,909	104,409	100%	104,409	223,253
West Shore J/S							27,827	100%	27,827										27,827
Viera	41,427	100%	41,427	53,890	100%	53,890							272,727	15%	40,909				136,226
Misc Sites																			
0081 Whip Hills																			
1018 S. A. Alt.	3,909	100%	3,909																3,909
9880 ESF	34,518	100%	34,518																34,518
TOTAL	676,863		612,003	603,853		572,121	1,337,475		1,085,490	60,480		60,480	1,909,089		286,363	104,409		104,409	2,720,867



HVAC Energy Reduction Improvements and Facilities Modifications

		Facilities Modifications			HVAC 1			HVAC 2			HVAC 3			School Total
Resource Conservation Measure (RCM)→		Portable Changes			Proliphix Thermostat			Dry Storage Mini-Split System			Misc HVAC Modifications			
School	Est Annual Savings (kwh)	Net Change in Quan	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)		
Elem Schools														
Atlantis							3,000	100%	3000				3,000	
Audubon				-32,000	100%	-32,000							-32,000	
Cambridge										-78,000	100%	-78,000	-78,000	
Challenger 7				-32,000	100%	-32,000							-32,000	
Columbia				-32,000	100%	-32,000							-32,000	
Creel	9,090	1	9,090				3,000	100%	3000				12,090	
Croton	9,090	1	9,090										9,090	
Discovery	9,090	-2	-18,180				3,000	100%	3000				-15,180	
Endeavour	9,090	5	45,450										45,450	
Enterprise	9,090	-2	-18,180				3,000	100%	3000				-15,180	
Fairglen				-22,800	100%	-22,800							-22,800	
Gardendale				-32,000	100%	-32,000							-32,000	
Gemini				-22,800	100%	-22,800				-104,400	100%	-104,400	-127,200	
Golfview	9,090	2	18,180										18,180	
Harbor City	9,090	0	909	-22,800	100%	-22,800							-21,891	
Holland				-4,600	100%	-4,600							-4,600	
Indialantic				-32,000	100%	-32,000				-208,900	100%	-208,900	-240,900	
Jupiter							3,000	100%	3000				3,000	
Lewis Carroll	9,090	-3	-27,270				3,000	100%	3000				-24,270	
Longleaf							3,000	100%	3000				3,000	
Manatee	9,090	-4	-36,360										-36,360	
McAuliffe	9,090	-1	-9,090	-32,000	100%	-32,000	-19,400	100%	-19,400				-60,490	
Meadowlane Pri							3,000	100%	3000				3,000	
Meadowlane Int.	9,090	6	54,540										54,540	
MILA				-22,800	100%	-22,800	-12,800	100%	-12,800				-35,600	
Mims										-130,600	100%	-130,600	-130,600	
Oak Park				-32,000	100%	-32,000							-32,000	
Ocean Breeze				-32,000	100%	-32,000							-32,000	
Palm Bay ES				-22,800	100%	-22,800							-22,800	
Pinewood				-38,600	100%	-38,600							-38,600	
Quest	9,090	1	9,090										9,090	
Riverview	9,090	-1	-9,090										-9,090	
Riviera							3,000	100%	3000				3,000	
Sabal	9,090	1	9,090	-32,000	100%	-32,000	-19,400	100%	-19,400				-42,310	
Saturn				-32,000	100%	-32,000							-32,000	
Sea Park				-32,000	100%	-32,000							-32,000	
Sherwood							3,000	100%	3000				3,000	
South Lake				-22,800	100%	-22,800							-22,800	
Stevenson				-79,800	100%	-79,800							-79,800	
Suntree	9,090	-4	-36,360										-36,360	
Surfside				-32,000	100%	-32,000							-32,000	
Tropical				-32,000	100%	-32,000							-32,000	
Turner										-104,400	100%	-104,400	-104,400	
University Park				-32,000	100%	-32,000				-156,700	100%	-156,700	-188,700	
West Melbourne				-22,800	100%	-22,800							-22,800	
Williams	9,090	-5	-45,450										-45,450	

Resource Conservation Measure (RCM)→	Facilities Modifications			HVAC 1			HVAC 2			HVAC 3			School Total
	Portable Changes			Proliphix Thermostat			Dry Storage Mini-Split System			Misc HVAC Modifications			
School	Est Annual Savings (kwh)	Net Change in Quan	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	Est Annual Savings (kwh)	Duration (FY%)	Target Reduced by (kwh)	
Middle Schools													
DeLaura				-32,000	100%	-32,000							-32,000
Hoover				-32,000	100%	-32,000							-32,000
Jackson				-22,800	100%	-22,800							-22,800
Jefferson				-22,800	100%	-22,800							-22,800
Johnson				-32,000	100%	-32,000							-32,000
Madison				-22,800	100%	-22,800							-22,800
Southwest	9,090	-9	-81,810				3,000	100%	3000				-78,810
Stone				-32,000	100%	-32,000							-32,000
High Schools													
Astronaut				-45,500	100%	-45,500							-45,500
Bayside	9,090	4	36,360										36,360
Satellite				-45,500	100%	-45,500	-19,400	100%	-19400	-29,300	100%	-29,300	-94,200
Space Coast	9,090	-13	-118,170	-4,600	100%	-4,600	3,000	100%	3000				-119,770
Titusville				-32,000	100%	-32,000	-19,400	100%	-19400	-29,300	100%	-29,300	-80,700
West Shore J/S	9,090	-1	-9,090										-9,090
Misc Sites													
0081 Whip Hills				22,800	100%	22,800							22,800
TOTAL	181,800		-217,251	-1,031,800		-1,031,800	-54,400		-54,400	-841,600		-841,600	-2,145,051