



Energy Update 2012



Scottsdale *Unified*
SCHOOL DISTRICT

Agenda

1. Performance Contracting

2. Existing Operational Solar

3. New Solar update

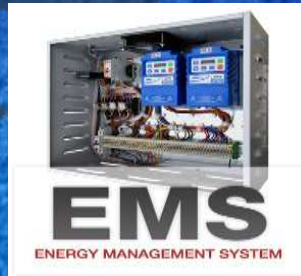
Energy Efficient Upgrades

Desert Mountain H.S. and Mountainside M.S.

New 550 ton High Efficiency Chiller with VFD's and high efficiency motors



New Central Plant EMS Controls

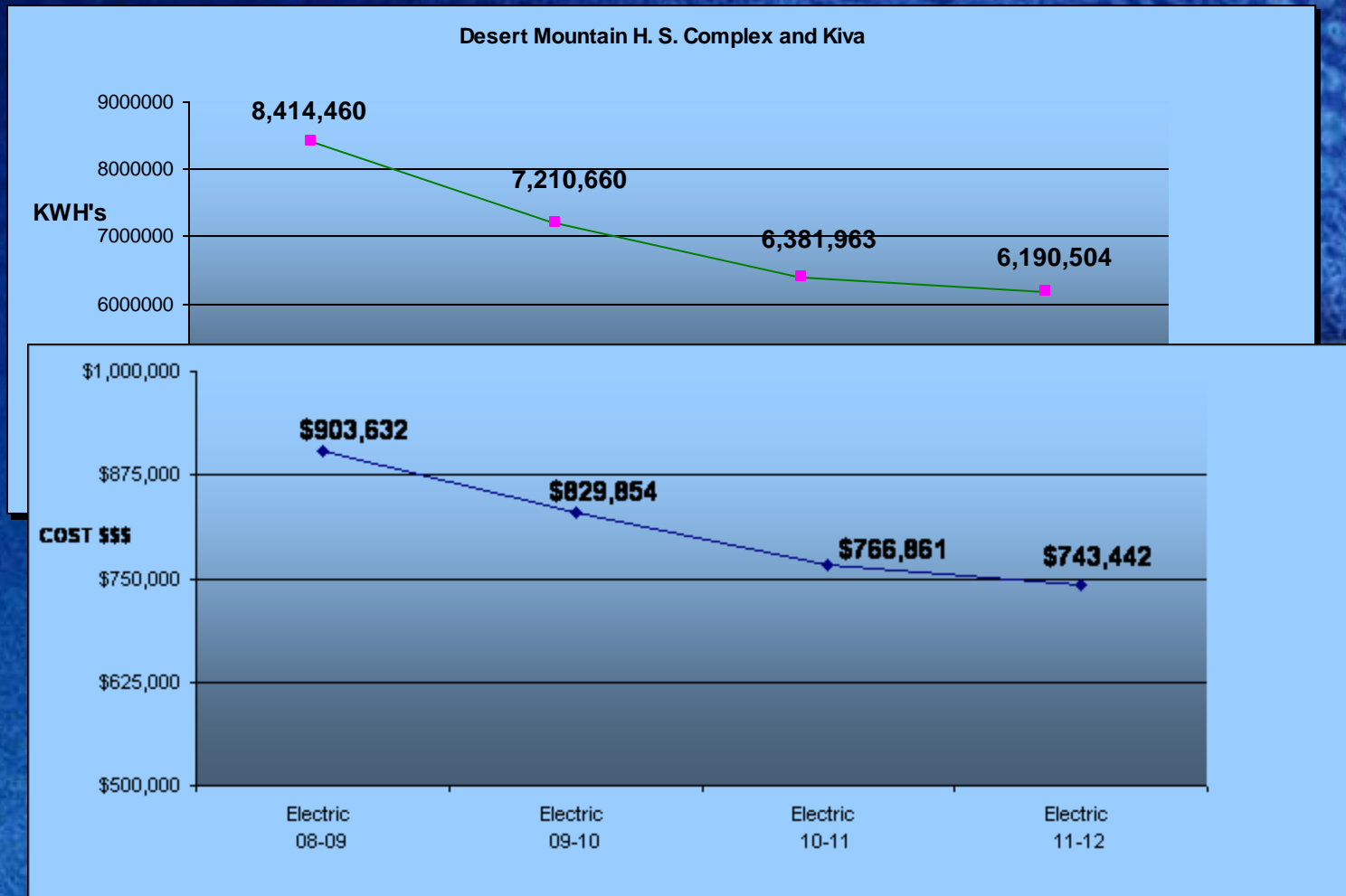


New Lighting Upgrades



Desert Mountain H.S. Complex and Kiva E.S.

Consumption vs Cost Overlay



Desert Mountain H.S Complex and Kiva

KWH Reduction

08-09	09-10	10-11	11-12 projected	Total KWH reduction Compared to 08-09
DMHS KWH Reduction	1,104,600	1,109,297	2,079,931	4,293,828
KIVA KWH Reduction	99,200	123,200	144,025	366,425
Combined	1,208,800	1,232,497	2,223,956	4,660,253

Desert Mountain H.S Complex and Kiva

Avoided Cost

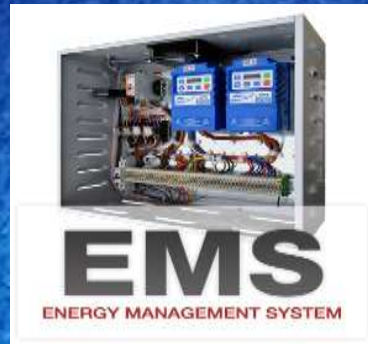
08-09	09-10	10-11	11-12 projected	Avoided Cost Compared to 08-09
DMHS avoided Cost	\$120,539	\$214,890	\$249,925	\$585,354
KIVA avoided Cost	\$16,764	\$22,487	\$26,288	\$65,540
Natural Gas Cost Savings	-\$3,737	\$10,523	\$11,244	\$18,010
Combined Savings	\$133,566	\$247,900	\$287,457	\$668,904

Chaparral High School Efficiency upgrades

29 New HVAC
units in Library



New EMS
Controls

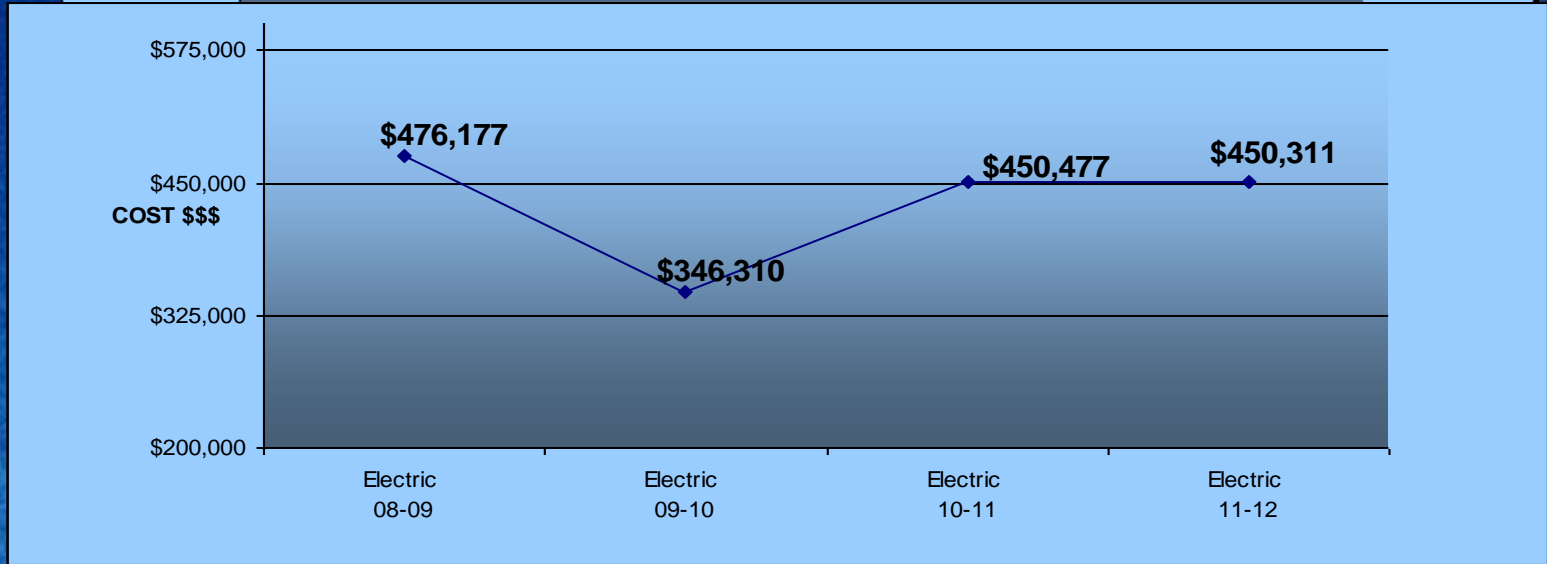
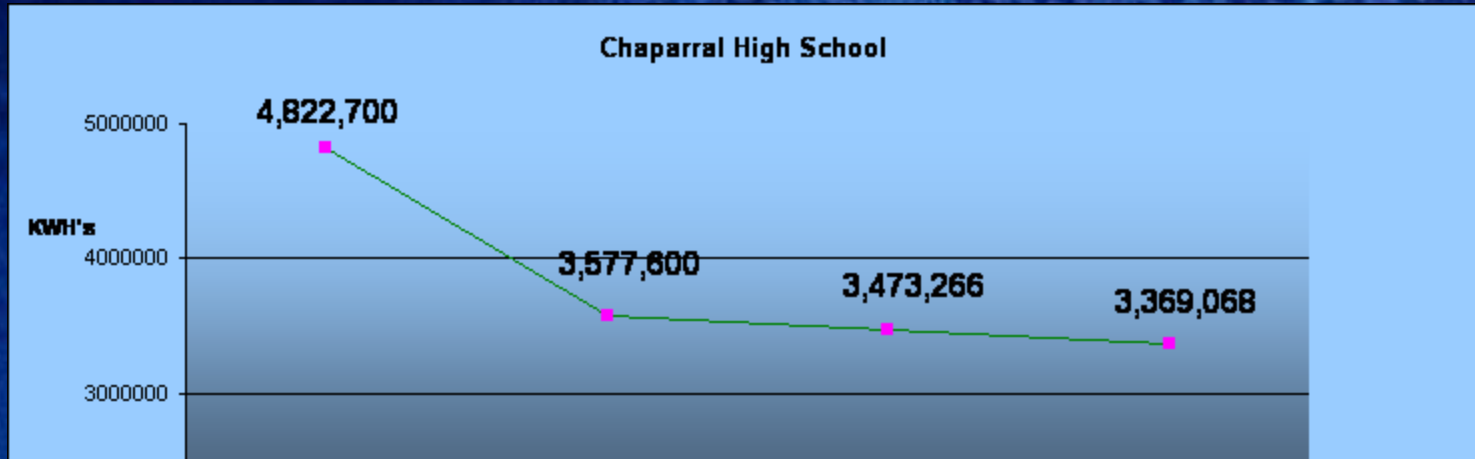


New Lighting
Controls



Chaparral High School

Consumption vs Cost Overlay



Chaparral High School

KWH Reduction

08-09	09-10	10-11	11-12 projected	Total KWH reduction Compared to 08-09
Chaparral KWH Reduction	1,245,100	1,349,434	1,453,632	4,404,171

Avoided Cost

08-09	09-10	10-11	11-12 projected	Total averted cost Compared to 08-09
Chaparral averted Cost	\$120,525	\$175,020	\$194,293	\$489,837
Natural Gas Savings	\$1,886	\$6,900	\$7,248	\$16,034
Combined	\$122,411	\$181,920	\$201,541	\$505,871

Anasazi, Desert Canyon E.S. and M.S., Copper Ridge E.S. and M.S., Arcadia, Saguaro, and Coronado H.S Efficiency upgrades

2 New 550 ton High
Efficiency Chillers and
Cooling Towers



New EMS Controls

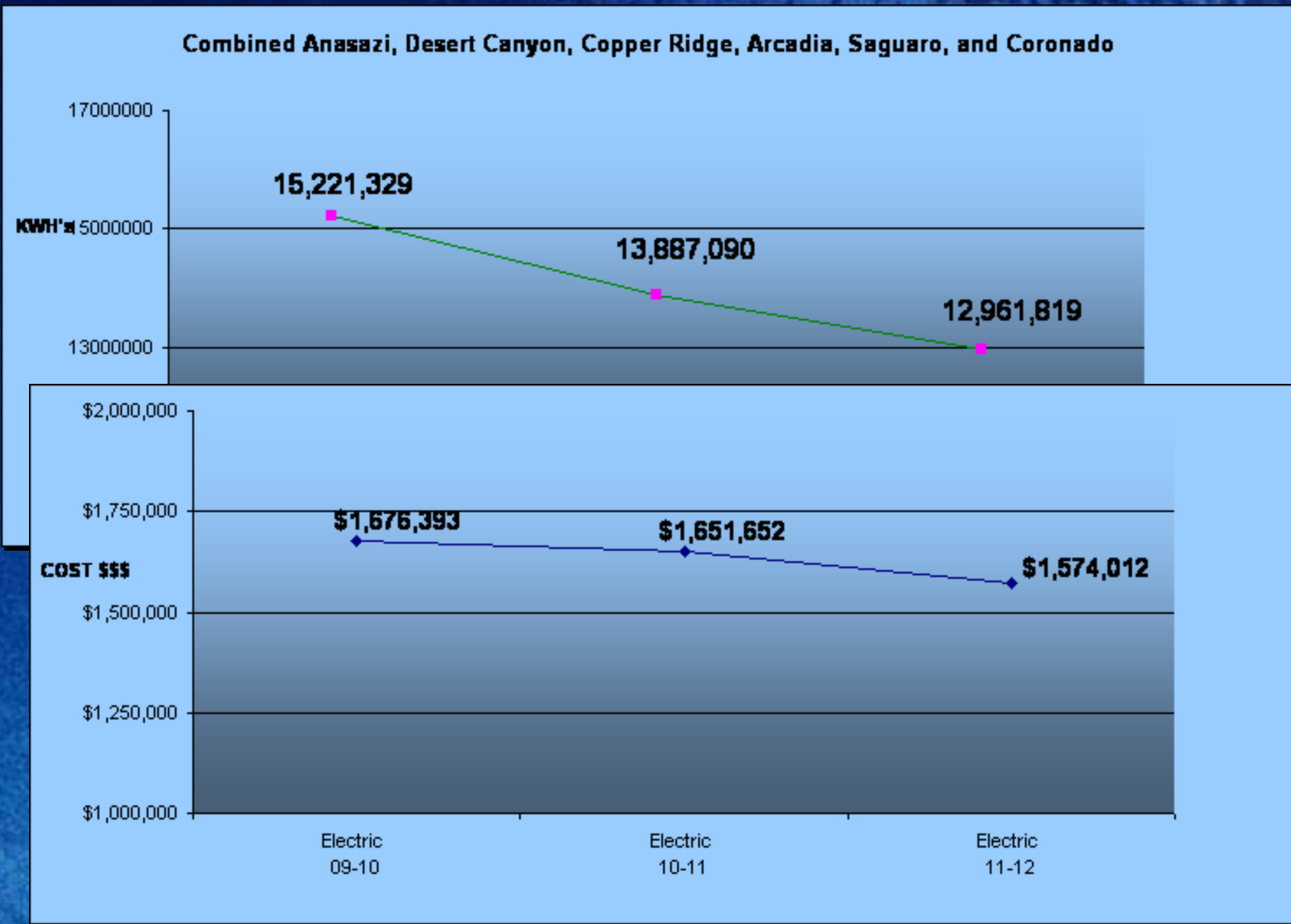


New Lighting
Controls and
Exterior Lighting



Anasazi, Desert Canyon E.S. and M.S., Copper Ridge E.S and M.S., Arcadia, Saguaro, and Coronado H.S

Consumption vs Cost Overlay



**Anasazi, Desert Canyon E.S. and M.S., Copper Ridge E.S and M.S.,
Arcadia, Saguaro, and Coronado H.S**

Efficiency upgrades

KWH Reduction

09-10	10-11	11-12 projected	Total KWH reduction Compared to 09-10
Combined KWH Reduction	1,334,239	2,259,510	3,593,748

Avoided Cost

09-10	10-11	11-12 projected	Total averted cost Compared to 09-10
Combined averted Cost	\$158,641	\$278,051	\$436,692
Natural Gas Savings	\$-748	\$4,187	\$3,439
Combined	\$157,893	\$282,238	\$440,131

Redfield, Sequoya, Laguna, and Cochise Efficiency upgrades

200 + High Efficient Heat pumps
and Cooling Towers



New EMS
Controls

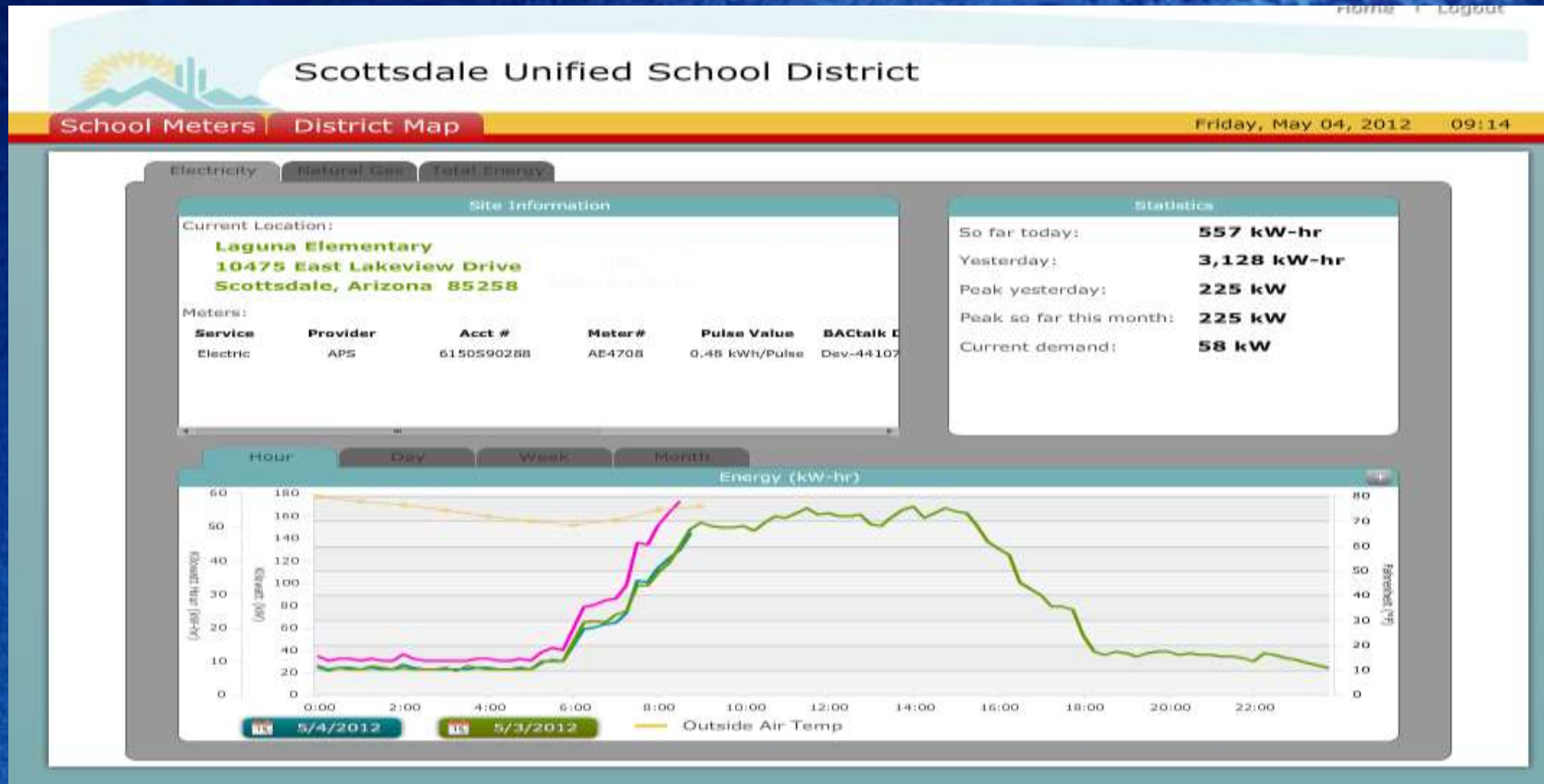


New Lighting
Controls and
Exterior Lighting



Redfield, Sequoya, Laguna, and Cochise Efficiency upgrades

New Energy Dashboards



Project substantially complete 4/27/12. No significant recordable data yet.

Performance Contracting Results

	Cost averted/year	Yearly Payment	Total Deviation
DMHS Complex and Kiva	\$222,968	\$221,367	+\$1,601
Chaparral H.S.	\$168,623	\$72,402	+\$96,221
Anasazi, Copper Ridge, Saguaro, Arcadia, Coronado, and DCMS	\$220,066	\$253,430	-\$33,364
Laguna, Sequoya, Cochise, and Redfield	Too early. No significant data yet.		
Combined Savings	\$611,657	\$547,199	\$64,458

Solar at SUSD!



Coronado Rooftop 380 KW array



Desert Mountain High School- 875 KW array



Desert Mountain High School- 875 KW array



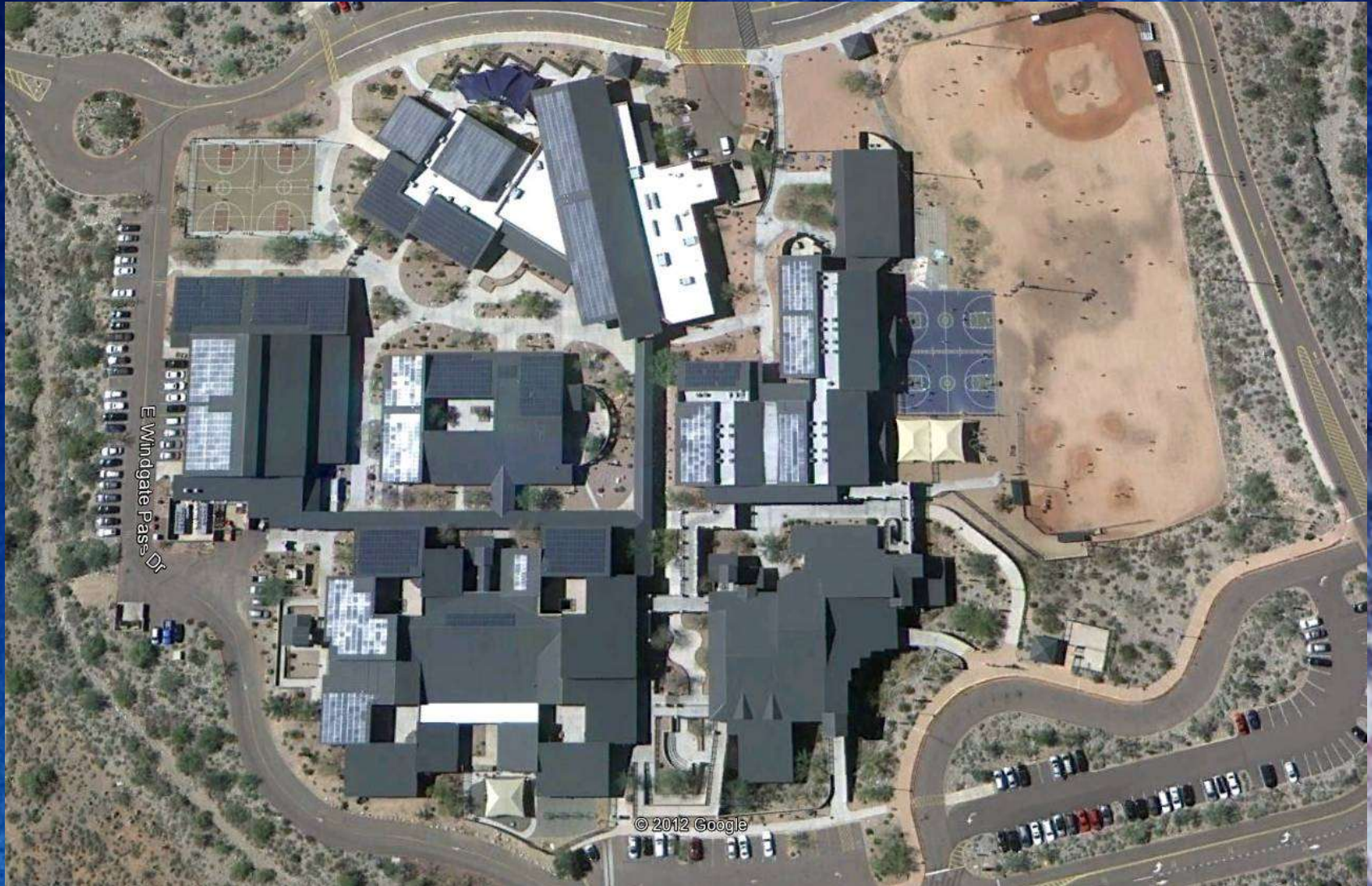
Desert Mountain High School- 875 KW array



Chaparral High School- 721 KW array



Copper Ridge Rooftop Solar 500 KW array



Copper Ridge Rooftop Solar 500 KW array



Arcadia Shade Structure Solar

300 KW array



Arcadia Shade Structure Solar

300 KW array



Saguaro Rooftop Solar

296 KW array



Saguaro Rooftop Solar

296 KW array



Tavan Rooftop Solar 13.2 KW array donated by SRP



Solar Power Purchase Agreements

	Cost/KWH	Average Utility Cost/KWH 2012	%Savings On each Solar KWH
Coronado H.S.	\$.09	\$.1231	27%
Chaparral H.S.	\$.107	\$.134	20%
Arcadia H.S.	\$.107	\$.120	11%
Saguaro H.S	\$.0725	\$.107	32%
Copper Ridge Complex	\$.09	\$.124	27%
Desert Mountain Complex	\$.09	\$.12	25%

New Solar Shade Structures 5.5 MW total addition



Desert Mountain Solar Shade Structure 1200 KW array



Desert Mountain Solar Shade Structure 1200 KW array



Chaparral Solar Shade Structure

991 KW array



Chaparral Solar Shade Structure

991 KW array



Solar Shade Structure Under Construction

Desert Canyon Complex	800 KW array
Copper Ridge Complex	350 KW array
Sequoia E.S.	266 KW array
Cherokee E.S.	396 KW array
Cochise E.S.	365 KW array
Cheyenne Traditional	321 KW array
Laguna E.S.	276 KW array
Redfield E.S.	287 KW array
Anasazi E.S.	279 KW array

Current Total Solar Output YTD

- Coronado Lifetime Output= 1,459,686 KWH's
- DMHS Lifetime Output= 2,581,687 KWH's
- Copper Ridge Lifetime Output=1,054,856 KWH's
- Chaparral Lifetime Output= 1,661,838 KWH's
- Arcadia Lifetime Output= 204,505 KWH's
- Saguaro Lifetime Output= 153,248 KWH's
- **TOTAL = 7,115,820 KWH's**

Total Solar Output EPA Correlations

- **TOTAL = 7,115,820 KWH's**

Reduction

- **4907 Metric Tons of CO2**
- **926 vehicles per year**
- **610 Home annual electricity usage**
- **26.8 rail cars of coal burned**

