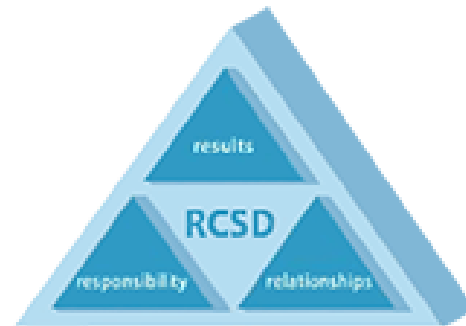


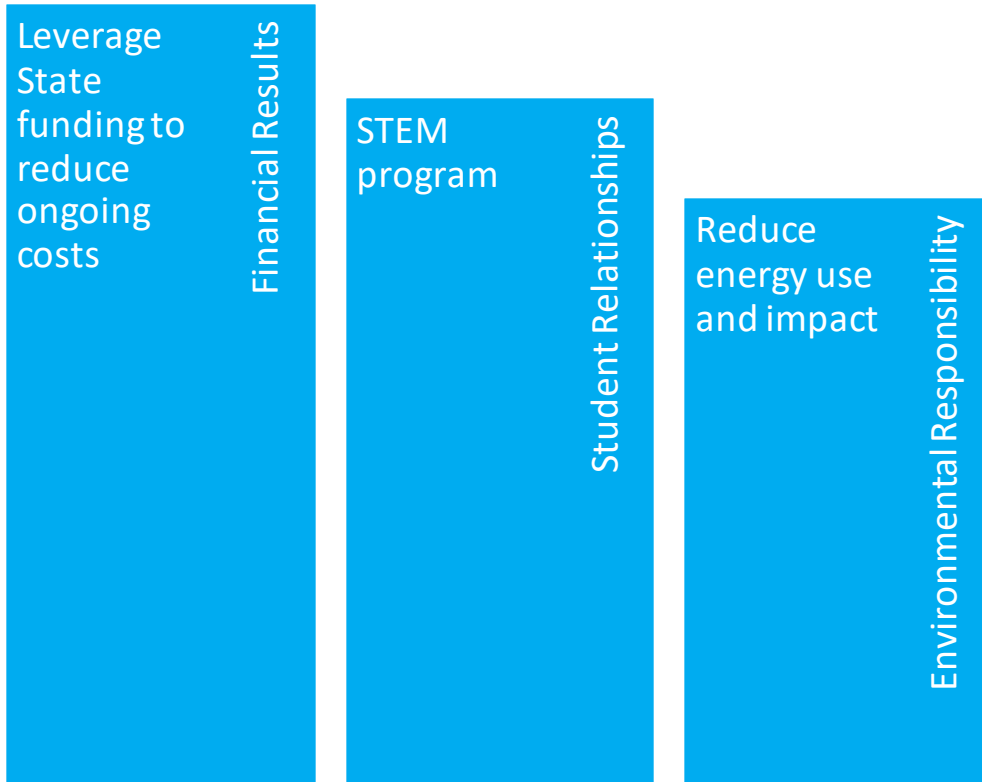


Ravenswood City School District
Solar, Lighting, and STEAM Program
3.25.2021



Program Overview

Program Pillars



Program Timeline

December 2018:	District selects ENGIE as energy partner in RFQ
Jan. – March 2019:	Energy audits and program design
May 2019:	Energy Services Contract approved contingent on funding (Prop 39 and CEC loan)
Summer 2019:	Prop 39 work completed (Costaño lighting)
Fall 2019:	CEC loan denied
Summer 2020:	CO#1 approved (removed closed sites)
	Additional Prop 39 work (Costaño HVAC controls)
Fall 2020:	CEC loan approved for \$3 MM
Tonight:	CO#2 Approval
May 2021:	CEC loan finalization
Summer 2021:	Lighting construction start
	Solar construction start (BH, LRM)

Energy Program Highlights

- **527 kW solar shade canopies across four sites**
- **LED lighting at 2 sites (RMS, BH)**
- **Production guarantee backed by ENGIE**
 - If production falls short, ENGIE writes a check
- **Energy Savings of 963,700 kWh in first year**
 - Equivalent to GHG savings of 147 cars driven for one year, or
 - Carbon sequestered by 11,267 tree seedlings grown for 10 years
- **STEAM Education Connections**
 - STEAM resources, books for each school's STEAM library
 - Middle School Engineering Design Challenge
- **Funded by California Energy Commission ECAA-Ed loan**
 - 0% interest, 19-year term
 - Energy savings exceed loan payments each year
 - Expected finalization in May 2021
 - 18 months to project completion (End of Sept 22)
 - Competitive process



Financial Overview

Year	Annual Solar Production (kWh)	Avoided Electric Rate (\$/kWh)	Solar Electricity Savings	Solar O&M and M&V Costs	Net Solar Project Savings	Lighting Savings	O&M Savings	Total Program Savings	CEC Loan Payment (19 yr term)	Project Net Benefit	Cumulative Program Savings
	A	B	C = A * B	D	E = C - D	F	G	H = E+F+G	I	J = H - I	K
1	823,534	\$0.160	\$131,671	\$11,978	\$119,693	\$32,115	\$7,500	\$159,308	\$157,895	\$1,413	\$1,413
2	819,416	\$0.167	\$136,908	\$12,356	\$124,552	\$33,560	\$7,725	\$165,837	\$157,895	\$7,943	\$9,356
3	815,319	\$0.175	\$142,353	\$12,745	\$129,608	\$35,070	\$7,957	\$172,635	\$157,895	\$14,741	\$24,096
4	811,243	\$0.182	\$148,016	\$13,147	\$134,868	\$36,649	\$8,195	\$179,712	\$157,895	\$21,818	\$45,914
5	807,186	\$0.191	\$153,903	\$13,562	\$140,341	\$38,298	\$8,441	\$187,080	\$157,895	\$29,185	\$75,099
6	803,151	\$0.199	\$160,024	\$9,642	\$150,383	\$40,021	\$8,695	\$199,098	\$157,895	\$41,204	\$116,303
7	799,135	\$0.208	\$166,389	\$9,931	\$156,458	\$41,822	\$8,955	\$207,236	\$157,895	\$49,341	\$165,644
8	795,139	\$0.218	\$173,007	\$10,229	\$162,779	\$43,704	\$9,224	\$215,707	\$157,895	\$57,812	\$223,456
9	791,163	\$0.227	\$179,889	\$10,536	\$169,353	\$45,671	\$9,501	\$224,525	\$157,895	\$66,630	\$290,086
10	787,208	\$0.238	\$187,044	\$10,852	\$176,192	\$47,726	\$9,786	\$233,704	\$157,895	\$75,809	\$365,895
11	783,272	\$0.248	\$194,484	\$11,177	\$183,306	\$49,874	\$10,079	\$243,259	\$157,895	\$85,364	\$451,259
12	779,355	\$0.259	\$202,219	\$11,513	\$190,707	\$52,118	\$10,382	\$253,206	\$157,895	\$95,311	\$546,571
13	775,458	\$0.271	\$210,262	\$11,858	\$198,404	\$54,463	\$10,693	\$263,561	\$157,895	\$105,666	\$652,237
14	771,581	\$0.283	\$218,626	\$12,214	\$206,412	\$56,914	\$11,014	\$274,340	\$157,895	\$116,445	\$768,682
15	767,723	\$0.296	\$227,321	\$12,580	\$214,741	\$59,475	\$11,344	\$285,561	\$157,895	\$127,666	\$896,348
16	763,885	\$0.309	\$236,363	\$12,958	\$223,406	\$62,152	\$11,685	\$297,242	\$157,895	\$139,347	\$1,035,696
17	760,065	\$0.323	\$245,765	\$13,346	\$232,418	\$64,948	\$12,035	\$309,402	\$157,895	\$151,507	\$1,187,203
18	756,265	\$0.338	\$255,540	\$13,747	\$241,793	\$67,871	\$12,396	\$322,061	\$157,895	\$164,166	\$1,351,368
19	752,484	\$0.353	\$265,704	\$14,159	\$251,545	\$70,925	\$12,768	\$335,238	\$157,895	\$177,344	\$1,528,712
20	748,721	\$0.369	\$276,272	\$14,584	\$261,688	\$74,117	\$13,151	\$348,957		\$348,957	\$1,877,669
21	744,977	\$0.386	\$287,261	\$15,021	\$272,240	\$77,452		\$349,692		\$349,692	\$2,227,360
22	741,253	\$0.403	\$298,687	\$15,472	\$283,215	\$80,938		\$364,152		\$364,152	\$2,591,513
23	737,546	\$0.421	\$310,567	\$15,936	\$294,631	\$84,580		\$379,211		\$379,211	\$2,970,723
24	733,859	\$0.440	\$322,920	\$16,414	\$306,506	\$88,386		\$394,891		\$394,891	\$3,365,615
25	730,189	\$0.460	\$335,764	\$16,907	\$318,857	\$92,363		\$411,220		\$411,220	\$3,776,835
26	726,538	\$0.481	\$349,119	\$17,414	\$331,705	\$0		\$331,705		\$331,705	\$4,108,540
27	722,906	\$0.502	\$363,005	\$17,936	\$345,069	\$0		\$345,069		\$345,069	\$4,453,609
28	719,291	\$0.525	\$377,444	\$18,474	\$358,969	\$0		\$358,969		\$358,969	\$4,812,578
29	715,695	\$0.548	\$392,457	\$19,029	\$373,428	\$0		\$373,428		\$373,428	\$5,186,006
30	712,116	\$0.573	\$408,067	\$19,600	\$388,467	\$0		\$388,467		\$388,467	\$5,574,473
Total	22,995,673		\$7,357,051	\$522,495	\$6,941,734	\$1,431,212	\$201,528	\$8,574,473	\$3,000,000	\$5,574,473	

Solar Design Principles

- Aim to offset up to 100% of site usage (kW)
- Account for planned energy efficiency
- Build close to main electrical service
- Prioritize areas that provide shade for students & staff
- Avoid shade from buildings, trees, and utility poles
- Avoid easements
- Align with future plans & upgrades
- Avoid hazards to the panels
- Avoid hazards to building users
- Meet DSA and CGS requirements



Los Robles Elementary & McNair Academy

122 kW Parking and Shade Canopies



Belle Haven Elementary

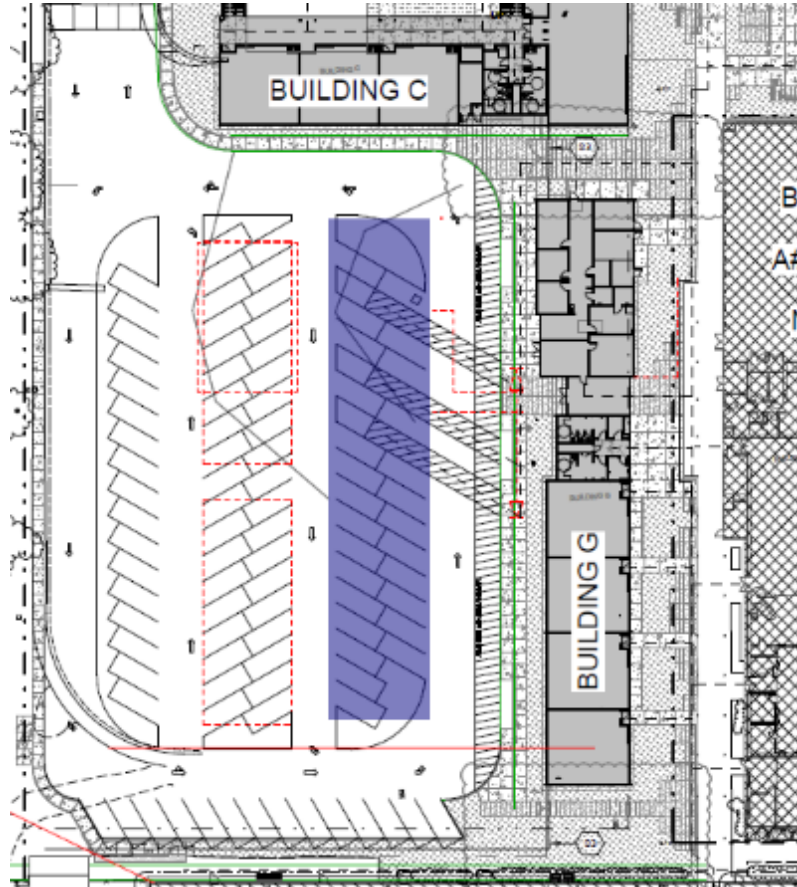
113 kW-dc Playground Shade Canopies



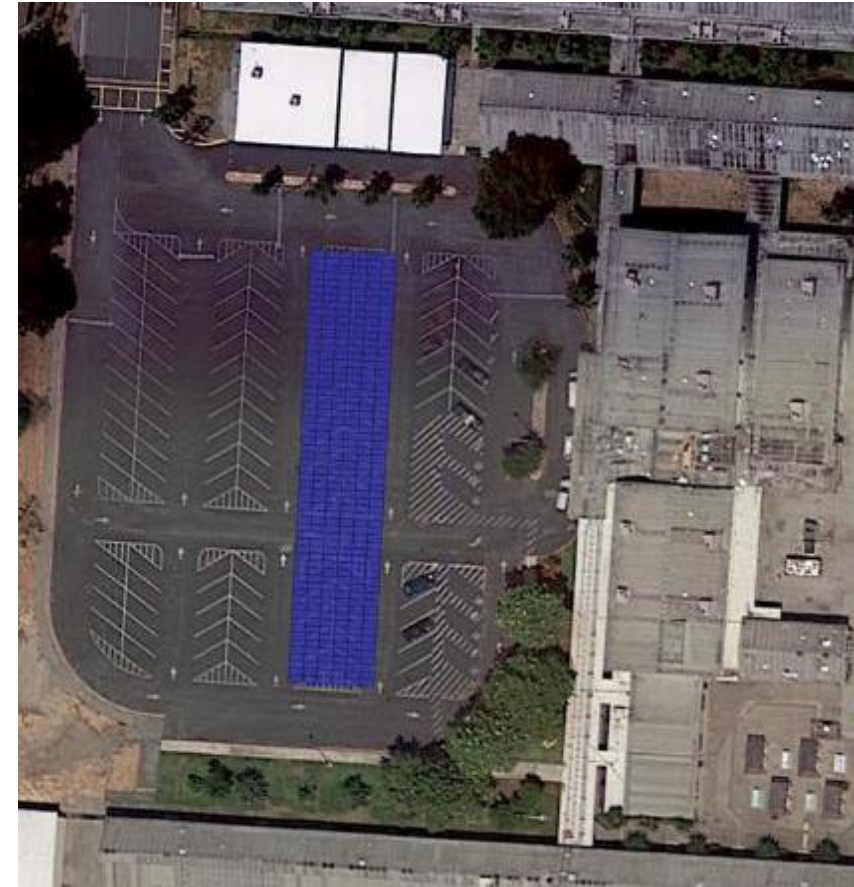
Ravenswood Cesar Chavez Middle School

162 kW-dc Parking Canopy, accommodates new site plans

Shown on New Site Plans



Shown on Current Site View



Costaño Elementary School

130 kW-dc Parking Canopy



Solar Canopy Styles

Shade Canopies



Solar Canopy Styles

Shade Canopies



Solar Canopy Styles

Parking Canopies



Partner Highlight

Hayward USD

- New solar structures will generate 8,100,000 kWh in the first year, savings 5,727 metric tons of CO2 per year.
- The energy upgrades are integrated into the student experience through hands-on learning activities and STEAM professional development sessions for teachers
- \$65MM in General Fund savings over the project lifetime
- 5.3 MW solar PV across all District sites
- 360 kW/720 kWh battery storage systems across three sites
- Electric vehicle (EV) charging stations at 22 District sites
- Real-time energy data available via the user-friendly UtilityVision™ dashboard



Thank You

