



Solar & Energy Efficiency Strategies

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Solar & Energy Efficiency Strategies Discussion Topics

- Welcome & Introductions
- Energy 101
- Current status of Energy Infrastructure
- Options
- Recommendations
- Action plan, Process & Timeline



Energy 101

Topics in this section:

- Solar
- Battery
- Infrastructure



Energy 101: Solar

Solar Photovoltaic Technology

- Panels of solar cells that convert light energy to electricity
- Can be installed in fields, as carports, on rooftops
- This energy is utilized to power electric devices & equipment



Results & Benefits

- Savings: Lower Bills + Generation Credits
- Green impact: Reduces carbon footprint
- Functional: Shading





Energy 101: Battery

Battery Storage

- Stores energy from solar or the grid during low cost periods
- Discharges when energy costs are high
- Safe commercial usage



Results & Benefits

- Reduces energy costs
- Improves solar financials and cash flow
- Significant incentive opportunity
- Risk hedge against utility uncertainty





Energy 101: Infrastructure

Infrastructure

- Lighting improvements
- HVAC replacement
- Building controls optimization

Results & Benefits

- Best “bang for the buck”
- Renews critical equipment
- Improved learning environments
- Financial savings
- Environmental impact
- Right-sizing energy





Current Status: Energy Infrastructure

Topics in this section:

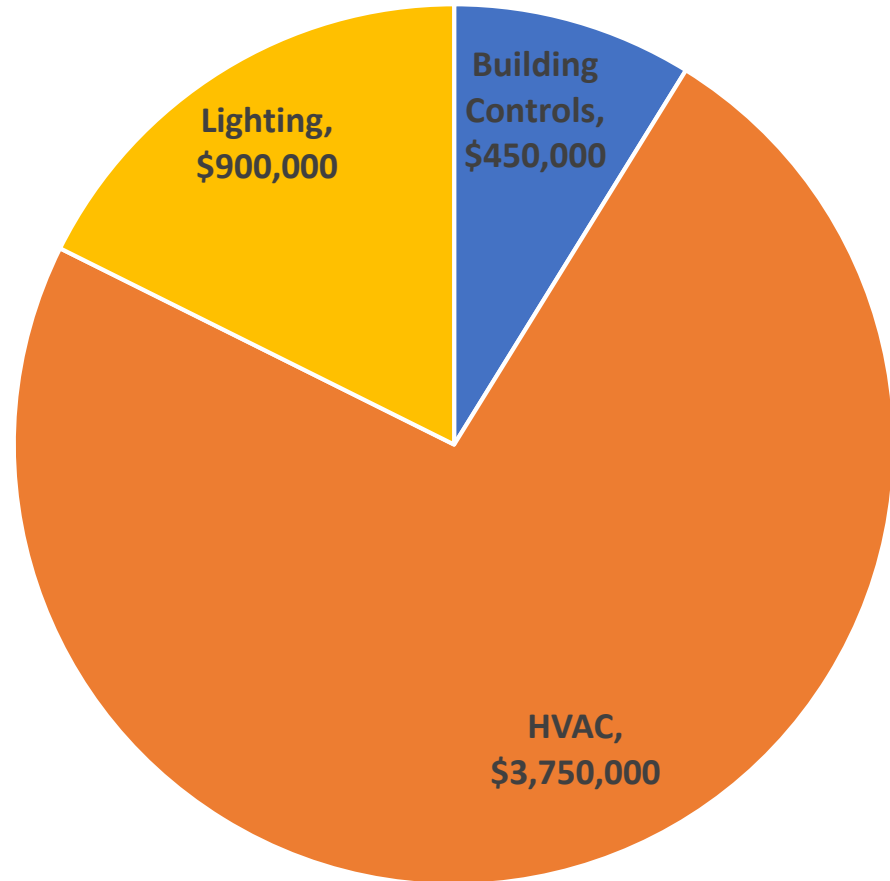
- \$ Need BEFORE Proposition 39 & Bond
- \$ Need AFTER Proposition 39 & Bond



Current Status: Energy Infrastructure

Total Need **BEFORE**
Prop39 & Bond Activities:

\$5,100,000





Current Status: Energy Infrastructure

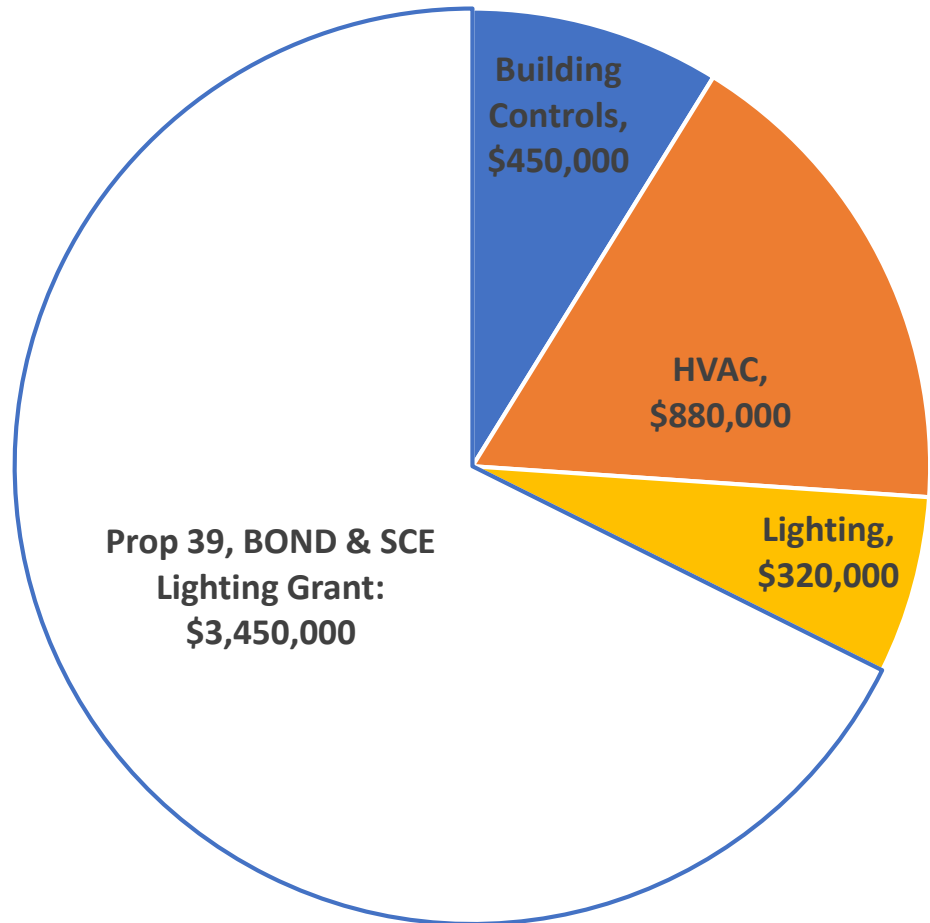
Remaining Need **AFTER**
Prop39 & Bond Activities:

\$1,650,000

**Prop 39, Bond & SCE
Grant Projects:**

Lighting:
Garvey, Duff, & DO

HVAC:
Garvey, Temple, Dewey,
Rice, Duff, & DO





Options

Topics in this section:

- Solar
- Battery
- Infrastructure



Options: Solar

	Direct Purchase	Power Purchase Agreement (PPA)
Pros	<ul style="list-style-type: none"> No long-term 3rd party commitment Realize the maximum savings Control 	<ul style="list-style-type: none"> No capital outlay No staff maintenance Defray capital risk
Cons	<ul style="list-style-type: none"> Ongoing maintenance Large capital investment 	<ul style="list-style-type: none"> Financial instability of PPA providers (No financial impact on District) Reduced savings
Installation Cost	\$500K-\$1M per site	\$0
Savings (20 year term)	\$6.7 M	\$1.0 M
Break-even/Return-on-investment (ROI)	13.5 years	N/A



Options: Battery

	Direct Purchase	Shared Savings Programs (SSP)
Pros	<ul style="list-style-type: none"> No long-term 3rd party commitment Realize the maximum savings District captures rebates 	<ul style="list-style-type: none"> No capital investment No staff maintenance
Cons	<ul style="list-style-type: none"> Ongoing maintenance Large capital investment 	<ul style="list-style-type: none"> Financial instability of SSP providers (No financial impact on District) Reduced savings
Installation Cost	\$300K-\$500K per site	\$0
Savings (20 year term)	\$3.8 M	\$900 K
Break-even/Return-on-investment (ROI)	8.5 years	N/A



Options: Infrastructure

	Bond
Pros	<ul style="list-style-type: none">• No debt• No cost of financing
Cons	
Installation Cost	\$1.65 M
Savings (20 year term)	\$3.45 M
Break-even/Return-on-Investment (ROI)	11 years



Recommendations

Topics in this section:

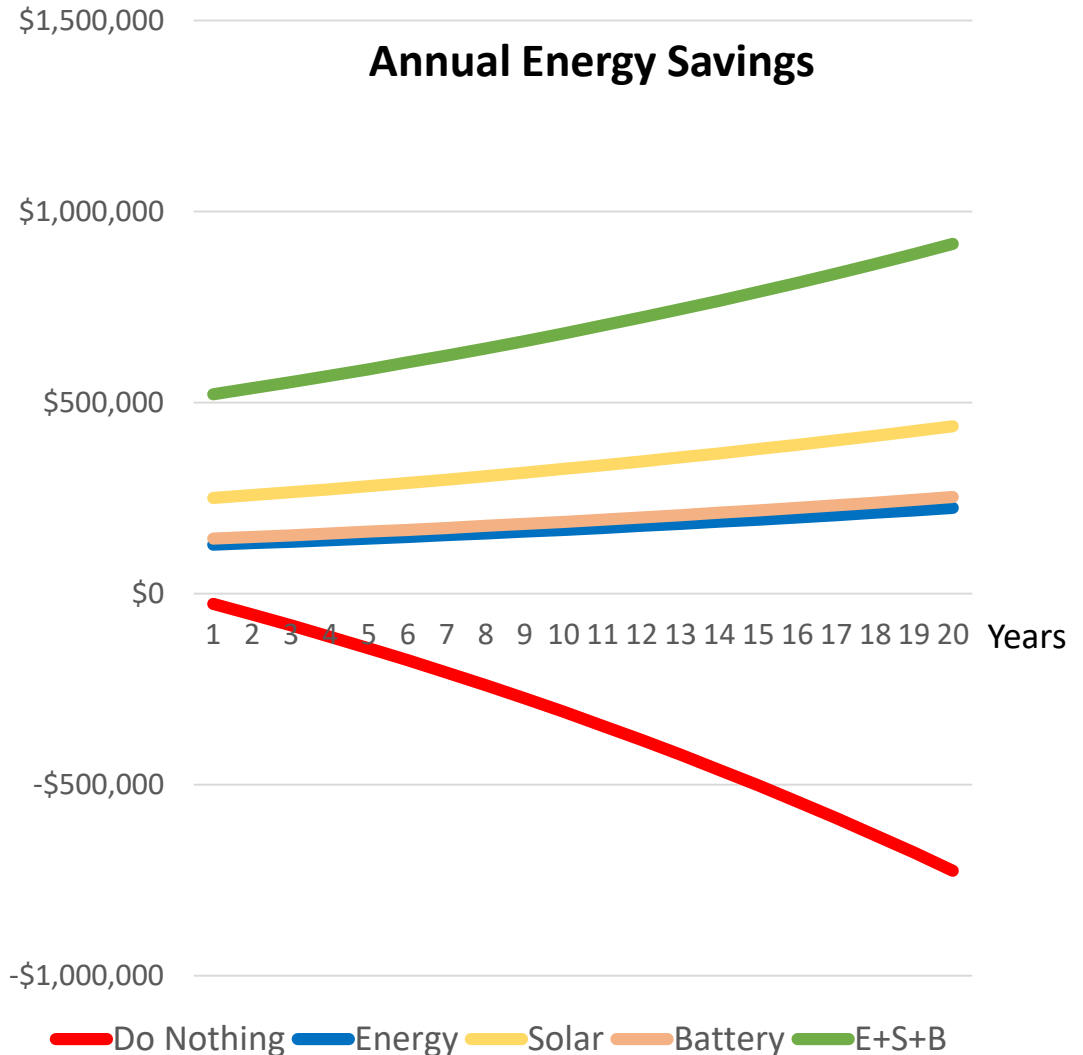
- Analysis of Annual Savings of Options
- Comprehensive Holistic Strategy
- Comparison



Analysis of Annual Savings of Options

Beyond technical, financial impact critical:

- Significant long-term effects on District
- Comprehensive yield best long-term Return-On-Investment (ROI)
- Can't do nothing





Recommendations

(subject to results of feasibility study)

Comprehensive Holistic Strategy

- **Solar - Power Purchase Agreement**
 - Financial due diligence
 - Prioritized implementation: Intermediate schools first + Elementary schools with large land
- **Battery - Shared Savings Program**
- **Infrastructure** - Finish upgrades (HVAC, Lighting, Controls)

BENEFITS TO THE DISTRICT OF COMPREHENSIVE APPROACH:

- Best financial impact
- Best environmental impact
- Best functional impact



Next Steps

- **December 2018:** Scope of work (Solar/Battery plan)
Procurement/Request for Proposal
- **February 2019:** Board Approval
- **June 2019:** Construction Kickoff