

California Transit Association

Beyond the Vehicle
Clean Green and Sustainable
Reducing Cost and Emissions through Sustainable
Elements

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S E R V I C E S

Presentation Summary

- ◆ Bus operations and maintenance facility
- ◆ Why Solar Power Generation is a great fit
- ◆ Energy and Operating Cost Savings
- ◆ Capital Cost Reduction (Rebates)
- ◆ GHG Emissions Reduction

Facilities and Solar

- ◆ Bus Operations and Maintenance Facility (50% area under Parking)
- ◆ Solar Panel Systems and Shade Structures (Capital and Operating Cost Savings; GHG Emission Reduction)

Savings and Green

- ◆ Operations and Maintenance Facility Projects (Typical 100 bus facility)
- ◆ Cost and Energy Savings (40% capital in rebates, > 300K in annual savings)
- ◆ GHG Emission Reduction
- ◆ AVTA, Gardena, VVTA Case Studies

GHG Reduction

Discourage Unnecessary Idling

- Estimated annual CO₂e reduction: 6 tons
- Assumptions:
 - School buses burn a half gallon of fuel per hour of idling
 - 600 gallons of fuel would be saved if 100 buses each reduced idling by 1 hour per month
 - The fuel efficiency of a diesel bus is: 5.4 mpg
- Emission Factor:
 - The GHG Emission Factor for a diesel bus is: 21.166 lbs. of CO₂e per U.S. gallon (CACP software)

Estimated annual CO₂e reduction: 0.5 ton per kW of installed solar capacity

Assumptions:

- For every kW of installed capacity, PV-generated electricity savings translate to an annual reduction of 1 ton CO₂e
- For every kW of installed capacity, PV panels can generate approximately 2,000 kWh of electricity per year.
- Using solar power results in zero emissions

Emission Factor:

- The GHG emission factor for average grid electricity delivered by PG&E in 2005 is: 0.49 lbs. of CO₂e per kWh (PG&E)

AVTA Facility



Solar Shade Structure

AVTA

- ◆ Phase I - 134 kW System (2004)
- ◆ Phase II - 366 kW System (2010)
- ◆ Phase III - 200 kW System (2011)
- ◆ Will ultimately generate 1 million kWh / yr

Roof Mounted Solar



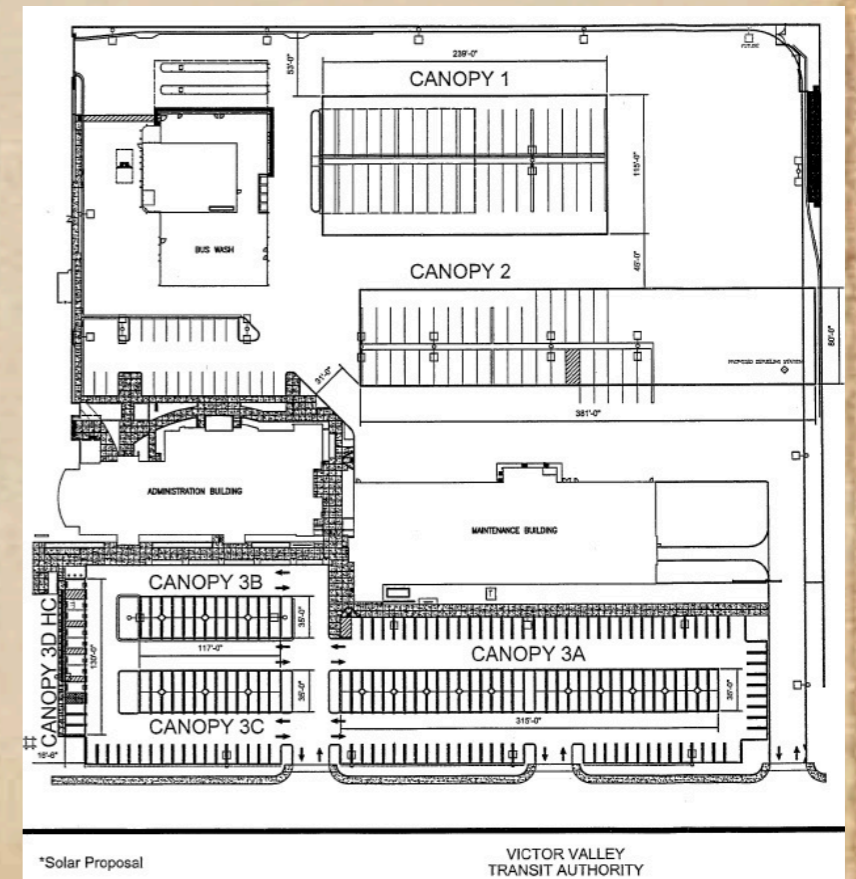
Gardena

- ◆ 100 kW System (2009)
- ◆ Savings / GHG Reductions (50 tons/yr)
- ◆ Will generate 200,000 kWh / year



WTA

- ◆ 1 MW System
- ◆ Will generate 1.7 million kWh/year
- ◆ CNG Plant and Facility
- ◆ Induction Lighting
- ◆ Other LEED Items



Grants and Financing

- ◆ TIGGER (ACTransit, Santa Clarita, LACMTA, North County TD)
- ◆ Financing of local match - using rebates
- ◆ PPA (Is it right for agencies?)
- ◆ Rebates (SCE - Step System)

Conclusion

- ◆ Solar panel system / Shade Structures
 - ◆ Financially viable
 - ◆ Capital and Operating Cost Savings
 - ◆ GHG Reduction (0.5 tons CO₂/kW)
 - ◆ Fossil Fuel Demand Reduction