CALIFORNIA DEPARTMENT OF TRANSPORTATION

# Clean Renewable Energy Bonds Program
# 2011 Annual Report

*Willows Safety Roadside Rest Area*

*Elk Grove Maintenance Station*


*Prepared by:*

*Division of Business, Facilities and Security*
*1120 N Street*
*Sacramento, California*
*April 2011*


Edmund G. Brown Jr., *Governor*

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# 2011 Annual Report
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## EXECUTIVE SUMMARY

### Introduction

California Streets and Highway Codes section 157.8 requires the California Department of Transportation (Caltrans) to annually report to the budget committees of each house of the Legislature with regard to the issuance of Clean Renewable Energy Bonds (CREBs) for financing the acquisition and installation of photovoltaic (solar) energy systems until maturity of the bonds.

The CREBs Report includes the status of each facility on which Caltrans has installed photovoltaic energy systems as part of the CREBs Program; an accounting of the costs for each photovoltaic energy system installed or acquired by the Department; a description of the energy savings Caltrans has achieved by acquiring or installing a photovoltaic energy system; and a review and analysis of the expected cost savings at the time of issuance of the bonds versus actual annual savings.

### Background

The CREBs Program was authorized as part of the Tax Incentives Act of 1995, which was passed by the United States Congress to encourage energy conservation, to develop energy infrastructure and increase domestic energy production and the use of alternative energy sources.

The CREBs Program is administered by the United States Internal Revenue Service (IRS). CREBs are a form of tax credit bonds in which interest on the bonds is paid in the form of tax credits by the United States government. The proceeds for the issuance of the CREBs are available to finance renewable energy and clean coal facilities' projects.

On November 13, 2006, the IRS approved 93 CREBs applications submitted by the Department, with a total value of $45.6 million. Caltrans subsequently initiated efforts to re-evaluate and approve facilities for soundness of the concept and adjusted the scope as necessary at each facility. The re-evaluation criteria consisted of the age and condition of the roof and design; the long-term building retention; structural integrity; and a cost-benefit analysis. Through this process, the number of photovoltaic projects was reduced to 70, with construction and installation costs estimated at $19.9 million.

A Banc of America Bond sale for capital outlay costs was obligated for a total of $20 million, plus interest (1.45% rate) of $2.2 million.

## CREBs PROGRAM

### Overview

Caltrans is installing photovoltaic energy systems on 70 building sites throughout the state under the CREBs Program. The goal is to generate over 2.4 megawatts (MW) of energy (see Appendix, Exhibit 1). The photovoltaic panels have a life expectancy of at least 25 years. The installation of the photovoltaic energy systems will help Caltrans meet energy conservation goals outlined in Former Governor Arnold Schwarzenegger's Executive Order (EO) S-20-04 dated December 14, 2004. This order targets a 20 percent reduction in grid-based energy savings for state-owned buildings by 2015.

A listing of Caltrans' 70 photovoltaic installation projects at various transportation facilities, as well as the installation dates (see Appendix, Exhibit 1). The breakdown of the installation of photovoltaic energy systems by facility type is displayed below.

| Facility Type | Number of Projects |
|---|---|
| Maintenance Facilities | 46 |
| Equipment Shops | 9 |
| Safety Roadside Rest Areas | 3 |
| Office Buildings | 4 |
| Materials Laboratories | 2 |
| Transportation Management Centers | 2 |
| Toll Bridge Facilities | 2 |
| Truck Inspection Facilities | 2 |
| **TOTAL** | 70 |

### Status of Projects

The financial success of CREBs was based on a 15-year or 16-year bond term. Due to fluctuations in the United States Department of Treasury bond rate in Fiscal Year 2008-09, the sale of the CREBs was delayed from December 2008 to June 2009 when the bond term rose to 15 years. This caused Caltrans to revise the original construction schedule to reflect the completion of 35 photovoltaic projects by June 2010 and the remaining projects by December 2010. There are other factors that have caused delays in the original delivery schedule of the CREBs projects by an additional 13 months. The major factors impacting the delivery of the CREBs projects are as follows:

- Fluctuations in the United States Department of Treasury bond rate and term required waiting for favorable terms to sell bonds
- State-mandated furloughs reduced staff time by almost 15 percent to work on the design, contract, and project management of the CREBs projects
- Issues associated with encouraging small businesses to contract with the State of California
- Unforeseen and unplanned environmental requirements
- Substitution of eight new sites when the original sites were determined in the design phase to not be viable
- Delay in execution of contracts due to the state budget impasse
- Nationwide shortage of photovoltaic equipment.

A summary chart of the status of the installation of the photovoltaic energy systems is displayed below. As of January 2011, a total of 29 of the 70 projects was complete and generating electricity. It is anticipated that a total of 59 of the 70 projects will be completed by December 2011, and the remaining projects will be completed in January 2012.

## BUDGET

### Original Cost Benefit Analysis

Caltrans examined the cost effectiveness and viability of each project. Financial factors that were considered for each project included energy consumption and the average cost of the utility-provided electricity for the facility. This data was compared with industry averages for the cost to install roof-mounted photovoltaic energy systems for the required kilowatts of electricity at each facility. As a result, Caltrans estimated a utility savings of approximately

$24.7 million over 15 years with a bond debt service payment of $22.2 million (see Appendix, Exhibit 2).

**Revised Cost Benefit Analysis**

Because the sites generating power just recently became operational, sufficient data of the actual energy generated to accurately calculate the annual avoided cost of energy is not available at this time. Therefore, the revised cost benefit analysis was prepared utilizing a projection of the energy to be generated in order to estimate the annual avoided cost of energy.

In the revised cost benefit analysis, the annual avoided cost of energy was changed to reflect the guidelines and assumptions presented by the California Energy Commission in the photovoltaic installation guidelines titled, "A Guide to Photovoltaic System Design and Installation," dated June 2001. In addition, Caltrans elected to design, bid, and manage a CREBs project, which was instrumental in reducing the bond debt by approximately $6 million to $14 million. Caltrans' personnel cost to support the CREBs Program is projected to be approximately $4 million. As a result, Caltrans estimates a utility savings of approximately $11.2 million over the 15 years with a bond debt of $15.6 million (see Appendix, Exhibit 3).

**Comparison of the Original Cost Benefit Analysis and the Revised Cost Benefit Analysis**

Due to Caltrans' limited knowledge of photovoltaic energy systems, the original cost benefit analysis did not account for all factors that affect the output of a photovoltaic energy system and economic benefits under variable weather conditions over time. Because the intensity of light on a surface varies throughout a day, as well as day to day, the actual output of a photovoltaic energy system can vary substantially. Therefore, to obtain a more realistic expectation of the overall system output and economic benefits, calculations were adjusted in the revised cost benefit analysis utilizing the guidelines provided by the California Energy Commission (Commission), which consider factors such as standard test conditions, dirt and dust, temperature, and sun angle and building orientation.

The original Cost Benefit Analysis Annual Avoided Cost calculation was based on an average of eight hours of sunlight each day. Following the guidelines of the Commission report, the average time of sunlight each day was revised to approximately five hours each day.

Taking into account the various factors that the Commission has identified as affecting the output of a photovoltaic energy system and the delays in the original CREBs project delivery schedule, the following assumptions identified in the original cost benefit analysis have changed:

- The total annual avoided cost differential changed from $24.7 million to $11.2 million over a 15-year period
- The bond debt service of $22.2 million was reduced to $15.6 million
- It will take an additional eight years to fund the bond debt service and cost associated with the photovoltaic systems (14 years revised to 22 years).

## CONCLUSION

The CREBs Program was established to increase Caltrans' efforts towards energy conservation as outlined in EO S-20-04. This was to be accomplished by installing photovoltaic energy systems on Caltrans-owned facilities at a cost of $20 million and financed through a 1.45 percent interest CREB. It was Caltrans' anticipation that the CREBs Program would begin generating electricity one year after the sale of the bond and that the bond debt service be fully paid through avoided energy cost before the maturity of the bond.

Although Caltrans has not met the original objective of the CREBs Program, after 25 years and the bond debt and cost associated with the photovoltaic projects are paid off, it is projected that Caltrans will save $4.6 million. The photovoltaic projects increase the departmental efforts towards energy conservation as outlined in EO S-20-04 and support the state's renewable power statutes, "green power," electric grid demand, energy conservation, Leadership in Energy and Environmental Design (LEED), and climate change mandates.

As Governor Edmund G. Brown Jr. stated in his inaugural address, "we can be proud that our state leads the rest of the country in our commitment to new forms of energy and energy efficiency." In Brown's campaign Web site titled "Jobs for California's Future" and in his inaugural address, he commits to the goal to have 20,000 megawatts of renewable energy by 2020. Caltrans' CREBs Program supports the Governor's goal of stimulating the economy by creating jobs and producing renewable electricity, as well as, identifying valuable lessons learned for future California photovoltaic installation projects (see Appendix, Exhibit 4). The 2.4 megawatts of solar power that Caltrans' 70 sites are expected to produce can power approximately 500 homes.

## APPENDIX

**Exhibit**

1 California Department of Transportation Clean Renewable Energy Bonds Projects

2 CREBs 15-Year Bond Term (Original Cost Benefit Analysis)

3 CREBs 15-Year Bond Term (Revised Cost Benefit Analysis)

4 CREBs Lessons Learned

Exhibit 1

## California Department of Transportation
## Clean Renewable Energy Bonds Projects

| Item | District | Project | City | Project Cost Actual | Project Cost Estimated | Project Cost Total | kW AC | Date Began Gen Power | Date Projected Gen Power |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | Elk Grove Maintenance Station | Elk Grove | $91,423 | $0 | $91,423 | 15.0 | 5/6/2010 | |
| 2 | 3 | Willows SRRA | Glenn County | $24,914 | $0 | $24,914 | 3.0 | 5/6/2010 | |
| 3 | 3 | Sunrise Maintenance Station | Rancho Cordova | $193,402 | $0 | $193,402 | 40.0 | 5/25/2010 | |
| 4 | 3 | District 3 - Maint. Facility 2 | Chico | $124,499 | $0 | $124,499 | 23.0 | 7/12/2010 | |
| 5 | 3 | District 4 - Maint. Facility 3 | Cupertino | $142,105 | $0 | $142,105 | 20.0 | 7/1/2010 | |
| 6 | 10 | John C. Rivera SRRA | Merced County | $45,557 | $0 | $45,557 | 6.0 | 7/19/2010 | |
| 7 | 6 | Porterville Maintenance Station | Porterville | $92,581 | $0 | $92,581 | 15.8 | 8/9/2010 | |
| 8 | 5 | District 5 - Maint. Facility 5 | Santa Maria | $100,131 | $0 | $100,131 | 15.0 | 8/12/2010 | |
| 9 | 5 | District 5 - Maint. Facility 2 | Monterey | $41,278 | $0 | $41,278 | 13.0 | 8/19/2010 | |
| 10 | 4 | District 4 - Maint. Facility 10 | Walnut Creek | $117,258 | $0 | $117,258 | 20.0 | 8/11/2010 | |
| 11 | 4 | Equipment Building #7 | San Leandro | $155,285 | $0 | $155,285 | 45.0 | 9/15/2010 | |
| 12 | 6 | District 6 - Maint. Facility 2 | Delano | $130,709 | $0 | $130,709 | 20.0 | 10/1/2010 | |
| 13 | 6 | Lebec Maintenance Station | Lebec | $116,986 | $0 | $116,986 | 15.8 | 10/4/2010 | |
| 14 | 6 | District 6 Office Building | Fresno | $265,404 | $0 | $265,404 | 89.3 | 10/20/2010 | |
| 15 | 6 | District 6 - Maint. Facility 8 | Fresno | $140,584 | $0 | $140,584 | 21.0 | 11/3/2010 | |
| 16 | 6 | Equipment Building #11 | Fresno | $133,156 | $0 | $133,156 | 35.0 | 11/3/2010 | |
| 17 | 3 | Burney Maintenance Station | Burney | $185,877 | $0 | $185,877 | 30.0 | 11/15/2010 | |
| 18 | 3 | Equipment Building #6 | Marysville | $295,293 | $0 | $295,293 | 92.2 | 11/16/2010 | |
| 19 | 6 | Equipment Building #12 | Bakersfield | $218,900 | $0 | $218,900 | 42.0 | 12/2/2010 | |
| 20 | 11 | District 11 - Maint. Facility 4 | San Diego | $180,000 | $0 | $180,000 | 35.7 | 12/7/2010 | |
| 21 | 10 | Westley SRRA | Stanislaus County | $131,000 | $0 | $131,000 | 14.0 | 11/30/2010 | |
| 22 | 4 | District 4 - Maint. Facility 8 | Hercules | $114,565 | $0 | $114,565 | 12.0 | 12/15/2010 | |
| 23 | 4 | District 4 - Maint. Facility 6 | Gilroy | $52,400 | $0 | $52,400 | 7.0 | 12/16/2010 | |
| 24 | 9 | District 9 - Maint. Facility 1 | Bishop | $186,600 | $0 | $186,600 | 35.0 | 12/18/2010 | |
| 25 | 6 | District 6 - Maint. Facility 4 | Visalia | $226,200 | $0 | $226,200 | 90.0 | 1/17/2011 | |
| 26 | 9 | District 9 Office Building | Bishop | $444,200 | $0 | $444,200 | 89.3 | 1/19/2011 | |
| 27 | 7 | District 7 - Maint. Facility 10 | Tarzana | $68,100 | $0 | $68,100 | 10.0 | 1/25/2011 | |
| 28 | 3 | District 3 - Maint. Facility 1 | Auburn | $114,700 | $0 | $114,700 | 20.0 | 1/26/2011 | |
| 29 | 7 | District 7 - Maint. Facility 1 | Altadena | $143,300 | $0 | $143,300 | 30.0 | 1/25/2011 | |
| 30 | 3 | Main Lab Bldg (Trailer) (New Warehouse) Phase I | Sacramento | $706,000 | $0 | $706,000 | 136.0 | | 2/28/2011 |
| 31 | 1 | Bracut Maintenance Station | Eureka | $256,300 | $0 | $256,300 | 50.0 | | 2/28/2011 |
| 32 | 1 | Equipment Building #1 (2101) | Eureka | $176,900 | $0 | $176,900 | 30.0 | | 2/28/2011 |
| 33 | 1 | District 1 - Maint. Facility 1 (Annex) | Eureka | $147,500 | $0 | $147,500 | 25.0 | | 2/28/2011 |
| 34 | 7 | Newhall Maintenance Station | Valencia | $164,392 | $0 | $164,392 | 38.0 | | 2/28/2011 |
| 35 | 9 | Shoshone Maintenance Station | Shoshone | $93,000 | $0 | $93,000 | 15.8 | | 2/28/2011 |
| 36 | 8 | Equipment Building #15 | Barstow | $202,600 | $0 | $202,600 | 30.0 | | 2/28/2011 |
| 37 | 11 | Equipment Building #10 | San Diego | $384,200 | $0 | $384,200 | 86.0 | | 3/31/2011 |
| 38 | 7 | District 7 - Maint. Facility 5 | Monrovia | $150,000 | $0 | $150,000 | 20.0 | | 3/31/2011 |
| 39 | 12 | District 12 - Maint. Facility 1 | Orange | $213,600 | $0 | $213,600 | 41.8 | | 3/31/2011 |
| 40 | 4 | District 4 - Maint. Facility 3 | Napa | $77,100 | $0 | $77,100 | 8.0 | | 3/31/2011 |
| 41 | 7 | District 7 - Maint. Facility 3 | Camarillo | $218,625 | $0 | $218,625 | 30.0 | | 3/31/2011 |
| 42 | 1 | District 1 Office Building | Eureka | $366,900 | $0 | $366,900 | 75.0 | | 4/30/2011 |
| 43 | 12 | Costa Mesa Maintenance Station | Costa Mesa | $223,200 | $0 | $223,200 | 41.8 | | 4/30/2011 |
| 44 | 4 | District 4 - Maint. Facility 15 | San Leandro | $176,900 | $0 | $176,900 | 30.0 | | 5/31/2011 |
| 45 | 11 | San Diego - Coronado Bridge | San Diego | $206,000 | $0 | $206,000 | 47.6 | | 5/31/2011 |
| 46 | 11 | San Onofre SB I-5 Truck Inspection Facility | San Onofre | $100,000 | $0 | $100,000 | 23.8 | | 5/31/2011 |
| 47 | 7 | District 7 - Maint. Facility 8 | Commerce | $153,300 | $0 | $153,300 | 36.5 | | 5/31/2011 |
| 48 | 9 | Equipment Building #10 | San Luis Obispo | $243,600 | $0 | $243,600 | 48.0 | | 6/31/2011 |
| 49 | 4 | District 4 - Maint. Facility 7 | Hayward | $267,200 | $0 | $267,200 | 50.0 | | 7/31/2011 |
| 50 | 4 | District 4 - Maint. Facility 9 | Crockett | $194,600 | $0 | $194,600 | 35.0 | | 7/31/2011 |
| 51 | 4 | South San Jose Maintenance Station | San Jose | $177,800 | $0 | $177,800 | 30.0 | | 7/31/2011 |
| 52 | 4 | District 4 Maintenance Facility | Petaluma | $135,200 | $0 | $135,200 | 30.0 | | 7/31/2011 |
| 53 | 5 | District 5 - Maint. Facility 4 | Santa Barbara | $0 | $125,000 | $125,000 | 15.0 | | 7/31/2011 |
| 54 | 1 | District 1 - Maint. Facility 3 | Ukiah | $0 | $179,474 | $179,474 | 25.0 | | 7/31/2011 |
| 55 | 4 | District 4 - Maint. Facility 1 | Benicia | $195,600 | $0 | $195,600 | 30.0 | | 8/31/2011 |
| 56 | 10 | Stockton Maintenance Station | Stockton | $212,400 | $0 | $212,400 | 40.0 | | 9/30/2011 |
| 57 | 5 | District 5 - Maint. Facility 6 | Bluffton | $0 | $135,000 | $135,000 | 15.0 | | 9/30/2011 |
| 58 | 5 | District 4 - Maint. Facility 17 | Santa Cruz | $0 | $114,000 | $114,000 | 15.0 | | 9/30/2011 |
| 59 | 5 | District 5 Office Building | San Luis Obispo | $0 | $528,000 | $528,000 | 73.5 | | 9/30/2011 |
| 60 | 7 | Chilao Maintenance Station | La Canada | $82,400 | $0 | $82,400 | 12.0 | | 1/1/2012 |
| 61 | 2 | Quincy Maintenance Station | Quincy | $0 | $217,000 | $217,000 | 30.0 | | 1/1/2012 |
| 62 | 11 | Calexico NB Truck Inspection Facility | Herber | $0 | $106,000 | $106,000 | 15.0 | | 1/1/2012 |
| 63 | 8 | District 8 - Maint. Facility 1 | Riverside | $0 | $191,000 | $191,000 | 30.0 | | 1/1/2012 |
| 64 | 4 | Antioch Bridge Toll Plaza | Antioch | $0 | $245,100 | $245,100 | 95.0 | | 1/1/2012 |
| 65 | 3 | Main Lab Bldg (Trailer) (Exist Consch & Structure Materials) Phase II | Sacramento | $0 | $900,000 | $900,000 | 95.0 | | 1/1/2012 |
| 66 | 12 | TMC #6 | Irvine | $0 | $277,000 | $277,000 | 39.2 | | 1/1/2012 |
| 67 | 12 | District 12 Maint. Facility | Orange | $0 | $350,000 | $350,000 | 50.0 | | 1/1/2012 |
| 68 | 7 | District 7 Maint. Facility | Long Beach | $0 | $267,000 | $267,000 | 45.0 | | 1/1/2012 |
| 69 | 11 | TMC #5 | San Diego | $0 | $375,100 | $375,100 | 38.0 | | 1/1/2012 |
| 70 | 3 | Division of Equipment Building | Sacramento | $0 | $675,100 | $675,100 | 90.0 | | 1/1/2012 |
| | | | TOTALS: | $9,731,252 | $4,268,774 | $14,000,026 | 3,436.7 | | |

## CREBs 15-Year Bond Term (Original Cost Benefit Analysis)

| Fiscal Year | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | Total (Yr 1-8) |
|---|---|---|---|---|---|---|---|---|---|
| Annual Avoided Cost | $403,457 | $1,237,411 | $1,389,238 | $1,444,871 | $1,502,666 | $1,562,772 | $1,625,283 | $1,690,295 | $10,856,054 |
| DOT Cost (Maint.) | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| State Highway Acct | $925,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $925,000 |
| Bond Debt Payment | ($1,480,561) | ($1,604,000) | ($1,584,667) | ($1,565,333) | ($1,546,000) | ($1,526,667) | ($1,507,333) | ($1,488,000) | ($12,104,561) |
| Bond Cost | ($90,750) | ($20,000) | ($80,000) | ($20,000) | ($20,000) | ($80,000) | ($20,000) | ($80,000) | ($428,750) |
| Net Avoided Cost | ($142,854) | ($386,589) | ($275,429) | ($140,462) | ($63,334) | $16,105 | $97,950 | $122,295 | ($662,037) |

| Fiscal Year | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | Total (Yr 1-15) |
|---|---|---|---|---|---|---|---|---|
| Annual Avoided Cost | $1,757,908 | $1,826,220 | $1,901,352 | $1,977,406 | $2,056,502 | $2,138,762 | $2,224,312 | $24,740,517 |
| DOT Cost (Maint.) | $0 | ($300,000) | $0 | $0 | $0 | $0 | $0 | ($300,000) |
| State Highway Acct | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $925,000 |
| Bond Debt Payment | ($1,464,667) | ($1,449,333) | ($1,430,000) | ($1,410,667) | ($1,391,333) | ($1,372,000) | ($1,352,667) | ($22,179,000) |
| Bond Cost | ($80,000) | ($20,000) | ($80,000) | ($20,000) | ($20,000) | ($80,000) | ($20,000) | ($578,750) |
| Net Avoided Cost | $213,241 | $58,889 | $451,352 | $546,738 | $645,169 | $746,762 | $851,646 | $2,607,766 |

Assumptions:

1. CREBs anticipated to be sold by December 2008.
2. CREBs debt service payments begin in Fiscal Year 2009-2010 (Calendar Year 2009).
3. Year 1 is Fiscal Year 2009-10.
4. Photovoltaic maintenance cost estimated at $300K every 10 years.
5. Bond costs will be funded either through rebates, bond proceeds or the Department of Transportation.

# CREBs 15-Year Bond Term (Revised Cost Benefit Analysis)

Exhibit 3

| Fiscal Year | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | Total (Yr 1-8) |
|---|---|---|---|---|---|---|---|---|---|
| Annual Avoided Cost | $0 | $190,765 | $570,505 | $690,203 | $719,831 | $748,882 | $778,654 | $808,780 | $4,510,703 |
| DOT Cost (Support) | [illegible] | [illegible] | [illegible] | | | | | | ($4,000,000) |
| DOT Cost (Maint.) | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| State Highway Acct | $925,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $925,000 |
| Bond Debt Payment | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| STO Bond Cost | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | ($425,750) |
| Net Avoided Cost | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

| Fiscal Year | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | Total (Yr 1-15) |
|---|---|---|---|---|---|---|---|---|
| Annual Avoided Cost | $840,171 | $875,658 | $910,000 | $947,328 | $985,221 | $1,024,630 | $1,065,615 | $11,162,490 |
| DOT Cost (Support) | | | | | | | | ($4,000,000) |
| DOT Cost (Maint.) | $0 | $0 | $0 | [illegible] | [illegible] | $0 | $0 | ($300,000) |
| State Highway Acct | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $925,000 |
| Bond Debt Payment | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| STO Bond Cost | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | ($10,000) | [illegible] | ($578,750) |
| Net Avoided Cost | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | $147,130 | $200,136 | [illegible] |

| Fiscal Year | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 | Total (Yr 1-20) |
|---|---|---|---|---|---|---|
| Annual Avoided Cost | $1,108,228 | $1,152,560 | $1,198,672 | $1,246,618 | $1,296,483 | $17,165,077 |
| DOT Cost (Support) | | | | | | ($4,000,000) |
| DOT Cost (Maint.) | $0 | $0 | $0 | $0 | $0 | ($300,000) |
| State Highway Acct | $0 | $0 | $0 | $0 | $0 | $925,000 |
| Bond Debt Payment | $0 | $0 | $0 | $0 | $0 | [illegible] |
| STO Bond Cost | $0 | $0 | $0 | $0 | $0 | ($578,750) |
| Net Avoided Cost | $1,108,228 | $1,152,560 | $1,198,672 | $1,246,618 | $1,296,483 | [illegible] |

| Fiscal Year | 2029-30 | 2030-31 | 2031-32 | 2032-33 | 2033-34 | Total (Yr 1-25) |
|---|---|---|---|---|---|---|
| Annual Avoided Cost | $1,348,345 | $1,402,276 | $1,458,367 | $1,516,702 | $1,577,370 | $24,498,139 |
| DOT Cost (Support) | | | | | | ($4,000,000) |
| DOT Cost (Maint.) | $0 | [illegible] | [illegible] | $0 | $0 | ($600,000) |
| State Highway Acct | $0 | $0 | $0 | $0 | $0 | $925,000 |
| Bond Debt Payment | $0 | $0 | $0 | $0 | $0 | [illegible] |
| STO Bond Cost | $0 | $0 | $0 | $0 | $0 | ($578,750) |
| Net Avoided Cost | $1,348,345 | $1,252,276 | $1,308,367 | $1,516,702 | $1,577,370 | $4,000,654 |

Assumptions:

1. CREBs sold June 10, 2009.
2. CREBs debt service payments begin in Fiscal Year 2009-2010 (December 15, 2009).
3. State Treasurer's Office (STO)
4. Photovoltaic maintenance cost materials at $300K every 10 years (Years 10 and 20).
5. Bond costs will be funded either through rebates, bond proceeds or the Department of Transportation.
6. Photovoltaic Construction Cost = $14 million