

Las Virgenes - Triunfo Joint Powers Authority

Tapia WRF – Process Air Evaluation

**Technical Memorandum No. 3
Funding Opportunities**

FINAL
December 2011



LAS VIRGENES - TRIUNFO JOINT POWERS AUTHORITY

Tapia WRF – Process Air Evaluation

**TECHNICAL MEMORANDUM
NO. 3**

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1.0 EXECUTIVE SUMMARY

Technical Memoranda 1 and 2 of the Process Air Evaluation recommended several measures to reduce energy usage at the Tapia Water Reclamation Facility (WRF) through improvements to the plant's process air system. The measures recommended in TM-1 and TM-2 that are expected to result in substantial annual energy savings are as follows:

1. The replacement of the plant's existing spiral-roll diffuser system in the aeration basins is expected to reduce average aeration airflows by an estimated 69 percent. The expected annual energy savings provided by this improvement is estimated to be 1,360,000 kWh with a corresponding annual energy cost savings of approximately \$115,000.
2. The replacement of two of the plant's existing 900-hp Roots blowers at project year 0 (calendar year 2012) with two new 350-hp single-stage blowers is expected to reduce annual energy usage by an estimated 820,000 kWh with a corresponding annual energy cost savings of approximately \$69,300.

Several funding programs are available to help offset the costs associated with implementing energy efficiency improvements. These programs include the Customized Solutions Program offered by Southern California Edison (SCE), and low interest loans provided by the California Energy Commission (CEC).

Based on the analysis presented within this memorandum, we recommend that the JPA pursue the following energy efficiency incentives:

1. *Energy efficiency rebates offered through the SCE Customized Solutions program* - These rebates are expected to result in a total capital costs savings of approximately \$220,000 for the aeration basin diffuser and blower replacement projects.
2. *Low interest (3 percent) loans offered through the California Energy Commission* - Should the JPA be granted CEC funding, these loans are expected to finance approximately 75 percent of the initial capital costs associated with the aeration basin diffuser and blower replacement projects. Should the capital costs associated with these projects be reduced through SCE energy efficiency rebates, the maximum expected CEC funding would finance approximately 82 percent of the remaining initial capital costs.

Our preliminary evaluation of each program's eligibility criteria suggests that the recommended improvements should qualify for each program. The financial analysis presented in this memorandum is based on each qualifying improvement receiving the maximum incentive offered by each program.

A financial summary of the improvements that are expected to qualify for the energy efficiency incentives discussed within this memorandum is presented below in Table 1.1.

Table 1.1 Summary of Recommended Energy Efficiency Incentives				
Parameter	Unit	Improvement		Total
		Aeration Basin Diffusers	Blower Replacement	
Expected Yr-0 Energy Savings ⁽¹⁾				
Energy Usage Reduction	(kWh)	1,364,100	820,450	2,184,500
Energy Cost Reduction	(\$)	115,000	69,300	184,300
Estimated Capital Costs	(\$)	1,376,000	1,315,000	2,691,000
Simple Payback Period	(Yrs)	11.9	19.0	14.6
Expected SCE Incentive				
Annual Energy Usage	(\$)	122,800	73,800	196,600
Peak Power Reduction ⁽²⁾	(\$)	15,600	9,400	25,000
Total	(\$)	138,400	83,200	221,600
Adjusted Capital Costs	(\$)	1,237,600	1,231,800	2,469,400
Adjusted Simple Payback Period	(Yrs)	10.7	17.8	13.4
Maximum CEC Loan Amount ⁽³⁾	(\$)	1,265,000	762,300	2,027,300
Notes:				
(1) Energy savings are based on operation of blowers at annual average inlet temperature of 63.5 °F and a relative humidity of 58 percent.				
(2) Peak power reduction calculated based on California Public Utilities Commission Mandated Definition of DEER Peak Energy, Method 6. Method 6 uses the average of the baseline minus the average of the proposed improvements over a defined duration (24-hour duration for this analysis).				
(3) Maximum CEC low interest loan amount based on 11-year simple payback period on loan principal.				

The application process for the recommended energy efficiency incentives should begin as soon as possible once the JPA has decided to pursue the recommended energy saving improvements.

CEC Low Interest Loans - Loan applications should be submitted to the CEC as soon as possible once the JPA has decided to pursue the recommended energy saving improvements. An official loan solicitation from CEC is expected to be released shortly after January 1, 2012, but applications can be submitted earlier for technical review.

SCE Rebates - Applications should be submitted as soon as the JPA can demonstrate that JPA funds have been budgeted for the qualifying improvements.

2.0 BACKGROUND AND INTRODUCTION

Technical Memoranda 1 and 2 of the Process Air Evaluation recommended several measures to reduce energy usage at the Tapia WRF through improvements to the plant's process air system. Improvements that are expected to result in significant reductions to energy usage include the following:

1. Repairs to leaks in above ground air conveyance piping are expected to reduce process air losses by approximately 500 SCFM. The resulting annual cost savings are expected to be approximately \$14,000.
2. The replacement of the existing spiral-roll diffuser system within the aeration basins with a new full-floor cover system is expected to reduce average aeration airflows by an estimated 69 percent. The resulting reduction in annual energy usage is expected to be approximately 1,364,100 kWh with an expected \$115,000 reduction in annual energy costs.
3. The replacement of two existing 900 hp single-stage Roots blowers with two new 350 hp single-stage blowers is expected to reduce annual energy usage at the plant by approximately 820,000 kWh. The resulting annual energy costs savings are expected to be approximately \$69,300.

Several efficiency-related funding programs are available to help offset each improvement's associated capital costs, and provide low interest financing for the remaining capital costs. These programs include the Customized Solutions Program offered by Southern California Edison (SCE), and low interest loans provided by the California Energy Commission (CEC).

The objective of this technical memorandum is to characterize each energy efficiency funding program based on the following:

- Application requirements and funding procedures
- Eligibility of the recommended improvements for each funding program
- Expected level of funding provided by each funding program

The figures presented in this report represent our best estimate of the levels of funding expected from each program. These estimates are based on individual program rules and discussions with SCE and CEC representatives. Exact funding amounts are subject to periodic changes to program eligibility requirements and funding available to each program.

3.0 ANALYSIS

3.1 SCE Customized Solutions Program

The Customized Solutions program offered by SCE provides rebates¹ for qualified energy efficiency improvements. These rebates help to offset the capital costs associated with each improvement. The rebates are currently offered at a rate of \$0.09 per kWh of annual energy savings and \$100 per kW of permanent peak power reduction. Participants may receive up to 50 percent of total project costs in SCE rebates. Total calendar year incentive payments to individual SCE customers cannot exceed \$6 million.

3.1.1 Application Requirements and Funding Procedures

The process by which an energy efficiency improvement is funded by the Customized Solutions program is outlined below.

1. **Application Submission** - An application is submitted to SCE by the project sponsor (JPA). The application includes project details and any other supporting documentation as required by the Utility Administrator. The Tapia WRF process air evaluation technical memoranda and final report would serve as supporting documentation in this case.
2. **Application Review** - An SCE representative reviews the application and may conduct a pre-installation site inspection. The reviewer will evaluate and may revise the submitted energy savings and/or incentive calculation. SCE may require a measurement and verification plan be submitted by the project sponsor.
3. **Application Approval** - Following approval by SCE, incentive funding for the project is reserved and the project sponsor and SCE enter into a project agreement defining energy savings and incentive payment. Funding for the project is not reserved until a project agreement is fully executed by both parties.
4. **Project Installation** - After all energy efficiency measures have been installed and are fully commissioned and operational, the project sponsor submits a signed installation report and project invoices.
5. **Installation Review** - Upon receipt of installation report, the SCE reviewer will evaluate the submittal package and conduct a post-installation inspection to verify project installation and ensure scope of work has not altered from the agreed-upon project. This inspection may be waived at the discretion of SCE.
6. **Incentive Payment** - Upon SCE's approval of the installation, the applicant receives the incentive payment. In most cases, applicants are paid 100 percent of the approved incentive upon completion and installation review approval. Recipients may elect to receive the incentives payment directly or have a credit applied to their SCE energy bill.

¹ Information presented within this memorandum specific to SCE efficiency rebates was gathered from Southern California Edison website at www.sce.com/business/ems/customized-solutions/default.htm

Based on discussions with SCE representatives, the application review and approval process usually takes from 2- 6 months from receipt of application. Applications are not reviewed until indication from the customer is provided showing a sufficient level of commitment to the energy efficiency project(s). Confirmation from the customer (LVMWD) that funds have been budgeted for the improvements is generally sufficient indication for SCE to begin the application review process. An example SCE Customized Solutions program application is provided for reference in Appendix B. Applications may also be accessed on the SCE website at <http://www.sce.com/business/ems/customized-solutions/tools-resources.htm> **Program Eligibility Criteria**.

The SCE Customized Solutions program has several criteria for determining eligibility. These are as follows:

1. ***New Equipment Must Exceed Baseline Energy Performance*** - Incentives are based on the energy savings and demand reduction above and beyond baseline energy performance. Baseline performance of equipment may be defined by state or federally mandated codes, industry-accepted performance standards, or other baseline energy performance standards as determined by SCE. In the case of the existing blowers at the Tapia WRF, for which specific baseline standards do not exist, the baseline performance is their expected performance as determined from manufacturer's test data.
2. ***New Equipment Must Meet CPUC Mandated DEER Peak Demand Definition*** - Incentives for demand reduction (in kW) are based on permanent electrical demand reduced during peak periods, as defined by Database for Energy Efficiency Resources (DEER).
3. ***New Equipment Must Operate at Least Five Years*** - The project agreement requires that the new equipment (or system retrofit) must guarantee energy savings for the effective useful life of the product or for a period of five years, whichever is less.
4. ***Measures Cannot Overlap Other Incentive Programs*** - Capital costs incentives cannot be provided by more than one energy efficiency program (SCE, CEC, or other) for the same improvement. This does not preclude the combination of SCE energy efficiency rebates with low interest financing from CEC.
5. ***Baseline Equipment Must be Decommissioned and Removed*** -The baseline (existing) equipment must be decommissioned and removed from the site prior to installation review approval. Subject to the discretion of SCE, baseline equipment may be kept for backup purposes.

Based on a preliminary review of the eligibility criteria presented above, the aeration basin diffuser and blower replacement projects would qualify for energy efficiency rebates offered by this program. Repairs to leaking air conveyance piping would not qualify for this program, as this improvement does not replace existing equipment.

3.1.2 Level of Funding for Qualifying Improvements

The expected level of funding for each qualifying improvement is presented in Table 3.1. Energy savings provided by the aeration basin diffuser replacement are based on activated sludge process modeling performed by Carollo, as well as the results of on-site aeration basin off-gas testing conducted by Dr. Stenstrom as part of this study.

The energy savings provided by the blower replacement project are based on the operation of the existing Hoffman blowers as a baseline. Of the two types of blowers currently in operation at the Tapia WRF, only the Hoffman blowers are capable of providing the discharge pressure and turndown required to satisfy plant air demands after the aeration basin diffusers are replaced.

All energy savings presented in Table 3.1 are based on operating the new and existing blowers under annual average flows and atmospheric conditions.

Table 3.1 SCE Customized Solutions Summary			
Parameter	Unit	Improvement	
		Aeration Basin Diffusers	Blower Replacement
Expected Yr-0 Energy Savings ⁽¹⁾	(kWh)	1,364,090	820,400
Estimated SCE Incentive	(\$)	122,768	73,800
Expected Yr-0 Peak Power Reduction ⁽²⁾	(kW)	155	94
Estimated SCE Incentive	(\$)	15,572	9,400
Estimated SCE Incentive (Sub Total)	(\$)	138,340	83,200
Total		\$221,540	
Notes:			
(1) Energy savings are based on operation of blowers at annual average inlet temperature of 63.5 °F and a relative humidity of 58 percent.			
(2) Peak power reduction calculated based on California Public Utilities Commission Mandated Definition of DEER Peak Energy, Method 6. Method 6 uses the average of the baseline minus the average of the proposed improvements over a defined duration (24-hour duration for this analysis).			

The calculations used to characterize the energy savings provided by the improvements listed in Table 3.1 are included in Appendix A.

3.2 SCE Industrial/Agricultural Retro-commissioning Program

The Industrial/Agricultural Retro-commissioning energy efficiency program is a relatively new program offered by SCE, implemented in the summer of 2011. The energy efficiency rebates offered by this program are based on the same rate structure as those offered by the SCE Customized Solutions program.

3.2.1 Application Requirements and Funding Procedures

The application requirements and funding procedures are the same as those for the Customized Solutions program, with the added requirement of a one-year follow-up review

(performed by SCE or SCE-appointed representative) to ensure the energy savings realized by the improvement are in line with the projections included in the program application.

3.2.2 Program Eligibility Criteria

Eligibility requirements for the SCE retro-commissioning program are more flexible than for the Customized Solutions program. The flexible nature of this program can often benefit the inclusion of a process-related improvement such as the replacement of the aeration basin diffusers, should this improvement not qualify (as determined by SCE) for energy efficiency rebates under the Customized Solutions program.

3.2.3 Level of Funding for Qualifying Improvements

Under this program, funding for qualifying energy efficiency improvements would be similar to that offered by the Customized Solutions program. It should be noted that this program and the Customized solutions program may not be combined- that is, a specific energy efficiency improvement may not receive funding from both programs.

3.3 CEC Low Interest Loans

The California Energy Commission (CEC) is currently offering low interest loans ² to cities, counties, and special districts toward the financing of energy efficiency improvements. Replacement of wastewater treatment equipment qualifies for financing under this program. As of the writing of this memo, there is approximately \$25 million in low interest financing (funded through the California Energy Conservation Assistance Act - ECAA) that will be made available for qualifying energy efficiency projects after January 1, 2012.

3.3.1 Application Requirements and Funding Procedures

Loan Application Requirements - Loan applications should be submitted to the CEC as soon as possible once the JPA has decided upon which improvements to pursue. An official loan solicitation from CEC is expected to be released shortly after January 1, 2012, but applications can be submitted earlier for technical review. An example CEC loan application is provided for reference in Appendix C. Applications may also be accessed on the CEC website at <http://www.energy.ca.gov/efficiency/financing/>.

In addition to a completed and signed loan application, the following documentation is required at the time of submission:

1. Completed summary of recommended energy efficiency measures in the template loan request table (see Appendix C).
2. Feasibility study - A feasibility study (i.e., the Tapia WRF Process air Evaluation) is required to verify estimated energy cost savings. Supporting material required to be submitted along with the feasibility study include:

² Information presented within this memorandum specific to CEC low interest loans was gathered from California Energy Commission website at www.energy.ca.gov/efficiency/financing
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- a. Copy of recent energy related utility bills for the affected facilities
- b. Calculations and assumptions to support the technical feasibility and energy savings of the recommended projects (refer to Appendix A).
- c. Proposed budget detailing all project costs
- d. Proposed schedule for implementation of the proposed projects
3. Copy of signed resolution, motion, or order from applicant's governing board.
 - a. The title of the official signing the loan agreement should be the same one named in the resolution, motion, or order.
4. California Environmental Quality Act (CEQA) compliance documentation (see attachment 5 included in Appendix C)
 - a. Energy efficiency projects are typically exempt from this requirement under the CEQA guidelines Section 15302.
5. Copy of resolution/agenda item
 - a. Resolution agenda item must include finding on CEQA compliance

Interest Rate - The interest rate is 3 percent and is fixed for the term of the loan.

Loan Security Requirements - All loans are secured by a loan agreement between the applicant and the Energy Commission and a promissory note. Certain loans (as determined by CEC) also require a tax certificate (see example loan agreement in Appendix D).

Funds Distribution - Funds are made available on a reimbursement basis. The final 10 percent of funds are retained until the project is completed. Interest is charged on the unpaid principal computed from the date of each disbursement to the borrower.

Repayment Terms - The repayment schedule is up to 15 years and is based on the annual projected energy cost savings from the project. Applicants will be billed twice a year in June and December; beginning 6 to 18 months after all projects are completed.

3.3.2 Program Eligibility Criteria

Eligible projects must demonstrate a proven energy savings and meet ECAA eligibility requirements. Criteria for determining eligibility include:

1. Energy efficiency projects must be technically and economically feasible.
2. Loans for energy projects must be repaid from energy cost savings within 15 years, including principal and interest. This is equivalent to a simple payback period of approximately 11 years.
3. The loan term cannot exceed the useful life of the loan-funded equipment.
4. Only approved project-related costs with invoices dated after loans are officially awarded by CEC are eligible to be reimbursed from loan funds. If the application is not approved for any reason, CEC will not reimburse any associated project costs.

3.3.3 Level of Funding for Qualifying Improvements

As previously discussed, the maximum loan amount must have a simple payback period (as calculated from expected annual energy savings) no greater than 11 years. The maximum loan amount is \$3 million per application. There is no minimum loan amount.

All energy savings presented in Table 3.2 are based on operating the new and existing blowers under annual average flows and atmospheric conditions.

Table 3.2 CEC Low Interest Loan Summary			
Parameter	Unit	Improvement	
		Aeration Basin Diffusers	Blower Replacement
Expected Yr-0 Energy Savings ⁽¹⁾	(kWh)	1,364,090	820,400
Expected Yr-0 Peak Power Reduction ⁽²⁾	(kW)	155	94
Expected Yr-0 Energy Cost Savings	(\$)	115,000	69,300
Estimated Yr-0 Project Capital Costs	(\$)	1,376,000	1,315,000
Estimated Maximum CEC Loan Amount	(\$)	1,265,000	762,300
Calculated Loan Payback Period	(Yrs)	11	11

Notes:
 (1) Energy savings are based on operation of blowers at annual average inlet temperature of 63.5 °F and a relative humidity of 58 percent.
 (2) Peak power reduction calculated based on California Public Utilities Commission Mandated Definition of DEER Peak Energy, Method 6. Method 6 uses the average of the baseline minus the average of the proposed improvements over a defined duration (24-hour duration for this analysis).

The calculations used to characterize the energy savings provided by the improvements listed in Table 3.2 are included (with engineering assumptions) in Appendix A.

4.0 SUMMARY AND RECOMMENDATIONS

Based on the analysis presented above, we recommend that the JPA pursue the following energy efficiency incentives:

1. *Energy efficiency rebates offered through the SCE Customized Solutions program* - As presented in the analysis above, these rebates are expected to result in a total capital costs savings of approximately \$220,000 for the aeration basin diffuser and blower replacement projects.
2. *Low interest (3 percent) loans offered through the California Energy Commission* - Should the JPA be granted CEC funding, these loans are expected to finance approximately 75 percent of the initial capital costs associated with the aeration basin diffuser and blower replacement projects. Should the capital costs associated with these projects be reduced through SCE energy efficiency rebates, the maximum expected CEC funding would finance approximately 82 percent of the remaining initial capital costs.

A financial summary of the improvements that are expected to qualify for the energy efficiency incentives discussed within this memorandum is presented below in Table 4.1.

Table 4.1 Summary of Recommended Energy Efficiency Incentives				
Parameter	Unit	Improvement		Total
		Aeration Basin Diffusers	Blower Replacement	
Expected Yr-0 Energy Savings ⁽¹⁾				
Energy Usage Reduction	(kWh)	1,364,100	820,450	2,184,500
Energy Cost Reduction	(\$)	115,000	69,300	184,300
Estimated Capital Costs	(\$)	1,376,000	1,315,000	2,691,000
Simple Payback Period	(Yrs)	11.9	19.0	14.6
Expected SCE Incentive				
Annual Energy Usage	(\$)	122,800	73,800	196,600
Peak Power Reduction ⁽²⁾	(\$)	15,600	9,400	25,000
Total	(\$)	138,400	83,200	221,600
Adjusted Capital Costs	(\$)	1,237,600	1,231,800	2,469,400
Adjusted Simple Payback Period	(Yrs)	10.7	17.8	13.4
Maximum CEC Loan Amount ⁽³⁾	(\$)	1,265,000	762,300	2,027,300
Notes:				
(1) Energy savings are based on operation of blowers at annual average inlet temperature of 63.5 °F and a relative humidity of 58 percent.				
(2) Peak power reduction calculated based on California Public Utilities Commission Mandated Definition of DEER Peak Energy, Method 6. Method 6 uses the average of the baseline minus the average of the proposed improvements over a defined duration (24-hour duration for this analysis).				
(3) Maximum CEC low interest loan amount based on 11-year simple payback period on loan principal.				

The application process for the recommended energy efficiency incentives should begin as soon as possible once the JPA has decided to pursue the recommended energy saving improvements.

CEC Low Interest Loans - Loan applications should be submitted to the CEC as soon as possible once the JPA has decided to pursue the recommended energy saving improvements. An official loan solicitation from CEC is expected to be released shortly after January 1, 2012, but applications can be submitted earlier for technical review.

SCE Rebates - Applications should be submitted as soon as the JPA can demonstrate that funds have been budgeted for the qualifying improvements.

The supporting material included in the Appendices has been provided to assist in the preparation of each program application.

Questions related to the preparation and submittal of energy efficiency incentive applications may be directed to the following contacts:

Southern California Edison (Customized Solutions Offering)

Contact: Chris Coronel
Title: Account Manager
Office: (559) 685-3243
Mobile: (661) 208-6518
Email: Chris.Coronel@sce.com

California Energy Commission

Contact: Karen Perrin
Title: Special Projects Coordinator
Office: (916) 654-4104
Email: kperrin@energy.state.ca.us

Carollo Engineers is available to provide any additional supporting information that may be required by each program application.

ENERGY SAVINGS CALCULATIONS

Blower Evaluation Tool v1.1

Carollo Engineers

Calculated by: Don DeMichele

Date: 12/27/2011

Calculation: Energy Savings Provided by Aeration Basin Diffuser System Replacement

Description:

Calculation of energy savings provided by the aeration basin diffuser replacement project. This improvement is expected to reduce average annual plant air flows from 14,550 SCFM to 7,380 SCFM at project year 0. Average air flows are currently provided by the existing Roots blowers ("Before" column). The existing Roots blowers cannot provide the increased blower discharge pressure requirement (8.0 psig) of the new aeration basin diffusers. It was assumed in the calculation of energy usage after the aeration basin diffuser replacement that the existing multistage Hoffman blowers would operate to provide annual average plant air demands.

Current Energy Rate 0.0845 \$/kWh (Current average power cost at the Tapia WRF)

Calculation Parameters			Case Description		
SPECIFIED PARAMETER INPUTS	Description	Variables	Annual Average Flows Shown		
			Yr- 0 Before	Yr-0 After	
Design Conditions	Atmospheric Temperature	t_{atm}	63.5	63.5	°F
	Atmospheric Pressure	P_{atm}	14.5	14.5	psia
	Relative Humidity	RH%	58%	58%	%
	Maximum Inlet Pipe Pressure Loss	ΔP_{inlet}	0.10	0.10	psi
	Maximum Inlet Filter Pressure Loss	ΔP_{filter}	0.10	0.10	psi
	Absolute Inlet Pressure	P_i	14.30	14.30	psia
	Discharge Gauge Pressure	P_{2total}	7.5	8	psig
Other Inputs	Impeller Revolutions Per Minute	N			RPM
	Discharge Temperature	$t_{2,tot}$	200	200	°F
Standard Conditions	Temperature	$t_{atm,STD}$	68	68	°F
	Relative Humidity	RH% _{STD}	36%	36%	%
	Atmospheric Pressure	$P_{atm,STD}$	14.7	14.7	psia
	Flow of Air at Standard Conditions: FT ³ /MIN at psia, °F, and % RH	SCFM	14,550	7,381	ft ³ /min
Gas Properties	Reduced Temperature	θ	0.449	0.449	unitless
	Reduced Saturated Pressure	β_k	9.08284E-05	9.08284E-05	unitless
	Saturated Vapor Pressure	P_{sat}	0.291286597	0.291286597	psia
	Gas Constant	$R_{wet,atm}$	0.068853247	0.068853247	Btu/lbmR
	Specific Humidity	ω_{atm}	0.007332647	0.007332647	unitless
	Isentropic Exponent	$K_{wet,atm}$	1.398870772	1.398870772	unitless
	Inlet Density	ρ_{atm}	0.073461105	0.073461105	lbm/ft ³
	Pressure Ratio	π	1.538461538	1.573426573	unitless
Head	Isentropic Work (Head)	γ_s	16.5	17.4	Btu/lbm
Flow	Inlet Flow (US)	ICFM	14,882.19	7,549.51	ft ³ /min
	Mass Flow	m	65596	33276	lbm/hr
Power and Efficiency	Isentropic Power	P_s	426	228	hp
	Isentropic Efficiency	η_s	74.0%	59.4%	%
	Gas Power	$P_{i,\Delta t}$	575	384	hp
	Motor Efficiency	η_{motor}	92%	92%	%
	VFD Efficiency	η_{VFD}	100%	100%	%
	Wire-Air Efficiency	$\eta_{overall}$	68.1%	54.6%	%
	Overall Power	$P_{tot,E}$	625	417	hp
	Overall Power	$P_{tot,M}$	466.2	311.0	kW
Energy	Annual Average Energy Use		4,084,070	2,724,559	kWh/Yr
	Annual Average Energy Cost		345,104	230,225	\$/Yr
	Annual Average Energy Savings			114,879	\$/Yr

Blower Evaluation Tool v1.0

Carollo Engineers

Calculated by: Don DeMichele

Date: 12/27/2011

Calculation: Energy Savings Provided by Blower Replacement

Description:

Calculation of overall energy savings provided by the replacement of two existing Roots blowers with two new 350-hp single-stage Siemens KA10 blowers at project year 0. Operation of existing Hoffman blowers were the baseline for the "Before" condition (existing Roots blowers cannot provide sufficient discharge pressure of 8.0 psig). The proposed Siemens KA10 blowers formed the baseline for the "After" condition.

Current Energy Rate

0.0845 \$/kWh

(Current average power cost at the Tapia WRF)

Calculation Parameters			Case Description		
SPECIFIED PARAMETER INPUTS	Description	Variables	Annual Average Flows Shown		
			Yr- 0 Before	Yr-0 After	
Design Conditions	Atmospheric Temperature	t_{atm}	63.5	63.5	°F
	Atmospheric Pressure	P_{atm}	14.5	14.5	psia
	Relative Humidity	RH%	58%	58%	%
	Maximum Inlet Pipe Pressure Loss	ΔP_{inlet}	0.10	0.10	psi
	Maximum Inlet Filter Pressure Loss	ΔP_{filter}	0.10	0.10	psi
	Absolute Inlet Pressure	P_i	14.30	14.30	psia
	Discharge Gauge Pressure	P_{2total}	8	8	psig
Other Inputs	Impeller Revolutions Per Minute	N			RPM
	Discharge Temperature	$t_{2,tot}$	200	200	°F
Standard Conditions	Temperature	$t_{atm,STD}$	68	68	°F
	Relative Humidity	RH% _{STD}	36%	36%	%
	Atmospheric Pressure	$P_{atm,STD}$	14.7	14.7	psia
	Flow of Air at Standard Conditions: FT ³ /MIN at psia, °F, and % RH	SCFM	7,381	7,381	ft ³ /min
Gas Properties	Reduced Temperature	θ	0.449	0.449	unitless
	Reduced Saturated Pressure	β_k	9.08284E-05	9.08284E-05	unitless
	Saturated Vapor Pressure	P_{sat}	0.291286597	0.291286597	psia
	Gas Constant	$R_{wet,atm}$	0.068853247	0.068853247	Btu/lbmR
	Specific Humidity	ω_{atm}	0.007332647	0.007332647	unitless
	Isentropic Exponent	$K_{wet,atm}$	1.398870772	1.398870772	unitless
	Inlet Density	ρ_{atm}	0.073461105	0.073461105	lbm/ft ³
Head	Pressure Ratio	π	1.573426573	1.573426573	unitless
	Isentropic Work (Head)	γ_s	17.4	17.4	Btu/lbm
Flow	Inlet Flow (US)	ICFM	7,549.51	7,549.51	ft ³ /min
	Mass Flow	m	33276	33276	lbm/hr
Power and Efficiency	Isentropic Power	P_s	228	228	hp
	Isentropic Efficiency	η_s	59.4%	83.2%	%
	Gas Power	$P_{i,\Delta t}$	384	274	hp
	Motor Efficiency	η_{motor}	92%	94%	%
	VFD Efficiency	η_{VFD}	100%	100%	%
	Wire-Air Efficiency	$\eta_{overall}$	54.6%	78.2%	%
	Overall Power	$P_{tot,E}$	417	291	hp
Energy	Overall Power	$P_{tot,M}$	311.0	217.4	kW
	Annual Average Energy Use		2,724,559	1,904,105	kWh/Yr
	Annual Average Energy Cost		230,225	160,897	\$/Yr
	Annual Average Energy Savings			69,328	\$/Yr

EXAMPLE SCE CUSTOMIZED SOLUTIONS APPLICATION

Energy Management Solutions Incentives Application for Business Customers

Follow the simple steps below to complete your Incentives Application:

STEP 1 Get Started

Use your SCE bill to help you complete the following sections:

- 1 Customer Information
- 2 Project Site Information

STEP 2 Select Your Solutions

Refer to the Energy Management Solutions Guide, your project proposal and/or Demand Response (DR) Technical Audit to complete the appropriate sections:

- | | |
|---|--|
| <ul style="list-style-type: none"> EE Express Solutions <ul style="list-style-type: none"> 3 Express Solutions EE Customized Solutions <ul style="list-style-type: none"> 4 Customized Solutions 5 Customized Solutions: Energy Savings and On-Peak Demand Reduction | <ul style="list-style-type: none"> DR Technology Incentives <ul style="list-style-type: none"> 6 Technology Incentives 7 Technology Incentives: Peak Demand Reduction |
|---|--|

STEP 3 Submit Completed Application

Tell us how you want to be paid, then read and sign the Terms and Conditions and submit the completed application with required supporting documents.

- 8 Payment Information and Customer Acknowledgement
- 9 Terms and Conditions

1 Customer Information

If you are an SCE customer submitting a project on your own, complete part A.
 If you are an Authorized Agent such as a contractor or equipment installer submitting this application on behalf of the customer, complete both parts A and B.

A. Customer (applicant)

[Submitting a project on your own]

Company/Business Name	Contact Name	Title	
<input type="text"/>			
Company/Business Mailing Address	City	State	ZIP
<input type="text"/>			
Contact Telephone Number	Contact Fax Number	Contact E-mail Address	
<input type="text"/>			

B. Authorized Agent

[Contractor and/or equipment vendor submitting application on behalf of the customer]

Authorized Agent Business Name	Contact Name		
<input type="text"/>			
Authorized Agent Mailing Address	City	State	ZIP
<input type="text"/>			
Authorized Agent Telephone Number	Authorized Agent Fax Number	Authorized Agent E-mail Address	
<input type="text"/>			

FLIP OPEN 

FOR UTILITY USE ONLY	UPN #	SCE Engineer	Rep Name	Partnership Name (if applicable)	Notes/Additional Info	TR
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- Express Installed
 Express to be Installed
 Customized
 Technology Incentives

2

Project Site Information

This section is for one project site where qualifying solutions will be installed.

- Please refer to your SCE bill for your Service Account Number, and to the Energy Management Solutions Guide Appendix for Building Type Code.

For more than one project site, check the Multiple Site Project box below, skip Sections 3 through 7 of this application and complete the Multiple Site/Solution Worksheet found at www.sce.com/solutions. Then go to Sections 8 and 9 to sign and complete your application. Submit the Multiple Site/Solution Worksheet and all required documents with your completed application.

Customer Reference (optional)	SCE Service Account Number	Site Address	ZIP Code	Building Type Code	Year Built	Total Sq Ft/ Facility	Site Contact Name	Site Contact Phone Number	E-mail Address
EXAMPLE Project Name	3 - 000 - 0000 - 00	111 Main St	91001	33	1950	10,000	Victor Johnson	626-555-0901	vjohnson@tdi.com
	3 - _ _ _ - _ _ _ - _ _								

Multiple Site Project

3



Express Solutions

Refer to the Energy Management Solutions Guide or www.sce.com/solutions for Solution Codes, Solution Descriptions, Incentive Amounts and Program and Equipment Eligibility Requirements. Then calculate your Express Solutions incentive total. For more than five solutions, check the Multiple Solutions box below, skip Section 3 of this application and complete the Multiple Site/Solution Worksheet found at www.sce.com/solutions.

NOTE: Please read and answer the Express Solutions eligibility requirements and questions carefully before proceeding with your equipment purchase. Eligibility requirements and questions can be found in the Energy Management Solutions Guide Appendix and at www.sce.com/solutions.

							Express Solutions Calculation			
Solution Code	Solution Description	Has the solution already been installed?	Date of Actual or Proposed Installation	Description of Replaced Equipment (e.g., lighting type, wattage, model #, # of units)	Unit of Measure (e.g., lamp, fixture, sq ft, hp)	Number of Units Installed	Incentive \$ Per Unit	Incentive Total		
						A	X	B	=	C
EXAMPLE LT-58109	T8 Lamps and Electronic Ballasts—8-foot	YES* <input type="checkbox"/> NO <input checked="" type="checkbox"/>	10/21/09	120-F40T12 Cool White	Lamp	80	\$9.00	\$720.00		
		YES* <input type="checkbox"/> NO <input type="checkbox"/>								
		YES* <input type="checkbox"/> NO <input type="checkbox"/>								
		YES* <input type="checkbox"/> NO <input type="checkbox"/>								
		YES* <input type="checkbox"/> NO <input type="checkbox"/>								
		YES* <input type="checkbox"/> NO <input type="checkbox"/>								

Multiple Solutions (more than five)

TOTAL

*If YES, please include/submit the following: 1) Invoice receipt(s), and 2) Specification sheet(s) for installed incentive(s) from vendor.

NEXT PAGE



If you are submitting this application for Express Solutions incentives only, stop here. Then go to Sections 8 and 9 to sign and complete this application.



Customized Solutions

Incentives for Energy Efficiency (EE) Customized Solutions are based on a calculated approach to energy savings and demand reduction. If your project includes EE Customized Solutions, complete the table below. For more than five solutions, check the Multiple Solutions box below, skip Sections 4 and 5 of this application, and complete the Multiple Site/Solution Worksheet found at www.sce.com/solutions.

- Refer to your Energy Management Solutions Guide for the Solution Code, Solution Description, and Program and Equipment Eligibility requirements.
- To obtain a Description of Existing Equipment refer to either a) energy savings report from the Energy Management Online Application Tool found at www.sce.com/solutions, or b) your project proposal.

Line #	Solution Code	Solution Description	Description of Existing Equipment
	EXAMPLE LT-17492	Interior lighting fixture replacement—LED fixture	Incandescent lighting
1			
2			
3			
4			
5			

Multiple Solutions (more than five)

ESTIMATED PROJECT COMPLETION DATE



Customized Solutions: Energy Savings and On-Peak Demand Reduction

For the corresponding line from Section 4, refer to your energy savings and/or on-peak demand reduction calculations from the Energy Management Online Application Tool at www.sce.com/solutions or your project proposal to complete the table below.

- Attach quote for projected equipment installation costs and equipment specifications from your contractor/installation vendor and energy savings calculations with your completed application.

Line # From Sec 4	Energy Savings					On-Peak Demand Reduction					Total
	Baseline Usage (kWh/yr)	Installed Usage (kWh/yr)	Energy Savings (kWh/yr)	Incentive Rate (\$/kWh)	Energy Incentive (\$)	Baseline On-Peak Demand (kW)	Installed On-Peak Demand (kW)	On-Peak Demand Reduction (kW)	Incentive Rate (\$/kW)	On-peak Demand Reduction Incentive (\$)	Incentive Total
	A	B	C	D	E1	A	B	C	D	E2	E1 + E2
	EXAMPLE 150,000	97,000	53,000	\$0.05	\$2,650	25	24	1	\$100	\$100	\$2,750
1											
2											
3											
4											
5											
		TOTAL		TOTAL			TOTAL		TOTAL		

TOTAL ESTIMATED CUSTOMIZED SOLUTIONS PROJECT COST





Technology Incentives

DR Technology Incentives are based on a calculated approach to energy savings and demand reduction. If your project includes DR Technology Incentives, complete the table below. For more than five solutions, check the Multiple Solutions box below, skip Sections 6 and 7 of this application, and complete the Multiple Site/Solution Worksheet found at www.sce.com/solutions.

- Refer to your Energy Management Solutions Guide for the Solution Codes, Solution Descriptions, Strategies, and Program and Equipment eligibility requirements.

Line #	Solution Code	Solution Description	Strategy
	EXAMPLE DR-98812	Chiller Controls	Limit Chiller Electric Demand
1			
2			
3			
4			
5			

Multiple Solutions (more than five)

ESTIMATED PROJECT COMPLETION DATE



Technology Incentives: Peak Demand Reduction

Refer to your DR Technical Audit or project proposal to complete the table below.

- Total Project Costs include estimated or actual labor installation and equipment costs.
- DR Technology Incentives are capped at \$125/kW of measured and verified load reduction (\$300/kW for Automated Demand Response projects), and cannot exceed the actual reasonable cost of the purchase and installation of the qualifying equipment.
- Attach quote for projected equipment installation costs from your contractor/installation vendor, required invoice(s) and/or receipts, and equipment specification sheets with your completed application.
- Contact your SCE Account Representative for assistance in selecting an appropriate qualifying DR program that complements your business.

Line # From Sec 6	Auto-Demand Response?	Qualifying DR Program	Estimated Max Peak kW Reduction	Estimated Avg Peak kW Reduction	Labor Installation (\$)		Equipment (\$)		Project Cost (\$)	
					A	+	B	=	C	
	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	EXAMPLE CBP	80	68	\$5,000		\$3,500		\$8,500	
1	YES <input type="checkbox"/> NO <input type="checkbox"/>									
2	YES <input type="checkbox"/> NO <input type="checkbox"/>									
3	YES <input type="checkbox"/> NO <input type="checkbox"/>									
4	YES <input type="checkbox"/> NO <input type="checkbox"/>									
5	YES <input type="checkbox"/> NO <input type="checkbox"/>									
TOTAL									TOTAL	

8 Payment Information and Customer Acknowledgement

Complete the section below to let us know how you would like to be paid.

A. FORM OF PAYMENT (Please check one)

- Check to Customer [Complete B and C.]
- Utility Bill Credit to Customer [Complete C and D.]
- Check to third-party Payee (e.g., contractor) [Complete B, C, and E. Note: Provide third-party Payee information in Section C.]

B. PAYEE INFORMATION Check here if Payee Information is same as Section 1

Payee-Customer/Business Name	Contact Name	Title		
<input type="text"/>				
Company/Business Mailing Address	City	State	ZIP	
<input type="text"/>				
Contact Telephone Number	Contact Fax Number	Contact E-mail Address		
<input type="text"/>				

C. TAX IDENTIFICATION TYPE (Please check one)

Identification Number

- Federal Tax ID
- Social Security Number [SSN]
- Employer ID Number [EIN]

TAX STATUS (Please check one)

- Corporation
- Non-Corp
- Individual/Sole Proprietor
- Tax-exempt, Non-profit

Exempt Reason

I understand that incentives are taxable, and if greater than \$600 will be reported to the IRS unless the payee (i.e., the party receiving the incentive) is exempt. The payee will be required to submit to SCE a complete W9 for tax purposes. SCE will report incentives as income on IRS form 1099 unless the "Corporation" or "Tax- exempt, Non-profit" tax status box (above) has been checked. I understand that payees should consult their tax advisor concerning the taxability of incentives, and that SCE is not responsible for any taxes that may be imposed due to program incentive payment(s).

D. UTILITY BILL CREDIT (PLEASE COMPLETE THIS SECTION IF YOU PREFER PAYMENT IN THE FORM OF A BILL CREDIT TO THE CUSTOMER OF RECORD)

Service Account Number	Customer Account Number
3- <input type="text"/> <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/>	2- <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/>

E. PAYMENT RELEASE AUTHORIZATION (PLEASE COMPLETE THIS SECTION IF AN AUTHORIZED AGENT IS TO RECEIVE THE CHECK)

As the Customer, I am authorizing this payment of my incentive to the Payee named in Section 8, Part B, above, and I understand that I will not be receiving the incentive check from SCE. I also understand that my release of this payment to the Payee does not exempt me from the requirements outlined in the Application package.

Customer Name (Please Print)	Signature	Title	Date
<input type="text"/>			

Would you like more information about Demand Response options and/or other SCE programs that you read about in the Energy Management Solutions Guide? Check all that apply.

<input type="checkbox"/> Demand Response Programs (please specify)	<input type="checkbox"/> California Solar Initiative	<input type="checkbox"/> Other (please specify)
<input type="text"/>	<input type="checkbox"/> Savings by Design	<input type="text"/>
	<input type="checkbox"/> OnBill Financing	
	<input type="checkbox"/> ENERGY STAR® Benchmarking	

Applicant Agreement Regarding Program Terms and Conditions

I, the Applicant (and Authorized Agent of the Applicant, if applicable), hereby agree (the "Agreement") to the following terms and conditions to my participation in: (1) Express Solutions Program, (2) Customized Solutions Program, and/or (3) Demand Response (DR) Technology Incentives Program (the "Programs"). The Programs are identified and further described in the appropriate attachments to the Application, and also in the 2010 Express Procedures Manual for Business (www.sce.com/express_solutions) and the 2010 Statewide Customized Offering Procedures Manual for Business (www.sce.com/customized_solutions), as applicable.

- 1.a. **Incorporation by Reference:** The Application (together with all applicable attachments) is hereby incorporated by reference into, and made a part of, this Agreement.
- 1.b. **Incorporation by Reference—SCE Partnerships (if applicable).** To the extent Applicant is a participant in an SCE 2010–2012 Local Government or Institutional Partnership, the following shall apply: In addition to the Application, the executed agreement to jointly deliver the applicable 2010–2012 Energy Efficiency Partnership Program between Applicant and SCE (and other California utilities where applicable) (the "Partnership Agreement") shall also be incorporated into this Agreement by this reference. Should a conflict exist between the terms and conditions of this Agreement and the Partnership Agreement (including but not limited to Section 10 of this Agreement), then the terms and conditions of the Partnership Agreement shall control with respect to such conflict.
2. **Limitation on Funding Availability:** Each Program has limited funding and is offered on a first-come, first-served basis until funding is depleted or the Program is terminated, whichever comes first. I further understand that submission of this Application is not a guarantee of payment by SCE, nor is it a guarantee of fund availability. Upon SCE's approval of this Application and SCE's execution of a Program project agreement, if applicable to the requested Program, incentive funds will be reserved by SCE; however, payment of any incentive is subject to post-installation performance verification.
3. **Changes to Program:** Funding and conditions of each Program are subject to the jurisdiction of the California Public Utilities Commission ("CPUC"), and shall be subject to such changes or modifications as the CPUC may, from time to time, direct in the exercise of its jurisdiction. I understand that if a Program is modified in any way or terminated by order of any government entity, then this Agreement shall be revised or terminated consistent with that order. In addition, SCE may suspend or terminate any agreement related to a Program without cause (and without prior written notice) if SCE determines suspension or termination of the agreement is necessary in order to make changes to the related Program or if SCE is ordered by the CPUC to modify or discontinue a Program and/or any agreements related to a Program. I agree that SCE will not be liable for any damages or compensation of any kind that may result from the changes described in this paragraph 3.
4. **Right of Assignment:** SCE may assign any agreement related to my participation in a Program, in whole or in part, or its rights and obligations hereunder, directly or indirectly, by operation of law or otherwise, without my prior written consent, provided SCE remains obligated for payments incurred prior to the assignment. I may not assign this Application, in whole or in part, or my rights and obligations hereunder, directly or indirectly, by operation of law or otherwise without the prior written consent of SCE.
5. **Site Access Requirements:** The Program(s) I select may require installations, audits, inspections, measurements of the performance of the project measure(s) (referred to as "solution(s)"), and/or verification of installation of solutions. Therefore, I agree to provide reasonable access to the project site(s) for these purposes to SCE and/or its agents, assigns, or contractors and the CPUC and/or its agents or assigns.
6. **Authorized Services:** I understand that SCE employees, contractors and/or agents are authorized to provide only the services described in this Application for the Programs. SCE assumes no responsibility for any services, installations, improvements or equipment offered or provided to me by an SCE employee, contractor or agent other than those specified in this Application or that have not been authorized by SCE.
7. **Release and Use of Information:** I authorize SCE to release my contact and other relevant information to SCE's employees, contractors and/or agents for purposes related to my participation in the Program(s). I further authorize SCE's employees, contractors and agents to contact me with regard to the initiation, performance, and/or verification of any of the terms and conditions of the applicable Program(s).
8. **Calculation of Energy Savings:** SCE will not pay incentives for any energy savings in excess of the actual annual amount of my electricity usage at each SCE service account for which incentives are requested.
9. **Equipment Eligible for Incentives:** Energy savings and demand reduction resulting from the project must be above and beyond baseline energy performance, which include state-mandated codes, federal-mandated codes, industry-accepted performance standards or other baseline energy performance standards as determined by SCE. Refurbished and/or leased equipment is not eligible for Program incentives. Specific restrictions may apply to each energy efficiency solution, as outlined in the instructions and attached Application forms.
10. **Method for Calculation of Incentive Payments:** I understand that SCE pays up to 50% of the project cost for Customized Solutions, and up to 100% of the equipment cost for Express Solutions. For DR Technology Incentives, SCE pays up to 100% of actual reasonable project costs, not to exceed \$125 per kW of verified load reduction (\$300 per kW for Automated Demand Response). Calculations will be in accordance with the 2010 Statewide Customized Offering Procedures Manual for Business (www.sce.com/customized_solutions). I further understand that the total calendar year incentive payments to an individual SCE customer cannot exceed \$6 million for Customized Solutions, and \$2 million for Express Solutions.
11. **Exclusive Nature of These Incentive Payments:** To be eligible for Program incentives, I agree that I have not and will not apply for or receive rebates, incentives or services for the solution(s) covered by this Application from any other utility, state or local program funded by the Public Goods Charge (PGC). I further agree that I will not apply or receive rebates, incentives, or services for the incentive(s) covered by this Application in an amount greater than the total cost of the solution(s). Because the Programs are funded by California utility ratepayers and administered by SCE under the auspices of the CPUC, I may face adverse consequences (i.e., a requirement that I return payments that were made to me or a restriction on my eligibility to participate in other programs) if I violate these restrictions.
12. **Estimated Savings May Not Equal Actual Savings:** I understand that all energy savings, incentives, and installed costs provided by SCE during the Program Application process are estimates only, and are subject to change based on SCE review and approval and that I am solely responsible for the selection, purchase, installation and ownership of the equipment and services under the Programs.
13. **Energy Benefits:** As a qualified SCE customer, I certify that the indicated energy savings products are for use in my project site and not for resale. I agree to provide SCE with documents establishing paid proof of purchase and installation of the solutions applied for in this Application. I understand the incentive payments are based on related energy benefits over the life of the product. I agree that if (a) I do not provide Southern California Edison with 100% of the related energy benefits specified in the rebate form for the life of the product or for a period of five (5) years from receipt of rebate, whichever is less, or (b) I cease to be a customer of SCE during said time period, I shall refund a prorated amount of rebate dollars to SCE based on the actual period of time for which I provided the related energy benefits as an electric customer of SCE.
14. **Risk Allocation:** I UNDERSTAND THAT SCE MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, REGARDING MANUFACTURERS, DEALERS, CONTRACTORS, MATERIALS OR WORKMANSHIP, OR REGARDING SELECTION OR QUALIFICATION OF AUTHORIZED AGENTS. I ALSO UNDERSTAND, AND HAVE CAUSED MY AUTHORIZED AGENT (IF ANY) TO UNDERSTAND, THAT SCE MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE, USE, OR APPLICATION OF THE PRODUCTS OR SOLUTIONS. I AGREE TO INDEMNIFY, DEFEND AND HOLD HARMLESS, AND HEREBY RELEASE SCE, ITS AFFILIATES, SUBSIDIARIES, PARENT COMPANY, OFFICERS, DIRECTORS, AGENTS AND EMPLOYEES OF EACH OF THEM, FROM AND AGAINST ALL CLAIMS, DEMANDS, LOSSES, DAMAGES, COSTS, EXPENSES, AND LIABILITY (LEGAL, CONTRACTUAL, OR OTHERWISE), WHICH ARISE FROM OR ARE IN ANY WAY CONNECTED WITH ANY OF THE PROGRAMS.
15. **Facsimile Signature:** Copies of Applicant's signed signature page may be transmitted to SCE by facsimile or other electronic means. Copies of the signature pages so transmitted may be used for the purpose of enforcing the terms of this Agreement as though they were originals.
16. **I hereby acknowledge the following (check ONLY ONE of the following options):**
 - I am SELF-ADMINISTERING this project. Upon project approval, if applicable to requested Program(s), I intend to enter into an agreement with SCE for delivery of energy savings/demand reduction resulting from the installation of energy efficiency and demand response solutions at the project site listed in Section 2 of this Application.
 - I have entered into a contract with the AUTHORIZED AGENT indicated below for the installation of energy efficiency and/or demand response solutions at the project site listed in Section 2 of this Application. Upon project approval, if applicable to requested Program(s), my Authorized Agent is authorized to enter into the necessary agreements with SCE for delivery of energy savings and/or demand reduction resulting from the installation of these solutions at the project site. I understand that: (i) SCE makes no warranty or representation about the Authorized Agent's qualifications; (ii) I am solely responsible for selecting the Authorized Agent to implement the project on my behalf; (iii) that the Authorized Agent is an independent contractor and not authorized to make any representation on behalf of SCE; and (iv) that SCE will have no role in resolving any disputes between me, the Authorized Agent and/or any other third parties. I further authorize all contracts and correspondence to be sent directly to the Authorized Agent specified below.

Verification and Certification: I affirm that I am authorized to enter into this Agreement and that I have read, understand, and agree to all of the specific terms, conditions and other requirements and restrictions set forth in this Agreement for each of the Programs selected in this Application for my participation. I certify that the information I have provided in the Application that accompanies this Agreement is true and correct, and the project(s) for which I am requesting Program funding meet(s) all applicable requirements as set forth in this Application. Furthermore, I understand and agree that I meet all eligibility requirements for participation in the Program(s) for which I am applying. SCE reserves the right to request additional information to verify Applicant's eligibility to participate in the Program(s).

Customer Name (Please Print)

Signature

Title

Date

Authorized Agent Name (Please Print)

Signature

Title

Date

EXAMPLE CEC LOW INTEREST LOAN APPLICATION

THE APPLICATION

How Do You Apply? Unless otherwise specified in the “Other Information” column, just submit the information shown below.

Attach to application	Copies Needed	Other Information
Completed and signed loan application	Original plus one copy	
Completed Summary of Recommended Energy Efficiency Measures in Loan Request Table	One copy	
Feasibility Study	One copy	The study must contain: a) description of energy efficiency projects and buildings/ facilities affected by these projects, b) discussion of baseline energy use for the affected facilities, including annual energy related utility bills, c) all calculations and assumptions to support the technical feasibility and energy savings of the recommended projects, d) proposed budget detailing all project costs, and e) proposed schedule for implementation of the projects.
Copy of a signed resolution, motion, order, etc. from your governing board (see sample).	One copy	The resolution must be submitted with the application. The title of the official signing the loan agreement should be the same one named in the resolution, motion, or order.

(Continued on next page)

For Help Call (916) 654-4104

(CONTINUED)

Attach to application	Copies Needed	Other Information
California Environmental Quality Act (CEQA) Compliance Documentation Attachment 5	One copy	Include a copy of documentation demonstrating that the applicant has complied with CEQA in approving the project. There are three possible actions the applicant can take. The applicant could determine that the activity undertaken by the loan is: <ol style="list-style-type: none">1. Not a project (include analysis supporting the conclusion that the activity is not a project); or2. A project that is exempt (include the Notice of Exemption); or3. The project is not exempt, in which case the applicant should indicate which type of environmental document it has prepared:<ul style="list-style-type: none">-- Negative Declaration (include the Notice of Determination)-- Mitigated Negative Declaration (include the Notice of Determination)-- Environmental Impact Report (include the Notice of Determination.)
Copy of Resolution /agenda item	One copy	The resolution/ agenda item must include the finding on CEQA compliance. <ul style="list-style-type: none">• If the CEQA finding is in the agenda item, include both the item and the resolution.• If the CEQA finding is in the resolution, application does not need to include a copy of the agenda item

(Continued on next page)

For Help Call (916) 654-4104

Attach to application	Copies Needed	Other Information
<p>For ARRA Funded Loans Only:</p> <p>National Historic Preservation Act (NHPA) Compliance Documentation</p> <p>Attachments 3 and 4</p>	<p>One copy</p>	<p>All applicants must review and follow the steps delineated in Attachments 3 and 4 and submit documentation to the Energy Commission that demonstrates the project is compliant with the NHPA. Include documentation demonstrating that the applicant has complied with the NHPA by consulting with the California State Historic Preservation Officer (SHPO) and, if applicable, the Tribal Historic Preservation Officer (THPO), as required by Section 106 of the NHPA.</p>
<p>For ARRA Funded Loans Only:</p> <p>National Environmental Policy Act (NEPA) Compliance Documentation</p> <p>Attachment 1 and Attachment 2, if applicable</p>	<p>Original</p>	<p>Include completed copy of the NEPA Compliance Form (Attachment 1). If the applicant is unable to certify that the proposed project falls within one of the DOE-established categorical exclusions for NEPA, the applicant must additionally submit a NEPA environmental questionnaire (Attachment 2).</p>

<p>☒ Where Do I Submit My Application?</p> <p>Send your application package with the specified copies to:</p> <p>California Energy Commission Special Projects Office Attn: Loan Program 1516 Ninth Street, MS-23 Sacramento, CA 95814-5512</p>	<p>📞 Who Do I Contact?</p> <p>Call or email the California Energy Commission to discuss project and facility eligibility, funding availability, and application requirements.</p> <p>(916) 654-4104 Email: PubProg@energy.state.ca.us</p>
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A copy of the loan agreement and Exhibit D is available for downloading as an Adobe Acrobat Portable Document Format (PDF) or Microsoft Word document at:

<http://www.energy.ca.gov/efficiency/financing/>

Energy Commission staff will review your loan application. It may be necessary to arrange a site visit to discuss your project and loan request.

APPLICATION FOR ENERGY COMMISSION FINANCING Interest Rate 3%

1. APPLICANT INFORMATION

Applicant/Legal Name:		
DUNS* Number:		
Attach additional documentation (see Table on previous page showing items to attach to application)		
Mailing Address:	City:	Zip:
Street Address:	City:	Zip:
County:		
Contact Person:	Title:	
Tax ID #:	Congressional District:	
E-mail:	Phone:	Fax:

*DUNS Number is issued by Dun & Bradstreet (D&B). It is a unique nine digit identification number. To request your D-U-N-S Number via the Web go to: www.dnb.com/us/duns_update

2. PROJECT INFORMATION

A. Has any funding (such as local funds or other available funds) been previously committed or approved for this project?

- Yes. Please complete Section B:
 No.

B.

Source of Funds approved/committed: Provide details:
Amount of funding approved:

ARRA loan funds may only be used to supplement and may not be used to supplant funds already committed or expected to be received in support of the loan funded project.

For Help Call (916) 654-4104

C. Has your agency applied for, expect to apply for, or received any utility rebates/incentives?

- Yes. Please complete Section D:
- No.

D.

Source of Rebates/Incentives:
Amount:

3. PROJECT SCHEDULE

Estimated start date:
Estimated completion date:
<ul style="list-style-type: none">• ARRA funded projects must be completed and loans fully disbursed on or before March 31, 2012.

4. PROJECT BUDGET

Total project costs (include all installation costs):
Amount requested from the Energy Commission:

5. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE

[NOTE: This section is required for ARRA funded loans only. Applicants may choose to complete the requirements in this section or wait for Energy Commission notification that the loan will be funded with ARRA funds. However, ARRA-funded loan applications will not be deemed complete until all ARRA application requirements are fully met, including compliance with NEPA]

A. Has your agency completed the NEPA Compliance Form ([Attachment 1](#)) and included it with the loan application?

- Yes, Go to B.
- No, STOP: Please complete NEPA Compliance Form and submit it with the loan application.

B. Does proposed loan-funded project fall within one of the DOE-established categorical exclusions for NEPA?

- Yes, Go to Question 6.
- No, Go to C.

C. If no to question B, has your agency completed the NEPA environmental questionnaire and included it with the loan application?

- Yes, Go to Question 6.
- No, STOP: Please complete NEPA environmental questionnaire and submit it with the loan application. See Attachment 2.

6. NATIONAL HISTORIC PRESERVATION ACT (NHPA) COMPLIANCE

[NOTE: This section is required for ARRA funded loans only. Applicants may choose to complete the requirements in this section or wait for Energy Commission notification that the loan will be funded with ARRA funds. However, ARRA-funded loan applications will not be deemed complete until all ARRA application requirements are fully met, including compliance with NHPA.]

A. Has your agency complied with the NHPA by consulting with the SHPO and, if applicable, the THPO, as required by Section 106 of the NHPA.

- Yes, Go to B.
- No, STOP: Your agency must satisfy the consultation process as required by Section 106 of the NHPA. To initiate the consultation process, your agency must submit a letter of request to the SHPO that includes certain minimum information as delineated in Attachments 3 and 4.

B. Has the SHPO concluded that the proposed project will have no adverse effects on any historic resources and issued your agency a written response to this effect.

- Yes, submit copies of your agency's letter of request to the SHPO and the SHPO's written response with your loan application. Go to Question 7.
- No, Go to C.

C. If the SHPO has concluded that the proposed project will have adverse effects on historic resources, your project must be modified to avoid, minimize and mitigate these adverse effects in order to qualify for ARRA loan funds.

7. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) COMPLIANCE

The entire CEQA statute and Guidelines current as of January 1, 2009 can be found at: <http://www.califaep.org/userdocuments/File/2009%20CEQA%20Statute%20and%20Guidelines%20.pdf>.

A. Is there documentation demonstrating your compliance with CEQA?

- Yes, Go to B.
- No, STOP: Please complete CEQA compliance documentation (Attachment 5) before submitting application.

B. What finding did your governing body make? Activity funded by the loan is:

- Not a project.
- Is a project, and is exempt: List applicable exemption:
___ Statutory (list code section): _____

- ___ Categorical (list section from CEQA Guidelines): ___ 14 CCR _____
- Is a project that is not exempt? Applicant prepared the following environmental document:
- ___ Initial study + Negative Declaration
 - ___ Initial study + Mitigated Negative Declaration
 - ___ Environmental Impact Report
 - ___ Other (describe)

Notice of Determination filed? Date: _____

8. SINGLE AUDIT ACT REQUIREMENTS

[NOTE: This section is required for ARRA funded loans only. Applicants may choose to complete the requirements in this section or wait for Energy Commission notification that the loan will be funded with ARRA funds. However, ARRA-funded loan applications will not be deemed complete until all ARRA application requirements are fully met, including compliance with the Single Audit Act.]

Please select one of the following:

- We are in full compliance with Single Audit Act requirements.
- We are exempt from Single Audit Act requirements.
- We are unsure whether we are in compliance with the Single Audit Act requirements. We have contacted the California State Controller's Office at singleaudits@sco.ca.gov to determine our status.
- We are not in compliance with Single Audit Act requirements. Please explain:

9. WHERE DID YOU HEAR ABOUT OUR PROGRAM?

Please tell us where you heard about our loan program.

- Energy Commission Website
- Energy Commission Staff Presentation
- Literature at Trade Show or Workshop
- Utility Company
- Recommendation by Another Public Agency
- Other (please specify) _____

10. CERTIFICATION

To the best of my knowledge and belief, the data in this application are correct and complete.

Name of Authorized Representative:		
Title:		
Signature of Authorized Representative:		
Date:	Phone:	Email:

For Help Call (916) 654-4104

Summary of Recommended Energy Efficiency Measures in Loan Request

For each application, list the projects for which you are requesting a loan and identify the savings, project cost and payback for each project. Total the savings and project cost at the end of the table. Insert more rows as needed.

Project	Peak Demand Savings (kW)	Annual Electric Savings (kWh)	Annual Natural Gas Savings (therms)	Annual Other Energy Savings (specify units)	Annual Cost Savings	Project Installation Cost	Simple Payback (years)
<i>Example: Install T8 lamps and electronic ballasts</i>	48	266,405	0	0	\$24,113	\$100,790	4.2
TOTAL							

For Help Call (916) 654-4104

EXAMPLE CEC LOW INTEREST LOAN AGREEMENT

LOAN AGREEMENT



BORROWER	AGREEMENT NUMBER <p style="text-align: center;">-ECA</p>
ADDRESS	AGREEMENT TERM (See CEC signature date below) to / / The effective date of this Agreement is the date the California Energy Commission signs the Agreement. No work is authorized, or shall begin until the California Energy Commission signs the Agreement. See the signature date below for effective start date.

The parties agree to comply with the terms and conditions of the following Exhibits which are by this reference made a part of the agreement.

- | | |
|--|----------------|
| Exhibit A – Energy Conservation Assistance Act Loan Agreement | Page(s): _____ |
| Exhibit A – Attachment 1 – Budget Detail/Project Cost and Savings | Page(s): _____ |
| Exhibit B – Promissory Note | Page(s): _____ |
| Exhibit B – Attachment 1 – Estimated Loan Amortization Table | Page(s): _____ |
| Exhibit C – Tax Certification | Page(s): _____ |
| Exhibit D – Federal Provisions | Page(s): _____ |
| Exhibit D – Attachments | Page(s): _____ |
| Exhibit E – Special Terms and Conditions | Page(s): _____ |
| Exhibit F – Contacts List | Page(s): _____ |

PROGRAM Energy Conservation Assistance Act			FUND TITLE ECAA	
AMOUNT ENCUMBERED \$ 0.00	ITEM 0033001-3360-94-517	CHAPTER 553	STATUTE 1994	FISCAL YEAR
MATCH SHARE \$ 0.00	PURPOSE OF EXPENDITURE 4400-626.04-44016			
TOTAL \$ 0.00	OPTIONAL USE PRC Section 25416			

I hereby certify upon my own personal knowledge that budgeted funds are available for the period and purpose stated above.

SIGNATURE OF ACCOUNTING OFFICER	DATE

The undersigned parties have read the attachments to this agreement and will comply with the standards and requirements contained therein.

CALIFORNIA ENERGY COMMISSION		RECIPIENT	
SIGNATURE OF DEPUTY DIVISION CHIEF	DATE	AUTHORIZED SIGNATURE	DATE
NAME Sherry Mediati	PHONE (916) 654-4204	NAME	PHONE
TITLE Grants and Loans Manager	TITLE		
CALIFORNIA ENERGY COMMISSION ADDRESS 1516 9th Street, MS-1, Sacramento, CA 95814			

EXHIBIT A

ENERGY CONSERVATION ASSISTANCE ACT LOAN AGREEMENT

This Loan Agreement (the "Agreement") is entered into as of the date it is executed by both parties hereto, between the California Energy Resources Conservation and Development Commission (the "Energy Commission") and the [Insert Recipient Name] (the "Borrower") located in [Insert Recipient County], CA.

1. STATUTORY AUTHORITY AND LOAN

- A. Pursuant to the purposes authorized by section 25410, et seq., of the California Public Resources Code (the "Energy Conservation Assistance Act"), the Energy Commission has approved the Borrower's loan application dated [Insert Loan Application Date], which is not attached but is expressly incorporated by reference herein.
- B. Subject to the terms, covenants, conditions, and including Special Conditions (if applicable) contained herein, and the Budget Detail/Summary of Project Cost and Savings attached as Exhibit A, Attachment 1 hereto to the extent it modifies the Borrower's loan application, the Energy Commission shall make a loan to the Borrower (the "Loan") in the amount of [Spell Out Loan Amount] dollars (\$[Insert Loan Amount]) evidenced by a Promissory Note (the "Promissory Note") for loan number [Insert Loan Number] attached hereto as Exhibit B.

2. PURPOSE

The Borrower agrees to expend all funds disbursed pursuant to this Agreement only for the purposes and in the amounts set forth in Exhibit A, Attachment 1 (the "Project"). Any other use of funds disbursed hereunder shall require prior written approval by the Energy Commission.

3. LOAN DISBURSEMENT SCHEDULE

- A. The Energy Commission agrees to disburse funds to the Borrower upon the Borrower's execution of the attached Promissory Note and any appropriate security instruments and required supplemental documents, including invoices as required in Section 3.B below.
- B. Loan funds shall be disbursed on a reimbursement basis based on invoices submitted by Borrower in a form approved by the Energy Commission. Backup documentation for actual expenditures, including such items as timecards, vendor invoices, and proof of payment must be provided to substantiate the request. Energy Commission staff will

approve invoices only after verifying requested amounts against backup billings and determining that expenses are appropriate and used for the authorized purposes of this Loan. For executed Agreements, invoices for expenses incurred during the Agreement Term are eligible for reimbursement.

- C. All invoices must be submitted within thirty (30) days after Project completion.
- D. The final ten percent (10%) of the Loan amount will be withheld as retention until the final report is received from the Borrower and the Commission's Project Manager determines the Project has been satisfactorily completed.

4. **LOAN REPAYMENT AND INTEREST**

All funds disbursed hereunder, together with all interest payable thereon, shall be repaid to the Energy Commission in accordance with the terms of the Promissory Note. The Loan shall bear simple interest at the annual rate set forth in the attached Promissory Note on the principal balance of Loan funds disbursed to the Borrower. Payment of said interest shall be due at the time of semiannual scheduled Loan repayment installments to the Energy Commission, and interest shall accrue from the time of disbursement of funds to the Borrower until receipt of full Loan repayment to the Energy Commission.

5. **TERM**

- A. The effective date of this Agreement shall be the date on which it has been executed by both parties hereto. No work is authorized, or shall begin until the Energy Commission signs the Agreement.
- B. The Borrower agrees to complete performance of its obligations under this Agreement within the applicable periods stated in this Agreement.

6. **PREPAYMENT**

The Borrower shall have the right to prepay all or any part of the amount of this Loan at any time without penalty.

7. **PROMISSORY NOTE**

In order to evidence its debt to the Energy Commission hereunder, the Borrower agrees to, contemporaneously with the execution of this Agreement, execute and deliver to the Energy Commission the Promissory Note (attached as Exhibit B hereto).

8. ACCOUNTS, AUDITS, AND RECORDS

- A. The Borrower agrees to establish on its books a separate account for this Loan. This account shall be maintained as long as the Loan obligation remains unsatisfied.
- B. The Borrower further agrees to maintain records that accurately and fully show the date, amount, purpose, and payee of all expenditures drawn on said account for three (3) years after this Loan is repaid in full unless the Energy Commission requests a longer retention period.
- C. The Borrower further agrees to utilize a voucher system by which all expenditures from said account will be authorized and authenticated.
- D. The Borrower further agrees to allow the Energy Commission or any other agency of the State of California (the "State") or the Federal Government, or their designated representatives, on written request, to have reasonable access to, and the right of inspection of, all records that pertain to said account or the Project. The Borrower also agrees to submit to an independent audit, if requested by the Energy Commission, at the expense of the Borrower. Borrower agrees to maintain all such records for a minimum of three years after this Loan is repaid in full unless the Energy Commission notifies the Borrower, prior to the expiration of such three-year period, that a longer period of record retention is necessary.

9. SOURCE OF REPAYMENT; OPERATION OF PROJECT

- A. Semiannual payments due to the Energy Commission under this Agreement shall be made from savings in energy costs or other legally available funds as the Borrower chooses. If the Borrower is a county, city, town, township, board of education, or school district, the Borrower agrees that the amount of the semiannual Loan repayment shall not be raised by the levy of additional taxes and shall not be an obligation against tax revenues, but shall be obtained either from savings in energy costs resulting from the subject energy conservation projects or other legally available funds as the Borrower chooses.
- B. Energy cost savings as determined by the Energy Commission are based on energy usage and serving utility rate schedules at the time of the issuance of this Loan, except as specified in Special Conditions, if any, as detailed in this Agreement, and the information and data contained in the Borrower's loan application and technical study. The following will not affect the Energy Commission's initial finding of energy cost savings, and are not a basis for claiming a lack of energy savings: a) changes in

energy use and/or rate schedules which occur after issuance of the Loan, except as specified in Special Conditions, if any, as detailed in this Agreement, b) deviations in the project work scope from what was approved by the Energy Commission, c) changes in the Borrower's facility and/or equipment which occur after the issuance of the loan, including, but not limited to maintenance, operations, schedules, employees and facility alterations and expansions, d) deviations, omissions or errors found in the loan application and technical study after the loan award. The Borrower is responsible for ensuring the accuracy of the information contained in its loan application and technical study. In the event annual energy cost savings resulting from the Project, as determined by the Energy Commission, fail to equal or exceed the amount due under this Agreement, this Agreement may be renegotiated to assure that the repayment amount does not exceed the actual energy savings or avoided costs resulting from the Project, and the Promissory Note will be revised accordingly. In no event, however, will the number of semiannual installments payable hereunder and under the Promissory Note exceed thirty.

- C. The Borrower shall obtain and maintain in its records any and all permits and licenses required to install or operate the Project and shall comply with all local, state, and federal laws, rules and codes concerning the Project. The Borrower shall maintain the Project in good working order for the duration of the Loan and shall insure that staff members are provided appropriate training on the operation and maintenance of the Project. The Borrower shall maintain insurance on the Project and, in the event of any casualty loss covered by such insurance policy, apply the proceeds to the repair of the Project or, with the approval of the Energy Commission, may use the insurance proceeds to install alternate projects to generate alternative energy cost savings to repay the Loan.
- D. The Borrower agrees to provide the Energy Commission with information necessary for administration of the Program for three years following completion of the Project or three years after the federal grant term, whichever is later, unless the Energy Commission requests a longer retention period. The needed information includes the following, at a minimum, (1) the annual computation, required by Section 25414 of the Energy Conservation Assistance Act, of energy cost savings for the most recent fiscal year, calculated in the manner and provided in the format prescribed by the Energy Commission and (2) any information or change in assumptions or operations which might affect the Energy Commission's initial determination of energy savings.
- E. The Borrower authorizes any official or agent of the Energy Commission, the State, or the Federal Government to conduct physical inspections of

the Project before the commencement; during construction, installation and implementation of the Project; and at any time prior to the complete repayment of the Loan. In each contract entered into with suppliers of goods and services to install, conduct, or operate the Project, including management services, the Borrower shall include terms which allow any officer or agent of the Energy Commission, the State, or the Federal Government access to the Project site and to any books, documents, or records directly relevant to the Project.

- F. If, prior to final repayment of the Loan, the Borrower sells the equipment or material installed with the proceeds of the Loan or sells the building, facility or system in which the Project has been implemented, then the Borrower shall apply the sale proceeds to repay any remaining balance due under this Agreement in full at the time of such sale. The Borrower shall notify the Energy Commission within five business days of the date on which the Borrower enters into an agreement to effect such transaction. The Borrower shall repay the Energy Commission within 30 calendar days of receiving an invoice from the Energy Commission for the balance due.
- G. Borrower shall not place any liens or encumbrances on the Project until the Loan is fully repaid.
- H. In accordance with Section 25415 of the Energy Conservation Assistance Act, the Borrower covenants to take such action as may be necessary to include all payments due hereunder in its annual budget and to make the necessary annual appropriations for all such payments. The obligation of the Borrower to make such payments shall be limited to the savings realized by the Borrower as a result of implementing the Project funded by the Loan.

10. **DEFAULT**

- A. The Borrower's failure to comply with any of the terms of this Agreement shall constitute a breach of this Agreement and an Event of Default. In such case, the Energy Commission may declare this Agreement to have been breached and be released from any further performance hereunder.
- B. In the event of any default or breach of this Agreement by the Borrower, the Energy Commission, without limiting any of its other legal rights or remedies, may to the extent permitted by law, declare the Promissory Note evidencing this Loan to be immediately due and payable.

11. TERMINATION

This Agreement may be terminated for any reason set forth below.

A. With Cause

In the event of any breach by the Borrower of the conditions set forth in this Agreement, the Energy Commission may, without prejudice to any of its legal remedies, terminate this Agreement for cause upon five (5) days written notice to the Borrower. "Cause" includes without limitation:

- 1) Failure to perform or breach of any of the terms or covenants at the time and in the manner provided in this Agreement; or
- 2) Significant change in Energy Commission or federal policy such that the work or product being funded would not be supported by the Energy Commission or Federal Government; or
- 3) Reorganization to a business entity unsatisfactory to the Energy Commission.

B. Without Cause

The Energy Commission may, at its option, terminate this Agreement without cause in whole or in part, upon giving thirty (30) days advance notice in writing to the Borrower.

12. REPORTING

- A. Progress reports are due until Project completion.
- B. A final report is due no later than 60 days after Project completion.
- C. The Energy Commission will not process an invoice unless the Borrower's report submittals are up to date.
- D. If requested by the Energy Commission, Borrower shall submit, within ten (10) days after the Energy Commission's written request, a status report on its activities to date, pursuant to this Agreement.
- E. Reports shall be in a format as determined by the Energy Commission.
- F. The Borrower shall submit reports regarding energy savings as described in Section 9.D above.

13. GENERAL TERMS

- A. Indemnification by the Borrower. The Borrower agrees to indemnify, defend, and save harmless the Energy Commission, the State, the Federal Government, and their officers, agents, and employees from any and all claims, losses, or costs (including reasonable attorney fees) arising out of, resulting from, or in any way connected with the Loan or this Agreement, or the financing or the operation of the facilities financed with the Loan.
- B. Ownership of Equipment and Material. All equipment and material acquired under this Agreement shall become the property of the Borrower at time of purchase. The Borrower shall obtain and maintain in its records a written waiver of all claims, other than those previously made in writing and still unsettled, from each contractor who supplies goods and services, including management services, in connection with the Project. All equipment purchased with Loan funds shall be subject to the equipment provisions of 10 Code of Federal Regulations (CFR) Part 600, which is incorporated by reference in Exhibit D.
- C. Independent Capacity. The Borrower, and the agents and employees of the Borrower, in the performance of this Agreement, shall act in an independent capacity and not as officers or employees or agents of the Energy Commission, the State of California, or the Federal Government.
- D. Assignment. Without the written consent of the Energy Commission, this Agreement is not assignable or transferable by the Borrower either in whole or in part. The Energy Commission may assign its rights under this Agreement for security purposes, and in such event the assignee of this Loan Agreement, including the bond trustee of any bonds which may be secured by repayment of this Loan, shall be entitled to enforce the provisions hereof and shall be a third party beneficiary of this Agreement.
- E. Time of the Essence. Time is of the essence in this Agreement. Borrower is required to take timely actions which, taken collectively, move to completion of the purpose for which this Loan was awarded. The Commission Project Manager will periodically evaluate the progress toward completion. If the Commission Project Manager determines that the Borrower is not progressing toward completion within one (1) year after the effective date of this Agreement, the Commission Project Manager may, without penalty or prejudice to any of the Energy Commission's other remedies, terminate this Agreement.
- F. Amendment. No amendment or variation of the terms of this Agreement shall be valid unless made in writing and signed by the parties hereto, and

no oral understanding or agreement not incorporated herein shall be binding on any of the parties hereto. The Borrower acknowledges that provisions included in this Agreement pursuant to Federal or State law, regulation, or policy are subject to change. The Borrower agrees to comply with any amendments that the Energy Commission makes to this Agreement to comply with Federal or State law, regulation, or policy. The Commission's Project Manager may approve changes to this Agreement that are not significant, including changes required to comply with Federal or State law, regulation, or policy. These changes shall be documented in a letter of agreement signed by the authorized representatives of the Energy Commission and the Borrower.

- G. Severability. In the event that any provision of this Agreement is unenforceable or held to be unenforceable, then the parties agree that all other provisions of this Agreement have force and effect and shall not be affected thereby.
- H. Governing Law and Venue. This Agreement is governed by and shall be interpreted in accordance with the laws of the State of California. Venue shall be in Sacramento County.
- I. Non-discrimination. During the performance of this Agreement, the Borrower and its contractors and subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, physical disability (including HIV and AIDS), mental disability, medical condition (cancer), age (over 40), marital status, and family care leave. The Borrower and its contractors and subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. The Borrower and its contractors and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12990 (a-f) et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this agreement by reference and made a part hereof as if set forth in full. The Borrower and its contractors and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. The Borrower and its contractors shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under this Agreement.

- J. Incorporation of Energy Conservation Assistance Act. The Energy Conservation Assistance Act, together with any applicable rules, regulations or procedures authorized by such statute, is incorporated by reference in this Agreement.
- K. Borrower Authorization. The Borrower certifies that it has full power and authority to enter into this Agreement, and this Agreement has been duly authorized, executed and delivered by the Borrower. The Borrower acknowledges that the resolution of its governing body or other official action authorizing it to enter into this Agreement also authorizes such further acts as are necessary, including execution of the Promissory Note, to implement and further the intent of this Agreement.
- L. Prevailing Wage. The Borrower shall comply with Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 of the Labor Code relating to the payment of prevailing wage for work performed on the Project financed in whole or in part with the proceeds of the Loan.

14. **NOTICE**

Any notice required to be given to the Energy Commission hereunder shall be sent to the Energy Commission at 1516 Ninth Street, MS-1, Sacramento, California 95814, attention Grants and Loans Office Manager, or at such other address as the Energy Commission may designate in writing to the Borrower. Any notice required to be given to the Borrower hereunder shall be sent to the address shown below the Borrower's execution of this Agreement, or at such other address as the Borrower shall designate in writing to the Energy Commission. Notice to either party may be given using the following delivery methods: U.S. mail, overnight mail, or personal delivery, providing evidence of receipt, to the respective parties identified in this Agreement. Delivery by fax or e-mail is not considered notice for the purposes of this Agreement. Notice shall be effective when received, unless a legal holiday for the State commences on the date of the attempted delivery in which case the effective date shall be postponed 24 hours, or whenever the next business day occurs.

EXHIBIT A

ATTACHMENT 1

BUDGET DETAIL/PROJECT COST AND SAVINGS

This loan is made to the [Insert Name of Borrower] (“Borrower”) for an energy savings Project. The Project consists of [Describe Energy Efficiency Measure(s)] to be installed at [Describe Facility(ies) Where EEMs to be Installed] in the [Insert Name of Township, City or County where the project is located].

The Table below summarizes the estimated Project cost(s), saving(s) and simple payback(s) for the Project.

TABLE 1: Summary of Project Cost and Savings:

Energy Efficiency Projects	Estimated Total Project Cost	Energy Commission Loan	Estimated Annual Energy Cost Savings	Simple Payback* (Years)
[Insert EEM #1]	[Insert EEM Cost]		[Insert Cost Savings]	[Insert EEM Payback]
[Insert EEM #2]	[Insert EEM Cost]		[Insert Cost Savings]	[Insert EEM Payback]
[etc.]	[etc.]		[etc.]	[etc.]
GRAND TOTAL ALL MEASURES	[Insert Total Project Cost]	[Insert Loan Amount]	[Insert Total Annual Energy Cost Savings]	[Insert Overall Payback]

* The simple payback is based on the loan amount.

The Borrower shall implement the Project in Table 1. Failure to implement all portions of the Project may reduce the approved loan amount. If necessary, the reduced loan amount will be determined by multiplying the annual energy cost savings by [Insert Maximum Simple Payback Period in Years]. If the Borrower has received disbursements that exceed the amount of the reduced loan, the Borrower shall refund the difference to the Energy Commission.

EXHIBIT B

PROMISSORY NOTE

LOAN NUMBER: [Insert Loan #]
PRINCIPAL AMOUNT: [\$[Insert Loan Amt]
INTEREST RATE: [Insert Int Rate]%

1. For value received, the undersigned, (hereinafter referred to as the "Borrower"), promises to pay to the order of the State of California, Energy Resources Conservation and Development Commission (hereinafter referred to as the "Commission"), at its principal place of business at 1516 Ninth Street, Sacramento, California 95814, or at such other place as the Commission may designate the principal sum of [Spell Out Loan Amount] dollars ([\$[Insert Loan Amount]) or such lesser amount as shall equal the aggregate amount disbursed to the Borrower by the Commission pursuant to the above-referenced Energy Conservation Assistance Account Loan Agreement (the "Loan Agreement") between the Borrower and the Commission, together with interest thereon at the rate of [Insert Interest Rate]% percent per annum on the unpaid principal, computed from the date of each disbursement to the Borrower. Principal, together with interest thereon, is due and payable in semiannual installments as specified in the Estimated Amortization Schedule, attached hereto as Exhibit B, Attachment 1 and as amended in the Final Amortization Schedule, beginning on or before December 22 of the fiscal year following the year in which the Project is completed and continuing thereafter on each June 22 and December 22 until said principal and interest shall be paid in full. The Final Amortization Schedule, and any amended Final Amortization Schedule(s), are not attached but are expressly incorporated by reference herein.
2. Payment of any scheduled installment received within thirty (30) days after its due date shall be considered to have been received on its due date and shall be first applied to accrued interest from the date of disbursal to the Borrower and the balance, if any, to principal. Payment of any scheduled installment received more than thirty (30) days after its due date but before the next billing shall be considered late, and interest on the unpaid principal shall accrue from date of disbursal to the Borrower through the actual payment date. However, payment of any scheduled installment received after a subsequent billing shall be considered overdue, and interest shall accrue on the unpaid principal from date of disbursal to the Borrower through the subsequent billing due date or actual payment date, whichever is later.
3. The Borrower may prepay this Promissory Note in full or in part, without penalty.
4. In accordance with Section 25415 of the Energy Conservation Assistance Act, the Borrower covenants to take such action as may be necessary to include all payments due hereunder in its annual budget and to make the necessary annual appropriations for all such payments. The obligation of the Borrower to make

such payments shall be limited to the savings realized by the Borrower as a result of implementing the Project funded by the Loan.

5. If any installment is not paid within thirty (30) days after its due date, the Commission, at its option, may require the Borrower to pay a late charge equal to five percent (5%) of the amount of the installment or Five Dollars (\$5.00), whichever is greater.
6. On the occurrence of any event of default, the Commission, at its sole election and without limiting any of its other legal rights or remedies, may, to the extent permitted by law, declare all or any portion of the principal and accrued interest on this Promissory Note to be immediately due and payable and may proceed at once without further notice to enforce this Promissory Note according to law.
7. Each of the following occurrences shall constitute an event of default:
 - A. Failure of the Borrower to repay any principal or interest when due under the terms of this Promissory Note;
 - B. Termination of the Loan Agreement pursuant to the terms thereof or breach by the Borrower of any terms of said Loan Agreement;
 - C. Failure of the Borrower to undertake in a timely way the express and implied activities for which said Loan Agreement has been executed;
 - D. Failure of the Borrower to obtain prior written Commission approval before undertaking a change in the scope of the activities for which said Loan Agreement has been executed; or
 - E. Occurrence of (1) the Borrower becoming insolvent or bankrupt or being unable or admitting in writing its inability to pay its debts as they mature or making a general assignment for the benefit of or entering into any composition or arrangement with creditors; (2) proceedings for the appointment of a receiver, trustee, or liquidator of the assets of the Borrower or a substantial part thereof, being authorized or instituted by or against the Borrower; or (3) proceedings under any bankruptcy, reorganization, readjustment of debt, insolvency, dissolution, liquidation or other similar law, or any jurisdiction being authorized or instituted against the Borrower.
8. No delay or failure of the Commission in the exercise of any right or remedy hereunder or under any other agreement which secures or is related hereto shall affect any such right or remedy, and no single or partial exercise of any such right or remedy shall preclude any further exercise thereof, and no action taken or omitted by the Commission shall be deemed a waiver of any such right or remedy.

9. Any notice to the Borrower provided for in this Promissory Note shall be given by mailing such notice by certified mail, return receipt requested, addressed to the Borrower at the address stated in the Loan Agreement, or to such other address as the Borrower may designate by notice to the Commission. Any notice to the Commission shall be given by mailing such notice by certified mail, return receipt requested, to the Commission at the address stated in the Loan Agreement, or at such other address as may have been designated by notice to the Borrower.
10. If suit is brought to collect any part of this Promissory Note, the Commission shall be entitled to collect all reasonable costs and expenses of said suit and any appeal therefrom, including reasonable attorney's fees.
11. This Promissory Note shall be binding upon the Borrower and its permitted successors and assigns and upon the Commission and its permitted successors and assigns. Without the written consent of the Commission, this Promissory Note is not assignable or transferable by the Borrower either in whole or in part. The Commission may assign its rights under this Promissory Note for security purposes, and in such event the assignee of this Promissory Note, including the bond trustee of any bonds which may be secured by repayments of this Promissory Note, shall be entitled to enforce the provisions hereof and shall be a third party beneficiary of this Promissory Note.
12. This Promissory Note shall be construed and enforced in accordance with the laws of the State of California.

[Insert Recipient Name] _____
BORROWER

PRINTED NAME OF AUTHORIZED
REPRESENTATIVE

AUTHORIZED SIGNATURE

TITLE

DATE

EXHIBIT B
ATTACHMENT 1
ESTIMATED AMORTIZATION SCHEDULE

EXHIBIT C
TAX CERTIFICATE

Not applicable.

EXHIBIT D
FEDERAL PROVISIONS

Not Applicable.

EXHIBIT E
SPECIAL TERMS AND CONDITIONS

Not Applicable.

EXHIBIT F

CONTACTS

<p>Commission Project Manager:</p> <p>Amir Ehyai California Energy Commission 1516 Ninth Street, MS - 23 Sacramento, CA 95814 Phone: (916) 654-4550 Fax: (916) 654-4368 e-mail: aehyai@energy.state.ca.us</p>	<p>Borrower Project Manager:</p> <p>(Name) (Contractor Name) Address</p> <p>Phone: Fax: e-mail:</p>
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