Appendix D

Economic Methods and Assumptions

INTRODUCTION

Economics were a key consideration in determining the feasibility of proposed GHG reduction measures. Costs and, where applicable, savings to the resident, business, or farmer were assessed for a selected number of high reduction potential measures. Governmental agency, academic institution, and private industry sources, as well as analyses conducted by AECOM were used in the analysis.

COSTS & SAVINGS

A costs and savings analysis was performed for a selected number of implementation measures included in the CAP. Measures vary in the distribution of costs; some measures require funding from the County or other public entities, whereas others will result in increased costs to residents, businesses, and/or farmers. In nearly all measures that require some investment by the private sector, there are long-term savings that allow recuperation of initial investments, as well as other benefits such as improved air quality. Some measures require no private investment, but generate savings for residents, business owners, or farmers.

Cost to Resident, Business or Farm

Although many measures do not have private costs, the economic implications of these measures to the resident, business, or farm owner merit analysis and quantification, where possible. The cost analysis for private entities is described as annual costs (or average annual costs), total costs, and per unit costs (specific units defined per measure). While several measures have mandatory costs (i.e. energy performance standards for new construction), others are voluntary (i.e., energy efficiency retrofits). However, funding sources and financing mechanisms are available to help offset these expenditures. To provide a comparable assessment of costs, calculations are based on a hypothetical average building, business, or farm. Where the variation in size is too considerable to overlook, per unit costs are provided that can be extrapolated to a range of building, business, or farm sizes. For nearly every measure with cost implications, savings would accrue over time, defraying some of the initial investment.

Savings to Resident, Business or Farm

The savings analysis for residents, businesses, or farms is presented in terms of annual savings, as many savings would be recurring. Not all measures generate savings, though many that deal with energy or water efficiency in homes or businesses generate long-term utility bill savings. Farm operational efficiency can also generate savings through decreased inputs for agricultural production. To provide a comparable assessment of savings, calculations are based on a hypothetical average building, business, or farm.

AGRICULTURE: Measure A-1					
Measure	Progress Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
A-1: Reduce nitrogen fertilizer application rates	**Nitrogen Fertilizer application reduction** Reduce average nitrogen fertilizer application rates by 6% below current (2010) levels.	**Cost Type**	*Ongoing Operation Cost*	Example crops: Alfalfa, Corn, Rice, Safflower Tomato, Wheat, Tomatoes Calculations are based on production acreage, tonnage, and value estimates from 2007-2008. Calculations are based on average relative changes in yield (%) of 25% reduction in fertilizer application compared to conventional practices (conventional tillage, 100% mineral fertilizer, and no cover crop) for the Sacramento Valley. Values are averages over individual fields and for the period 1997–2006. Crops are grown in typical rotations. Values are biophysical potentials that do not reflect practical limitations of combining practices. Gain (+) or Loss (-) in productivity due to 25% reduction in fertilizer application: – Alfalfa: 0.35% – Corn: -0.20% – Rice: -0.03% – Safflower: -12.90% – Tomato: -4.00% – Wheat: -0.10% Changes in agricultural production will have impacts on individual farmers, as well as agricultural infrastructure, processing, storage, and transportation.	Yolo County 2008 Agricultural Crop Report CEC & UC Davis: *Assessment of Greenhouse Gas Mitigation in California Agricultural Soils* AECOM
		Annual Cost	**Estimated Impact on Yolo County Agriculture:** – Alfalfa: $219,000 production value gain with $540,000 of savings = $719,000 net gain – Corn: $16,000 production value loss with $398,000 of savings = $382,000 net gain – Rice: $13,000 production value loss with $823,000 of savings = $810,000 net gain – Safflower: $636,000 production value loss with $110,000 of savings = $526,000 net loss – Tomato: $4,110,000 production value loss with $1,913,000 of savings = $2,197,000 net loss – Wheat: $43,000 production value loss with $975,000 of savings = $932,000 net gain		
		Total Cost	N/A		
		Per Unit Cost	**Per Acre Impact (individual farmers):** – Alfalfa: $4 production value gain with $10 of savings – Corn: $2 production value loss with $40 of savings – Rice: $0 production value loss with $26 of savings – Safflower: $56 production value loss with $10 of savings – Tomato: $103 production value loss with $48 of savings – Wheat: $1 production value loss with $25 of savings		

AGRICULTURE: Measure A-2					
Measure	Progress Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
A-2: Reduce fossil fuel consumption in field equipment	**Tractor operation efficiency** 5% of farm equipment increases fuel efficiency by 6% through improvements to operation and maintenance improvements.	**Cost Type**	*Ongoing Operation Cost*	**Tractor Efficiency** – *Make sure your thermostat works properly.* A properly working thermostat saves energy. Most engines run most efficiently when water temperature is between 165° F and 180° F. Fuel consumption increases by approximately 25% when the engine is operating at 100° F, instead of 180° F. – *Minimize idling, which can account for 15% to 20% of total fuel used.* Letting an engine idle for 10 minutes during an average day, or 61 hours a year, will use about 31 gallons of fuel on a 75-horsepower diesel tractor. – *Avoid quick starts—they waste fuel and are hard on equipment.* Keeping farm vehicles and equipment in top operating condition will save fuel and money, help reduce repair costs, improve reliability, and minimize harmful exhaust emissions. Common maintenance measures include getting regular tune-ups; replacing air, oil and fuel filters routinely; changing oil; and using the proper grade of oil. – *Ensure that gas caps fit properly.* Caps that are damaged, loose, or missing altogether will cause fuel to vaporize. – *Reduce excess weight on vehicles.* Lighter loads consume less fuel than heavier ones. Keep your tires properly inflated. Having just one tire under-inflated by six pounds per square inch (psi) can increase fuel consumption by 3%, not to mention reducing the tire's life. – *Have wheels aligned and balanced.* Proper alignment and balance—like proper air pressure—help minimize resistance from tires, which can reduce fuel economy.	National Sustainable Agriculture Information Service - Conserving Fuel on the Farm http://attra.ncat.org/attra-pub/farm_energy/conserving.html
		Annual Cost			
		Total Cost			
		Per Unit Cost	Cost savings to negligible costs if efficiency is achieved through basic operational and maintenance improvements.		

AGRICULTURE: Measure A-2					
Measure	Progress Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
A-2: Reduce fossil fuel consumption in field equipment	**Tractor operation efficiency** 25% of farm equipment increases fuel efficiency by 5% through improvements to equipment (conversion from older model to Tier IV engines)	**Cost Type**	*Initial Capital Cost*	**Tier IV Tractor Engines** Only Caterpillar has estimated prices for Tier IV equipment, calculating it will add 12% to engine costs over the next three years. Other manufacturers have indicated that likely price increases will be in the 3% to 5% range. This extra cost purchases cleaner burning engines that are more efficient, and consumes 15% to 20% less fuel than pre-Tier equipment built just 12 years ago. John Deere Base Price (Tier III compliant) – 6115D Cab Tractor: $54,000 – 7130 Open Operator Station Tractor: $64,000 – 8235R Tractor: $195,000 – 8360R Tractor : $295,000 – 8360RT Tractor: $305,000 – 9430T Tractor: $323,000 – 9530T Tractor: $343,000 – 9360 Tractor: $326,000	www.agriculture.com/machinery/meer-cleer-leer-engines_197-ar10177 John Deere www.deere.com/en_US/ProductCatalog/FR/category/FR_TRACTORS.html
		Annual Cost	If financed through a commercial loan (~5% interest rate, 20 years): ~$33 to $330 dollars per month, assuming no subsidies or discounts.		
		Total Cost	N/A		
		Per Unit Cost	Approximate 10-15% premium on Tier IV tractor engines compared to Tier III. For a range of tractor prices from $50,000 to $325,000, this price premium translates to $5,000 to $50,000 on the purchase of a new Tier IV tractor compared to Tier III tractors.		

AGRICULTURE: Measure A-3					
Measure	Performance Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
A-3: Reduce energy use in agricultural irrigation pumping	**Pump repair or upgrade** 10% of groundwater pumps improve pump bowl efficiency for an average 33% reduction in energy (electricity or diesel) consumed.	**Cost Type**	*Ongoing Operating Cost*	**Assumes a typical groundwater pump:** **Low Range:** – 50 horsepower – 500 gallons per minutes (GPM) (700 GPM after retrofit) – 50 Discharge Pressure (psi) – 50% Overall Plant Efficiency (OPE) (83% OPE after retrofit) – 2,000 hours of operation per year **High Range:** – 175 horsepower – 800 gallons per minutes (GPM) (1,000 GPM after retrofit) – 50 Discharge Pressure (psi) – 50% Overall Plant Efficiency (OPE) (83% OPE after retrofit) – 2,000 hours of operation per year	Center of Irrigation Technology - CSU Fresno - Agricultural Pumping Efficiency Program www.pumpefficiency.org/Pumptesting/costanalysis.asp AECOM
		Annual Cost	**50-horsepower (low range) - 195 acre-feet per year (at 2,000 annual hours of operation):** Annual Cost per Acre-Foot of Water: ~$17,000/year (current condition) and ~$10,000 (after retrofit) = ~$7,000 of savings **175-horsepower (high range) - 295 acre-feet per year (at 2,000 annual hours of operation):** Annual Cost per Acre-Foot of Water: ~$26,000/year (current condition) and ~$16,000 (after retrofit) = ~$10,000 of savings		
		Total Cost	Retrofit and/or repair costs will vary considerably depending on the current groundwater pump system.		
		Per Unit Cost	**50-horsepower (low range):** Average Cost per Acre-Foot of Water: $88 (current condition at 50% OPE) and $53 (after retrofit at 83% OPE) = Savings of $35/acre foot/year **175-horsepower (high range):** Average Cost per Acre-Foot of Water: $88 (current condition at 50% OPE) and $53 (after retrofit at 83% OPE) = Savings of $35/acre foot/year		

AGRICULTURE: Measure A-3					
Measure	Mechanism	Categories	Economics Assumptions	Calculation and Assumptions	Sources
A-3: Reduce energy use in agricultural irrigation pumping	**Solar irrigation pumps** 40% of tailwater-return pumps switch to a solar electric energy source providing 100% of pumping energy.	**Cost Type**	*Initial Capital Cost*	**Range of costs per unit of energy and per system (installed, and maintenance costs):** – The cost of a solar water pumping system will vary depending on the capacity of the system. Generally, solar water pumping systems range in cost from $2,000 - $6,000. **Expected Payback:** – Solar water pumping is an economical and low maintenance alternative to a generator or extending the grid to un-serviced areas. Where the upfront costs of a grid extension are greater than the cost of the solar water pumping system (usually 0.25 mile or further), the savings are immediate and ongoing with minimal maintenance costs. While the upfront costs are generally greater than a gas-fuelled generator-based water pumping system, savings are met over 5 - 10 years or sooner in maintenance and fuel costs.	Integration of Renewable Energy on Farms www.farm-energy.ca WorldWater and Power Corporation www.worldwatersolar.com Conergy www.conergy.us
		Annual Cost	If financed through a commercial loan (~5% interest rate, 20 years): ~$13 - $40 dollars per month (not including tax and rebate benefits)		
		Total Cost	N/A		
		Per Unit Cost	~$2,000 to $6,000 per 10 horsepower solar irrigation unit (costs per acre-foot will vary depending on the utilization of the pump) **Potential Rebates** Rebate of up to 40% of installed cost Federal Tax Credit of 10% California State Tax Credit of 7.5% 5 Year Accelerated Tax Depreciation Renewable Energy Credits Sustained Asset Value with 25 year PV Module Warrantees		

AGRICULTURE: Measure A-4					
Measure	Performance Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
A-4: Reduce confined livestock manure methane emissions	**Confined livestock manure management** Reduction of 90% manure methane emissions from 100% of confined livestock operations.	**Cost Type**	*Initial Capital Cost (does not include annual operation and maintenance costs)*	**EPA - Managing Manure with Biogas Recovery Systems Improved Performance at Competitive Costs** – Note that 1,000 pounds Steady State Live Weight (SSLV) = approximately 1 mature cow – Covered lagoon digesters with open storage ponds: $150-$400 per 1,000 SSLV – Heated digesters with open storage tanks: $200-$400 per 1,000 pounds SSLV – Aerated lagoons with open storage ponds: $200-$450 per 1,000 pounds SSLV – Separate treatment lagoons and storage ponds: $200-$400 per 1,000 pounds SSLV – Combined treatment lagoons and storage ponds: $200-$400 per 1,000 pounds SSLV – Storage ponds and tanks: $50-$500 per 1,000 pounds SSLV **Agricultural and Resource Economics North Carolina State University** – New System Cost per 1,000 pounds SSLV per year: $86.81 – Standardized Feeder-to-Finish Farm with 4,320 head – 10-Year Amortization, Pit-Recharge, N-limited Irrigation onto Forages Range: – Across Farm Sizes and Types (Pit-Recharge): $43.24 To $189.07 / 1,000 lbs. SSLW / yr. – Across Farm Sizes and Types (Flush): $43.32 To $190.84 / 1,000 lbs. SSLW / yr.	EPA - Managing Manure with Biogas Recovery Systems Improved Performance at Competitive Costs www.epa.gov/agstar/pdf/manage.pdf Agricultural and Resource Economics North Carolina State University - Cost and Returns Analysis of Manure Management Systems Evaluated in 2004 under the North Carolina Attorney General Agreements with Smithfield Foods, Premium Standard Farms, and Front Line Farmers
		Annual Cost	N/A		
		Total Cost	N/A		
		Per Unit Cost	$50-450 per 1,000 pounds Steady State Live Weight (SSLV) depending on manure management system employed. If subsequent analysis determines that the cost in Yolo County is prohibitively high, subsidies and other incentives may be needed to support implementation.		

ENERGY: Measure E-2					
Measure	Progress Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
E-2: Reduce Energy Consumption in Existing Residential and Non-Residential Buildings	**Energy efficiency building envelope retrofits** 20% of existing residential units reduce energy consumption by 15%	**Cost Type**	*Initial Capital Cost*	– Costs will vary based on the size, age, condition, and design of the building and site. Total costs shown are for a representative 2,000 square foot house. – Based on the cost of implementing basic, cost-effective energy conservation measures, which achieve an average of ~15% energy efficiency improvement for existing residential (pre-1980). These energy conservation measures include (and will vary depending on building type): attic and duct insulation, high efficiency heating system, and high efficiency lighting. – The building owner could leverage additional rebate and financing options to offset some costs.	AECOM Sustainable Systems Integration Model (SSIM) Energy Sub-Model Residential Energy Consumption Survey (RECS) California Energy Commission www.consumerenergycenter.org PG&E www.pge.com/tariffs/rateinfo.shtml
		Annual Cost	If financed through a home equity loan (~5% interest rate, 30 years): ~$5-8 dollars per month		
		Total Cost	Initial Capital Cost: $1,000 - $1,500 Average Annual Savings: $200 - $300		
		Per Unit Cost	Initial Capital Cost: $0.50 - $0.75/sq. ft. Average Annual Savings: $0.10 - $0.15/sq. ft.		

ENERGY: Measure E-2					
Measure	Performance Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
E-2: Reduce Energy Consumption in Existing Residential and Non-Residential Buildings	**Energy efficiency building envelope retrofits** 10% of existing commercial buildings reduce energy consumption by 20%	**Cost Type**	*Initial Capital Cost*	– Costs will vary based on the size, age, condition, and design of the building and site. Total costs shown are for a representative 10,000 square foot commercial building (this building is hypothetical and is not considered the typical building in Yolo County). Generally, the per square foot cost of energy efficiency retrofits will not vary considerably with building size. – Based on the cost of implementing basic, cost-effective energy conservation measures, which achieve an average of ~20% energy efficiency improvement for a typical commercial building. These energy conservation measures include (and will vary depending on building type): high efficiency heating and cooling system, variable frequency drives, high efficiency lighting system, lighting controls, low flow fixtures, and high efficiency hot water boiler. – The building owner could leverage additional rebate and financing options to offset some costs.	AECOM Sustainable Systems Integration Model (SSIM) Energy Sub-Model Commercial Building Energy Consumption Survey (CBECS) California Energy Commission www.consumerenergycenter.org PG&E www.pge.com/tariffs/rateinfo.shtml
		Annual Cost	If financed through a commercial loan (~6% interest rate, 20 years): ~$290-$720 dollars per month		
		Total Cost	Initial Capital Cost: $40,000 - $100,000 Average Annual Savings: $5,000 - $15,000		
		Per Unit Cost	Initial Capital Cost: $4.00 - $10.00/sq. ft. Average Annual Savings: $0.50 - $1.50/sq. ft.		

ENERGY: Measure E-4					
Measure	Performance Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
E-4: Reduce Energy Consumption in New Residential and Non-Residential Buildings	**Minimum performance standards for new construction** 100% of new residential units below 4,000 sq. ft. at 15% above Title 24 standards (CGBC Tier I) 100% of new residential units above 4,000 sq. ft. at 30% above Title 24 standards (CGBC Tier II) 2% of new residential buildings achieve exemplary performance (CGBC Tier II) and 0.5% of new residential buildings achieve zero-net energy demand.	**Cost Type**	*Developer Cost*	– Costs incurred by complying with Tier I standards would be born primarily by the developer and project financier. The following information is directed at that target audience, though the economic category to the left pertains solely to the resident. Residents would likely experience negligible to minimal additional costs from the application of this standard on new development, as the price of a building is more determined by market forces than building and construction costs. – Costs will vary based on the size and design of the building and site. Total costs shown are for a representative 2,000 square foot house. – Based on the cost of implementing basic, cost-effective energy conservation measures, which achieve an average of ~15% energy efficiency improvement for residential. These energy conservation measures include (and will vary depending on building type): attic and duct insulation, high efficiency windows, high efficiency heating and cooling system, high efficiency lighting, Energy Star washer, dishwasher, and refrigerator, and code compliant hot water boiler. – The building owner could leverage additional rebate and financing options to offset costs.	AECOM Sustainable Systems Integration Model (SSIM) Energy Sub-Model Residential Energy Consumption Survey (RECS) California Energy Commission - 2008 Building Energy Efficiency Standards for Residential and Nonresidential Buildings www.energy.ca.gov/2008publications/CEC-400-2008-001/CEC-400-2008-001-CMF.PDF PG&E www.pge.com/tariffs/rateinfo.shtml
		Annual Cost	N/A		
		Total Cost	Initial Capital Cost: $1,000 - $2,000 Average Annual Savings: $200 - $600		
		Per Unit Cost	Initial Capital Cost: $0.50 - $1.00/sq. ft. Average Annual Savings: $0.10 - $0.30/sq. ft.		

ENERGY: Measure E-4					
Measure	Performance Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
E-4: Reduce Energy Consumption in New Residential and Non-Residential Buildings	**Minimum performance standards for new construction** 100% of new commercial construction at 15% above Title 24 standards. 2% of new commercial buildings achieve exemplary performance (CGBC Tier II) and 0.5% of new commercial buildings achieve zero-net energy demand.	**Cost Type**	*Developer Cost*	– Costs incurred by complying with a 15% energy efficiency improvement standard would be borne primarily by the developer and project financier. The following information is directed at that target audience, though the economic category to the left pertains solely to the building tenant. Tenants would likely experience negligible to minimal additional leasing costs from the application of this standard on new development, as leasing rates for a commercial building are more determined by market forces than building and construction costs. – Costs will vary based on the size and design of the building and site. Total costs shown are for a representative 10,000 square foot commercial building. – Based on the cost of implementing basic, cost-effective energy conservation measures, which achieve an average of 15% energy efficiency improvement for a typical commercial building. These energy conservation measures include (and will vary depending on building type): high efficiency heating and cooling system, variable frequency drives, high efficiency lighting system, lighting controls, low flow fixtures, and high efficiency hot water boiler. – The building owner could leverage additional rebate and financing options to offset costs.	AECOM Sustainable Systems Integration Model (SSIM) Energy Sub-Model Commercial Building Energy Consumption Survey (CBECS) California Energy Commission - 2008 Building Energy Efficiency Standards for Residential and Nonresidential Buildings www.energy.ca.gov/2008publications/CEC-400-2008-001/CEC-400-2008-001-CMF.PDF PG&E www.pge.com/tariffs/rateinfo.shtml
		Annual Cost	N/A		
		Total Cost	Initial Capital Cost: $15,000 - $30,000 Average Annual Savings: $1,500 - $4,000		
		Per Unit Cost	Initial Capital Cost: $1.50 - $3.00/sq. ft. Average Annual Savings: $0.15 - $0.40/sq. ft.		

ENERGY: Measure E-7					
Measure	Performance Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
E-7: Increase On-site Renewable Energy Generation to Reduce Demand for Grid Energy	**Solar hot water heaters** 100% of new residential units 15% of existing residential units 100% of new commercial units 5% of existing commercial units	**Cost Type**	*Initial Capital Cost*	– Cost of installation and administration estimated at $2,500-$3,500 with a 30% federal rebate. The scenario shown is for a hypothetical solar hot water system (~65 square feet of roof space). – Financing shown in the calculation is for a home equity loan. Other financing programs such as power purchase agreements (PPAs) are available, the terms of which are specific to the solar financing company. The terms of the CaliforniaFIRST or HUD's PowerSaver program were not considered, though it is likely that the interest rates available through this program, if implemented, would be in the range of 7-8%.	California Solar Initiative www.gosolarcalifornia.ca.gov PG&E www.pge.com/tariffs/rateinfo.shtml Solar hot water calculator - *rael.berkeley.edu/berkeley/calculator#*
		Annual Cost	If financed through a home equity loan (~5% interest rate, 30 years): ~$640 average (years 1-10) and $1,100 (years 11-25) annual payment with an average of ~$180 (years 1-10) and $110 (years 11-25) annual savings Payback ~15 years assuming $890 average (years 1-10) and $1,440 (years 11-25) annual utility bill (pre-solar hot water system) with a 2.5% energy escalation factor		
		Total Cost	$3,000 ($2,100 with rebates)		
		Per Unit Cost	$3,000 per solar hot water unit		

ENERGY: Measure E-7					
Measure	Mechanism	Categories	Economics Assumptions	Calculation and Assumptions	Sources
E-7: Increase On-site Renewable Energy Generation to Reduce Demand for Grid Energy	**Photovoltaic systems (Residential)** 100% of new residential units 5% of existing residential units	**Cost Type**	*Initial Capital Cost*	– Cost of solar PV system: $8/watt installed ($8,000/kW installed), though there is a downward trend in costs that can be expected to continue for at least the near-term future. Both federal and state tax credits are available, which total approximately 35%. The scenario shown is for a hypothetical 3-kW system (~300 square feet of roof space). – Financing shown in the calculation is for a home equity loan. Other financing programs such as power purchase agreements (PPAs) are available, the terms of which are specific to the solar financing company. The terms of the CaliforniaFIRST or HUD's PowerSaver were not considered, though it is likely that the interest rates available through this program, if implemented, would be in the range of 7-8%.	California Solar Initiative www.gosolarcalifornia.ca.gov PG&E www.pge.com/tariffs/rateinfo.shtml Solar calculator - *gosolarcalifornia.cleanpowerestimator.com*
		Annual Cost	**Residential** If financed through a home equity loan (~5% interest rate, 30 years): ~$80 monthly payment with an average of ~$70 savings (1st year) - cash positive in the first year Payback ~17-18 years assuming $100 average monthly utility bill (pre-PV system) with a 2.5% energy escalation factor		
		Total Cost	3-kW system: $24,000 total cost ($15,500 with rebates)		
		Per Unit Cost	$8,000 per kW installed		

ENERGY: Measure E-7					
Measure	Performance Indicators	Categories	Economics Assumptions	Calculation and Assumptions	Sources
E-7: Increase On-site Renewable Energy Generation to Reduce Demand for Grid Energy	**Photovoltaic systems (Commercial)** 100% of new commercial units 200,000 square feet of existing commercial rooftop space is used to install solar PV	**Cost Type**	*Initial Capital Cost*	– Cost of Solar PV system: $8/watt installed ($8,000/kW installed), though there is a downward trend in costs that can be expected to continue for at least the near-term future. Both federal and state tax credits are available, which total approximately 35%. The scenario shown is for a hypothetical 10-kW system (~1,000 square feet of roof space). – Financing shown in the calculation is for a commercial loan. Other financing programs such as power purchase agreements (PPAs) are available, the terms of which are specific to the solar financing company. The terms of the CaliforniaFIRST or HUD's PowerSaver , though it is likely that the interest rates available through this program, if implemented, would be in the range of 7-8%.	California Solar Initiative www.gosolarcalifornia.ca.gov PG&E www.pge.com/tariffs/rateinfo.shtml Solar calculator - *gosolarcalifornia.cleanpowerestimator.com*
		Annual Cost	**Commercial** If financed through a loan (~6% interest rate, 30 years): ~$310 monthly payment with an average of ~$380 savings (1st year) Payback ~11-12 years assuming $400 average monthly utility bill (pre-PV system) with a 2.5% energy escalation factor		
		Total Cost	10-kW system: $80,000 total cost ($51,500 with rebates)		
		Per Unit Cost	$8,000 per kW installed		