

**South Bay Environmental Services Center**  
**Estimate of Tasks and Hours for Energy Efficiency Assessment**

rate eng      \$164.50  
rate cad      \$61.00

Task	Task Description	Lead Responsibility	Support	Hours Per Task	Cost	Overall Total Cost
<b>Phase 1 - Benchmarking and Rough Cut Assessment</b>						
1.01	Obtain areas of all buildings (SBECS to give building manager's phone number to P2S).	P2S	SBESC	16	\$2,632.00	<b>\$10,537</b>
1.02	Assist SBECS input all gas bills	P2S	SBESC	22.5	\$1,372.50	
1.03	Assist SBECS input water bills	P2S	SBESC	10	\$610.00	
1.04	Review billing data	P2S		2	\$329.00	
1.05	Obtain more information about what is on each site (is it just a building, more than one building; buildings and extensive site lighting, etc.)	P2S	SBESC	6	\$987.00	
1.06	Perform the benchmarking exercise for the buildings	P2S		16	\$2,632.00	
1.07	Develop rough cut list of facilities or sites to visit based on building benchmarking and facilities or sites over 500,000 kWh in yearly electric consumption	P2S		4	\$658.00	
1.08	Produce Recap of Findings	P2S		4	\$658.00	
1.09	Meet with SBECS to discuss results and plan next phase	P2S	SBESC	4	\$658.00	

<b>Phase 2 - Preliminary Site Visit, Choose Facilities and Sites to Study</b> (Estimate is based on visiting 38 facilities or areas of usage (e.g. street lighting))						
2.01	Make preliminary visits to the chosen facilities (2 hour site visit + 1 hour travel time)	P2S	Various City Personnel	114	\$18,753.00	<b>\$24,511</b>
2.02	List potential retrofit opportunities at each site	P2S		19	\$3,125.50	
2.03	Create final cut of facilities on which to conduct audits.	P2S		8	\$1,316.00	
2.04	Produce Recap of Findings	P2S		4	\$658.00	
2.05	Meet with SBECS to discuss results and plan next phase	P2S	SBESC	4	\$658.00	

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<b>Phase 3A - Simple Project Audit, Energy Calculations, Cost Estimate, and Estimate of Payback.</b>						
Project Type Would Simple Lighting Project or Simple HVAC Project Such as Adding VFDs to Constant Speed Motors (Cost is Per Facility or Per Site)						
<b>3A.01</b>	Obtain drawings of the facility or site	P2S	Various City Personnel	4	\$658.00	<b>\$6,580</b>
<b>3A.02</b>	Conduct the preliminary audit on the chosen facility or site	P2S	Various City Personnel	8	\$1,316.00	
<b>3A.03</b>	Determine Baseline (Assess hours of operation and installed fixtures or equipment)	P2S	Various City Personnel	8	\$1,316.00	
<b>3A.04</b>	Determine Retrofit Option	P2S	Various City Personnel	4	\$658.00	
<b>3A.05</b>	Estimate savings	P2S		2	\$329.00	
<b>3A.06</b>	Perform cost estimate	P2S		4	\$658.00	
<b>3A.07</b>	Estimate simple payback	P2S		2	\$329.00	
<b>3A.08</b>	Produce Recap of Findings	P2S		4	\$658.00	
<b>3A.09</b>	Meet with SBECs to discuss results and plan next phase	P2S	SBESC/City Personnel	4	\$658.00	

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<b>Phase 3B - Complex Project with Multiple Energy Efficiency Measures (EEMs)</b>						
(Sample Estimate based on 85,000 ft2 building such as Carson Community Center and Based on Typical IOU Partnership Program Procedure)						
<b>Per Building</b>			<b>\$0.63</b>	<b>per square foot</b>		<b>\$53,134</b>
<b>Planning and Baseline Modeling</b>						
3B.01	Project kick off meeting	P2S	SBESC/City Personnel	4	\$658.00	\$23,195
3B.02	Analysis of HVAC system and building Information	P2S		16	\$2,632.00	
3B.03	Inventory Building non utility (HVAC, Domestic Hot Water, and Lighting) Loads	P2S	Various City Personnel	8	\$1,316.00	
3B.04	Conduct Initial Metering, Monitoring Site Assessment	P2S	Various City Personnel	12	\$1,974.00	
3B.05	Define Monitoring Objectives & Requirements	P2S		2	\$329.00	
3B.06	Evaluate Existing Monitoring Systems	P2S	Various City Personnel	1	\$164.50	
3B.07	Develop Metering & Monitoring RCx plan	P2S		2	\$329.00	
3B.08	Develop plan for supplementing existing monitoring capabilities necessary to establish a baseline	P2S		4	\$658.00	
3B.09	Procure & Install meters & EMS components (if necessary)	P2S	Various City Personnel	8	\$1,316.00	
3B.10	Commission instrumentation necessary to establish a baseline	P2S	Various City Personnel	4	\$658.00	
<b>Setup Trends and Data Collection</b>						
3B.11	Identify typical points (existing and to be added) important to project and the required sampling frequencies	P2S	Various City Personnel	8	\$1,316.00	
3B.12	Trend and collect the data	P2S		8	\$1,316.00	
3B.13	Collect at least 3 days of data from system	P2S		4	\$658.00	
<b>Assess Data Quality</b>						
3B.14	Review tables, charts & trends and investigate unreasonable results	P2S		12	\$1,974.00	
3B.15	Fix any data problems	P2S		4	\$658.00	
3B.16	Collect data for at least one month	P2S		12	\$1,974.00	
3B.17	Prepare for Data Analysis (necessary factors and metrics)	P2S		8	\$1,316.00	
3B.18	Perform benchmarking and build Model for Baseline	P2S		16	\$2,632.00	
3B.19	Develop Status Report	P2S		8	\$1,316.00	
<b>Pre-Functional, and Investigation Of Energy Efficiency Measures Phase</b>						
3B.20	Review trends and data for operational anomalies, such as simultaneous heating and cooling	P2S		20	\$3,290.00	\$29,939
3B.21	Review sequences of operations and equipment	P2S		18	\$2,961.00	
3B.22	Analyze systems for Improvement opportunities	P2S		20	\$3,290.00	
3B.23	Validate Economizer operation, and possible EEMs	P2S		12	\$1,974.00	
3B.24	Determine the objectives of pre-functional testing to evaluate improvement opportunities	P2S		2	\$329.00	

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3B.25	Perform pre-functional testing	P2S		18	\$2,961.00	
3B.26	Collect & analyze data generated from pre-functional performance tests to validate improvement opportunities. Update Findings log	P2S		16	\$2,632.00	
3B.27	Identify Utility incentive for each improvement opportunity	P2S		6	\$987.00	
3B.28	Perform Alternative runs to evaluate deficiencies and EEMs	P2S		30	\$4,935.00	
3B.29	Define and Prioritize Deficiencies / EEMs, Cost, and Pay back	P2S		12	\$1,974.00	
3B.30	Update Status Report	P2S		8	\$1,316.00	
3B.31	Provide Investigation Phase Report identifying Projects, EEMs, Cost and Payback for Review and adoption	P2S		16	\$2,632.00	
3B.32	Provide Meeting to review Projects and EEMs	P2S	SBESC/City Personnel	4	\$658.00	
3B.33	Final Report	P2S		24	\$3,948.00	