

Conservation Cost Effectiveness Standard (CCES)

Conservation Cost Effectiveness Standard (CCES) shows the full “avoided cost” to PSE of the energy saved, for the Type of Savings (defined by end use load shape and customer class) and life of the energy savings, or Measure Life. The CCES is based on the market costs projected by a power costing model, which would otherwise be incurred to provide energy from a generation source either directly or by contract plus credits for transmission and distribution system benefits, environmental externalities, and line losses. This value is expressed as the levelized value per kWh saved of future energy savings over the life of the measure. The CCES is based on Aurora forecast power costs at Mid-Columbia, and adds 35% for a power planning adjustment, 10% for environmental credits, 7.6% Residential and 6.1% Commercial/Industrial for avoided transmission and distribution losses, a valuation for avoided peak capacity, and \$31.87/kW-year distribution benefit. Load factors from the analysis in PSE’s 2009 IRP are used for end-use load shapes that define Type of Savings. Each Type of Savings has a CCES, or a value per kWh or Therm per Measure Life, up to 30 years. The values for the natural gas and electric CCES used to evaluate PSE’s 2008 - 2009 programs are shown in **Table F-1 and F-2**.

Cost effectiveness of projects will allow for PSE administrative costs. PSE’s costs are expected to vary, depending upon the proposal content. At a minimum, PSE costs include some project management activities, coordination with customer data, and conducting customer satisfaction surveys for the respondent’s program activity.

1. Description of Tests

Puget Sound Energy will evaluate the cost effectiveness of proposals using a standard Utility Cost Test and a Total Resource Cost Test.

Total Resource Cost Test (TRC Test) measures the net value of energy efficiency programs to society as a whole. The TRC Test is a cost-effectiveness calculation which demonstrates if the total benefits, including electricity (defined by the **Conservation Cost Effectiveness Standard**) and other savings benefits, exceed total costs including those

incurred by PSE, the Respondent, the customer, and any other contributing party. The benefits and costs not directly associated with electrical energy efficiency in this calculation may be difficult to quantify.

Utility Cost Test (UC Test) measures the net value of energy efficiency programs to the sponsoring utility. The UC Test is a cost-effectiveness calculation which demonstrates that the utility electricity savings benefits (defined by the **Conservation Cost Effectiveness Standard**), exceed the costs incurred by the utility.

2. Calculation Methodology

Puget Sound Energy's determination that an energy efficiency project is cost-effective is a two-step process.

Step 1: The **Total Resource Cost test** determines that the value of all benefits of doing the project (energy savings plus other benefits like maintenance savings, improved productivity, etc.) is *greater than* the total projects costs. (Note: If the value of the energy benefits alone exceeds the total cost, the equation is satisfied without the need to quantify further benefits.)

$$\text{Total benefits (\$)} > \text{Total costs (\$)}$$

Step 2: IF Step 1 is satisfied, OR

IF: Total costs < 150% of value of energy benefits, AND there are documented additional benefits which cannot easily be quantified (e.g. improved indoor air quality), then the utility funding is limited by the Utility Cost Test

$$\text{Utility benefits (\$)} > \text{Utility costs (\$)},$$

also expressed as:

$$\text{Value of kWh Savings (for measure life)} > \text{Utility funding (customer incentives + PSE administrative costs + Respondent costs)}$$

Table F-1. Electric Conservation Cost Effectiveness Standard – 2009-2010
(Levelized \$/kWh) (Includes avoided energy and avoided capacity)

Measure Life	SF Space Heat	MF Space Heating	Residential Water Heat	Residential Lighting	Residential Heat Pump	Residential Plug Load	Commercial Cooking	Commercial Cooling	Commercial Heating	Commercial Lighting	Commercial Refrigeration	Flat
	SFSH	MFSH	WH	LIGHTING	HP	PLUG	CICOOK	CICOOL	CIHEAT	CILTG	CIREF	FLAT
1	\$ 0.139	\$ 0.114	\$ 0.110	\$ 0.092	\$ 0.168	\$ 0.095	\$ 0.085	\$ 0.061	\$ 0.184	\$ 0.113	\$ 0.097	\$ 0.092
2	\$ 0.142	\$ 0.116	\$ 0.112	\$ 0.095	\$ 0.171	\$ 0.097	\$ 0.087	\$ 0.062	\$ 0.187	\$ 0.116	\$ 0.099	\$ 0.094
3	\$ 0.153	\$ 0.127	\$ 0.122	\$ 0.104	\$ 0.182	\$ 0.107	\$ 0.097	\$ 0.072	\$ 0.198	\$ 0.126	\$ 0.109	\$ 0.104
4	\$ 0.159	\$ 0.133	\$ 0.128	\$ 0.110	\$ 0.188	\$ 0.113	\$ 0.103	\$ 0.077	\$ 0.204	\$ 0.132	\$ 0.115	\$ 0.110
5	\$ 0.164	\$ 0.138	\$ 0.133	\$ 0.114	\$ 0.193	\$ 0.117	\$ 0.107	\$ 0.081	\$ 0.210	\$ 0.136	\$ 0.119	\$ 0.114
6	\$ 0.168	\$ 0.141	\$ 0.136	\$ 0.117	\$ 0.197	\$ 0.121	\$ 0.110	\$ 0.083	\$ 0.214	\$ 0.140	\$ 0.123	\$ 0.118
7	\$ 0.171	\$ 0.145	\$ 0.139	\$ 0.120	\$ 0.201	\$ 0.123	\$ 0.112	\$ 0.085	\$ 0.218	\$ 0.143	\$ 0.126	\$ 0.120
8	\$ 0.175	\$ 0.148	\$ 0.142	\$ 0.122	\$ 0.204	\$ 0.126	\$ 0.115	\$ 0.087	\$ 0.222	\$ 0.145	\$ 0.128	\$ 0.123
9	\$ 0.178	\$ 0.150	\$ 0.144	\$ 0.125	\$ 0.208	\$ 0.128	\$ 0.117	\$ 0.089	\$ 0.226	\$ 0.148	\$ 0.131	\$ 0.125
10	\$ 0.181	\$ 0.153	\$ 0.147	\$ 0.127	\$ 0.211	\$ 0.131	\$ 0.119	\$ 0.091	\$ 0.229	\$ 0.150	\$ 0.133	\$ 0.127
11	\$ 0.184	\$ 0.155	\$ 0.149	\$ 0.129	\$ 0.214	\$ 0.133	\$ 0.121	\$ 0.092	\$ 0.232	\$ 0.153	\$ 0.135	\$ 0.130
12	\$ 0.186	\$ 0.158	\$ 0.151	\$ 0.131	\$ 0.216	\$ 0.135	\$ 0.123	\$ 0.094	\$ 0.235	\$ 0.155	\$ 0.137	\$ 0.131
13	\$ 0.189	\$ 0.160	\$ 0.153	\$ 0.133	\$ 0.219	\$ 0.137	\$ 0.125	\$ 0.095	\$ 0.238	\$ 0.157	\$ 0.139	\$ 0.133
14	\$ 0.191	\$ 0.162	\$ 0.155	\$ 0.135	\$ 0.222	\$ 0.139	\$ 0.127	\$ 0.097	\$ 0.241	\$ 0.159	\$ 0.141	\$ 0.135
15	\$ 0.194	\$ 0.164	\$ 0.157	\$ 0.136	\$ 0.224	\$ 0.140	\$ 0.128	\$ 0.098	\$ 0.244	\$ 0.161	\$ 0.143	\$ 0.137
16	\$ 0.196	\$ 0.166	\$ 0.159	\$ 0.138	\$ 0.227	\$ 0.142	\$ 0.130	\$ 0.099	\$ 0.246	\$ 0.163	\$ 0.144	\$ 0.139
17	\$ 0.199	\$ 0.168	\$ 0.161	\$ 0.140	\$ 0.229	\$ 0.144	\$ 0.132	\$ 0.100	\$ 0.249	\$ 0.165	\$ 0.146	\$ 0.140
18	\$ 0.201	\$ 0.170	\$ 0.163	\$ 0.141	\$ 0.232	\$ 0.146	\$ 0.133	\$ 0.102	\$ 0.252	\$ 0.167	\$ 0.148	\$ 0.142
19	\$ 0.203	\$ 0.172	\$ 0.164	\$ 0.143	\$ 0.234	\$ 0.147	\$ 0.135	\$ 0.103	\$ 0.254	\$ 0.169	\$ 0.149	\$ 0.144
20	\$ 0.205	\$ 0.174	\$ 0.166	\$ 0.144	\$ 0.236	\$ 0.149	\$ 0.136	\$ 0.104	\$ 0.256	\$ 0.170	\$ 0.151	\$ 0.145
21	\$ 0.208	\$ 0.175	\$ 0.168	\$ 0.146	\$ 0.238	\$ 0.150	\$ 0.137	\$ 0.105	\$ 0.259	\$ 0.172	\$ 0.152	\$ 0.147
22	\$ 0.210	\$ 0.177	\$ 0.169	\$ 0.147	\$ 0.240	\$ 0.151	\$ 0.139	\$ 0.106	\$ 0.261	\$ 0.173	\$ 0.154	\$ 0.148
23	\$ 0.212	\$ 0.178	\$ 0.171	\$ 0.148	\$ 0.242	\$ 0.153	\$ 0.140	\$ 0.107	\$ 0.263	\$ 0.175	\$ 0.155	\$ 0.149
24	\$ 0.213	\$ 0.180	\$ 0.172	\$ 0.150	\$ 0.244	\$ 0.154	\$ 0.141	\$ 0.108	\$ 0.265	\$ 0.176	\$ 0.156	\$ 0.150
25	\$ 0.215	\$ 0.181	\$ 0.173	\$ 0.151	\$ 0.246	\$ 0.155	\$ 0.142	\$ 0.109	\$ 0.267	\$ 0.177	\$ 0.158	\$ 0.151
26	\$ 0.217	\$ 0.182	\$ 0.174	\$ 0.152	\$ 0.247	\$ 0.156	\$ 0.143	\$ 0.110	\$ 0.269	\$ 0.179	\$ 0.159	\$ 0.153
27	\$ 0.218	\$ 0.184	\$ 0.176	\$ 0.153	\$ 0.249	\$ 0.157	\$ 0.144	\$ 0.110	\$ 0.270	\$ 0.180	\$ 0.160	\$ 0.154
28	\$ 0.220	\$ 0.185	\$ 0.177	\$ 0.154	\$ 0.251	\$ 0.158	\$ 0.145	\$ 0.111	\$ 0.272	\$ 0.181	\$ 0.161	\$ 0.155
29	\$ 0.222	\$ 0.186	\$ 0.178	\$ 0.155	\$ 0.252	\$ 0.159	\$ 0.146	\$ 0.112	\$ 0.274	\$ 0.182	\$ 0.162	\$ 0.156
30	\$ 0.223	\$ 0.187	\$ 0.179	\$ 0.156	\$ 0.253	\$ 0.160	\$ 0.147	\$ 0.112	\$ 0.275	\$ 0.183	\$ 0.163	\$ 0.156

1. 2010 Start Year 2. Discount rate: 8.25%

**Table F-2. Gas Conservation Cost Effectiveness Standard,
2006 – 2007 (Levelized \$/Therm)**

Revised gas cost effectiveness standards will be included in the final document.

Measure Life	Space Heat Existing	Space Heat New	Water Heat	Process Heat
1	1.124	1.171	1.048	0.962
2	1.143	1.192	1.057	0.968
3	1.146	1.195	1.055	0.964
4	1.141	1.191	1.046	0.953
5	1.140	1.190	1.045	0.952
6	1.143	1.193	1.048	0.954
7	1.146	1.197	1.052	0.957
8	1.150	1.201	1.056	0.960
9	1.154	1.206	1.061	0.964
10	1.161	1.214	1.067	0.970
11	1.168	1.221	1.074	0.976
12	1.176	1.229	1.082	0.983
13	1.184	1.238	1.090	0.991
14	1.193	1.248	1.098	0.997
15	1.202	1.257	1.106	1.004
16	1.212	1.267	1.114	1.011
17	1.221	1.277	1.122	1.018
18	1.230	1.286	1.130	1.026
19	1.239	1.296	1.138	1.033
20	1.248	1.305	1.148	1.040
21	1.257	1.314	1.157	1.047
22	1.253	1.311	1.167	1.041
23	1.264	1.322	1.176	1.050
24	1.275	1.334	1.185	1.058
25	1.285	1.345	1.194	1.067
26	1.295	1.355	1.202	1.075
27	1.305	1.366	1.210	1.083
28	1.315	1.376	1.219	1.091
29	1.324	1.386	1.227	1.099
30	1.333	1.395	1.234	1.106