

# 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 that will be used to evaluate PSE’s 2010-2011 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 – 2010-2011**  
(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	CHEAT	CILTG	CIREF	FLAT
1	\$ 0.140	\$ 0.113	\$ 0.109	\$ 0.092	\$ 0.167	\$ 0.094	\$ 0.084	\$ 0.060	\$ 0.183	\$ 0.112	\$ 0.096	\$ 0.091
2	\$ 0.143	\$ 0.115	\$ 0.111	\$ 0.093	\$ 0.170	\$ 0.096	\$ 0.086	\$ 0.061	\$ 0.186	\$ 0.114	\$ 0.098	\$ 0.093
3	\$ 0.153	\$ 0.125	\$ 0.120	\$ 0.102	\$ 0.180	\$ 0.105	\$ 0.095	\$ 0.069	\$ 0.196	\$ 0.124	\$ 0.107	\$ 0.102
4	\$ 0.159	\$ 0.130	\$ 0.125	\$ 0.107	\$ 0.185	\$ 0.110	\$ 0.100	\$ 0.074	\$ 0.202	\$ 0.129	\$ 0.113	\$ 0.107
5	\$ 0.164	\$ 0.134	\$ 0.129	\$ 0.110	\$ 0.189	\$ 0.114	\$ 0.103	\$ 0.077	\$ 0.206	\$ 0.133	\$ 0.116	\$ 0.111
6	\$ 0.168	\$ 0.137	\$ 0.132	\$ 0.113	\$ 0.193	\$ 0.116	\$ 0.106	\$ 0.079	\$ 0.210	\$ 0.136	\$ 0.119	\$ 0.114
7	\$ 0.172	\$ 0.140	\$ 0.134	\$ 0.115	\$ 0.196	\$ 0.119	\$ 0.108	\$ 0.080	\$ 0.213	\$ 0.138	\$ 0.121	\$ 0.116
8	\$ 0.175	\$ 0.142	\$ 0.136	\$ 0.117	\$ 0.199	\$ 0.120	\$ 0.109	\$ 0.082	\$ 0.216	\$ 0.140	\$ 0.123	\$ 0.117
9	\$ 0.178	\$ 0.144	\$ 0.138	\$ 0.118	\$ 0.201	\$ 0.122	\$ 0.111	\$ 0.083	\$ 0.219	\$ 0.142	\$ 0.125	\$ 0.119
10	\$ 0.181	\$ 0.146	\$ 0.140	\$ 0.120	\$ 0.204	\$ 0.124	\$ 0.112	\$ 0.084	\$ 0.222	\$ 0.144	\$ 0.126	\$ 0.121
11	\$ 0.184	\$ 0.148	\$ 0.141	\$ 0.121	\$ 0.206	\$ 0.125	\$ 0.114	\$ 0.085	\$ 0.224	\$ 0.145	\$ 0.128	\$ 0.122
12	\$ 0.186	\$ 0.149	\$ 0.143	\$ 0.123	\$ 0.208	\$ 0.127	\$ 0.115	\$ 0.086	\$ 0.227	\$ 0.147	\$ 0.129	\$ 0.124
13	\$ 0.189	\$ 0.151	\$ 0.144	\$ 0.124	\$ 0.210	\$ 0.128	\$ 0.116	\$ 0.087	\$ 0.229	\$ 0.149	\$ 0.130	\$ 0.125
14	\$ 0.191	\$ 0.152	\$ 0.146	\$ 0.125	\$ 0.212	\$ 0.129	\$ 0.118	\$ 0.087	\$ 0.231	\$ 0.150	\$ 0.132	\$ 0.126
15	\$ 0.194	\$ 0.154	\$ 0.147	\$ 0.126	\$ 0.214	\$ 0.131	\$ 0.119	\$ 0.088	\$ 0.234	\$ 0.151	\$ 0.133	\$ 0.128
16	\$ 0.197	\$ 0.155	\$ 0.149	\$ 0.128	\$ 0.216	\$ 0.132	\$ 0.120	\$ 0.089	\$ 0.236	\$ 0.153	\$ 0.134	\$ 0.129
17	\$ 0.199	\$ 0.157	\$ 0.150	\$ 0.129	\$ 0.218	\$ 0.133	\$ 0.121	\$ 0.090	\$ 0.238	\$ 0.154	\$ 0.135	\$ 0.130
18	\$ 0.201	\$ 0.158	\$ 0.151	\$ 0.130	\$ 0.220	\$ 0.134	\$ 0.122	\$ 0.091	\$ 0.240	\$ 0.155	\$ 0.137	\$ 0.131
19	\$ 0.203	\$ 0.159	\$ 0.152	\$ 0.131	\$ 0.221	\$ 0.135	\$ 0.123	\$ 0.091	\$ 0.242	\$ 0.157	\$ 0.138	\$ 0.132
20	\$ 0.206	\$ 0.161	\$ 0.154	\$ 0.132	\$ 0.223	\$ 0.136	\$ 0.124	\$ 0.092	\$ 0.244	\$ 0.158	\$ 0.139	\$ 0.133
21	\$ 0.208	\$ 0.162	\$ 0.155	\$ 0.133	\$ 0.225	\$ 0.137	\$ 0.125	\$ 0.093	\$ 0.245	\$ 0.159	\$ 0.140	\$ 0.134
22	\$ 0.210	\$ 0.163	\$ 0.156	\$ 0.133	\$ 0.226	\$ 0.138	\$ 0.125	\$ 0.093	\$ 0.247	\$ 0.160	\$ 0.141	\$ 0.135
23	\$ 0.212	\$ 0.164	\$ 0.157	\$ 0.134	\$ 0.228	\$ 0.139	\$ 0.126	\$ 0.094	\$ 0.249	\$ 0.161	\$ 0.142	\$ 0.136
24	\$ 0.214	\$ 0.165	\$ 0.158	\$ 0.135	\$ 0.229	\$ 0.140	\$ 0.127	\$ 0.094	\$ 0.250	\$ 0.162	\$ 0.143	\$ 0.136
25	\$ 0.215	\$ 0.166	\$ 0.158	\$ 0.136	\$ 0.230	\$ 0.140	\$ 0.127	\$ 0.095	\$ 0.252	\$ 0.163	\$ 0.143	\$ 0.137
26	\$ 0.217	\$ 0.167	\$ 0.159	\$ 0.136	\$ 0.232	\$ 0.141	\$ 0.128	\$ 0.095	\$ 0.253	\$ 0.164	\$ 0.144	\$ 0.138
27	\$ 0.219	\$ 0.168	\$ 0.160	\$ 0.137	\$ 0.233	\$ 0.142	\$ 0.129	\$ 0.095	\$ 0.254	\$ 0.165	\$ 0.145	\$ 0.138
28	\$ 0.220	\$ 0.168	\$ 0.161	\$ 0.138	\$ 0.234	\$ 0.142	\$ 0.129	\$ 0.096	\$ 0.256	\$ 0.165	\$ 0.145	\$ 0.139
29	\$ 0.222	\$ 0.169	\$ 0.161	\$ 0.138	\$ 0.235	\$ 0.143	\$ 0.130	\$ 0.096	\$ 0.257	\$ 0.166	\$ 0.146	\$ 0.140
30	\$ 0.223	\$ 0.170	\$ 0.162	\$ 0.139	\$ 0.236	\$ 0.144	\$ 0.130	\$ 0.096	\$ 0.258	\$ 0.167	\$ 0.146	\$ 0.140

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

**Table F-2. Gas Conservation Cost Effectiveness Standard,  
2010 – 2011 (Levelized \$/Therm)**

Base on Monthly Shaped System Costs from 2009 IRP Monthly Gas  
Avoided Cost – 2009 Trends Scenario Prices

Measure Life	Res Space Heat Existing	Res Water Heat/ Appliances	Com Space Heat	Com Water Heat & Cooking	Industrial Flat
	SH	WH	CISH	CIWH	FLAT
1	\$ 0.953	\$ 0.862	\$ 0.978	\$ 0.865	\$ 0.862
2	\$ 1.021	\$ 0.926	\$ 1.047	\$ 0.928	\$ 0.925
3	\$ 1.097	\$ 1.003	\$ 1.123	\$ 1.006	\$ 1.003
4	\$ 1.150	\$ 1.056	\$ 1.176	\$ 1.059	\$ 1.056
5	\$ 1.189	\$ 1.092	\$ 1.215	\$ 1.095	\$ 1.092
6	\$ 1.216	\$ 1.117	\$ 1.242	\$ 1.120	\$ 1.117
7	\$ 1.242	\$ 1.140	\$ 1.270	\$ 1.143	\$ 1.140
8	\$ 1.268	\$ 1.162	\$ 1.296	\$ 1.165	\$ 1.162
9	\$ 1.291	\$ 1.183	\$ 1.319	\$ 1.186	\$ 1.183
10	\$ 1.313	\$ 1.204	\$ 1.342	\$ 1.207	\$ 1.204
11	\$ 1.333	\$ 1.223	\$ 1.362	\$ 1.226	\$ 1.223
12	\$ 1.352	\$ 1.241	\$ 1.382	\$ 1.245	\$ 1.241
13	\$ 1.372	\$ 1.260	\$ 1.401	\$ 1.264	\$ 1.260
14	\$ 1.389	\$ 1.278	\$ 1.419	\$ 1.282	\$ 1.278
15	\$ 1.408	\$ 1.296	\$ 1.438	\$ 1.299	\$ 1.296
16	\$ 1.426	\$ 1.312	\$ 1.456	\$ 1.316	\$ 1.312
17	\$ 1.442	\$ 1.328	\$ 1.473	\$ 1.332	\$ 1.328
18	\$ 1.461	\$ 1.346	\$ 1.494	\$ 1.350	\$ 1.346
19	\$ 1.477	\$ 1.362	\$ 1.513	\$ 1.366	\$ 1.362
20	\$ 1.492	\$ 1.377	\$ 1.532	\$ 1.381	\$ 1.377
21	\$ 1.508	\$ 1.392	\$ 1.549	\$ 1.396	\$ 1.392
22	\$ 1.522	\$ 1.406	\$ 1.566	\$ 1.410	\$ 1.406
23	\$ 1.536	\$ 1.420	\$ 1.582	\$ 1.424	\$ 1.420
24	\$ 1.549	\$ 1.433	\$ 1.597	\$ 1.437	\$ 1.433
25	\$ 1.562	\$ 1.445	\$ 1.611	\$ 1.449	\$ 1.445
26	\$ 1.574	\$ 1.457	\$ 1.625	\$ 1.461	\$ 1.457
27	\$ 1.586	\$ 1.468	\$ 1.639	\$ 1.472	\$ 1.468
28	\$ 1.597	\$ 1.479	\$ 1.651	\$ 1.483	\$ 1.479
29	\$ 1.608	\$ 1.489	\$ 1.664	\$ 1.494	\$ 1.489
30	\$ 1.618	\$ 1.499	\$ 1.675	\$ 1.504	\$ 1.499

1. 2010 Start Year

2. Discount Rate 8.25%