

## **Fuel Blind Home Energy Solutions Pilot Program Evaluation Plan**

An evaluation of the HES Pilot will be conducted in 2010 after the end of the heating season. The purpose of the evaluation will be to review the effectiveness of program delivery and to verify energy savings achieved by the energy efficiency measures installed during the 2009 implementation year. The specific evaluation objectives are:

1. Review program processes and procedures in order to assess the effectiveness of program marketing, administration and delivery of program services.
2. Assess customer satisfaction with program service delivery and customer perceptions of energy cost savings and payback.
3. Assess implementation contractor satisfaction with program participation.
4. Identify potential barriers to participation and assess the effectiveness of the customer co-pay.
5. Identify potential energy savings opportunities that are not being captured.
6. Verify fossil fuel and electric energy savings achieved by energy efficiency measure installation.
7. Verify summer and winter peak demand savings achieved by energy efficiency measure installation.
8. Provide recommendations regarding program design, marketing and delivery for full-scale implementation in future years.
9. Review the effectiveness of collaboration with gas utility programs.

An independent evaluation contractor will be hired to conduct site surveys of program participants and interviews with utility staff and implementation contractors. The evaluation contractor will review the energy savings calculation methodology and perform an independent verification of energy and demand savings by fuel type and measure type, including weatherization, heating system replacement, domestic hot water, appliance replacement and efficient lighting. The contractor will also analyze the effectiveness of the screening criteria employed to qualify customers for HES Pilot program services and, based on the findings, make recommendations concerning any revisions that would improve overall program effectiveness.

The evaluation will be initiated during the second quarter of 2010 and be completed by September 1, 2010. The project budget is estimated to be \$75,000.

**Program Cost-Effectiveness - 2009 PLAN**

	Present Value					
	Total Resource Benefit/Cost Ratio	Utility Costs		Customer Costs	Lifetime MWh Savings	Number of Customers Served
		Benefit (\$000)	(\$000)	(\$000)		
<b>Residential Programs</b>						
ENERGY STAR Homes	1.70	\$ 2,067.6	\$ 823.6	\$ 389.9	3,987.6	347
Home Energy Solutions *1	1.10	\$ 2,012.8	\$ 1,560.5	\$ 263.8	12,430.5	1,315
ENERGY STAR Lighting *2	3.75	\$ 5,313.1	\$ 997.0	\$ 420.9	67,325.9	224,009
ENERGY STAR Appliances	1.97	\$ 2,384.8	\$ 606.8	\$ 606.0	15,243.7	9,965
Home Energy Assistance	0.64	\$ 1,310.8	\$ 1,935.3	\$ 128.5	7,201.7	514
EnergyStar Homes (Geothermal)	1.48	\$ 947.9	\$ 346.8	\$ 294.7	16,723.2	40
Electro-Thermal Storage Units (LI)		\$ -	\$ -	\$ -	-	-
<b>Subtotal Residential</b>	<b>1.68</b>	<b>\$ 14,036.8</b>	<b>\$ 6,269.9</b>	<b>\$ 2,103.8</b>	<b>122,912.6</b>	<b>236,190</b>
<b>Commercial/Industrial Programs</b>						
New Construction / Major Renovation	2.88	\$ 7,311.2	\$ 1,902.9	\$ 638.8	67,241.6	106
Large C&I Retrofit	2.33	\$ 11,567.7	\$ 2,242.7	\$ 2,715.0	114,598.8	120
Small C&I Retrofit	1.90	\$ 7,174.3	\$ 2,174.7	\$ 1,593.8	75,020.7	404
C&I RFP Pilot	1.97	\$ 1,626.0	\$ 475.7	\$ 348.7	13,287.9	3
Other (Education)	0.00	\$ -	\$ 157.7	\$ -	-	-
Smart Start		\$ -	\$ 50.0	\$ -	-	-
<b>Subtotal C&amp;I</b>	<b>2.25</b>	<b>27,679.1</b>	<b>\$ 7,003.8</b>	<b>\$ 5,296.3</b>	<b>270,149.0</b>	<b>633</b>
<b>Total</b>		<b>\$ 41,715.9</b>	<b>\$ 13,273.7</b>	<b>\$ 7,400.2</b>	<b>393,061.6</b>	<b>236,823</b>

Note 1: This includes 200 Fuel Blind Home Energy Solutions Pilot Program participants

Note 2: Plan included 56,002 customers purchasing a total of 224,009 lighting products (4 per customer)

**Shareholder Incentive Calculation**

2009

	<u>Planned</u>	<u>Actual</u>
<b>Commercial/Industrial Incentive</b>		
1. Benefit/Cost Ratio	2.15	0.00
2. Threshold Benefit / Cost Ratio <sup>1</sup>	1.00	
3. Lifetime kWh Savings	270,149,013	0
4. Threshold Lifetime kWh Savings (65%) <sup>2</sup>	175,596,859	
5. Budget	\$7,003,803	\$0
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
<b>8. C/I Shareholder Incentive</b>	\$560,304	
<b>9. Cap (12%)</b>	\$840,456	
<b>Residential Incentive</b>		
10. Benefit / Cost Ratio	1.58	0.00
11. Threshold Benefit / Cost Ratio <sup>1</sup>	1.00	
12. Lifetime kWh Savings	122,912,589	0
13. Threshold Lifetime kWh Savings (65%) <sup>2</sup>	79,893,183	
14. Budget <sup>3</sup>	\$6,102,424	
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
<b>17. Residential Incentive</b>	\$488,194	
<b>18. Cap (12%)</b>	\$732,291	
<b>19. TOTAL INCENTIVE EARNED</b>		

**Notes**

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.

2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.

3. Reduced by estimated budget for fossil savings in Fuel Blind HES Pilot Program. \$167,500

**Planned Versus Actual Benefit / Cost Ratio by Sector**  
 2009

	<u>Planned</u>	<u>Actual</u>
<b>Commercial &amp; Industrial:</b>		
1. Benefits (Value) From Eligible Programs	\$ 27,679,086	\$ -
2. Implementation Expenses	\$ 7,003,803	\$ -
3. Customer Contribution	\$ 5,296,314	\$ -
4. Estimated Shareholder Incentive	\$ 560,304	\$ 560,304
5. Total Costs (including shareholder incentive)	\$ 12,860,421	\$ 560,304
6. Benefit/Cost Ratio - C&I Sector	<b>2.15</b>	<b>0.00</b>
 <b>Residential:</b>		
7. Benefits (Value) From Eligible Programs	\$ 14,036,838	\$ -
8. Implementation Expenses	\$ 6,269,924	\$ -
9. Customer Contribution	\$ 2,103,846	\$ -
10. Estimated Shareholder Incentive	\$ 488,194	\$ 488,194
11. Total Costs (including shareholder incentive)	\$ 8,861,964	\$ -
12. Benefit/Cost Ratio - Residential Sector	<b>1.58</b>	<b>0.00</b>

**Actual Lifetime Energy Savings by Sector and Program**  
2009

	<b>Lifetime kWh Savings</b>	
	<b><u>Planned</u></b>	<b><u>Actual</u></b>
<b>Commercial &amp; Industrial:</b>		
New Equipment & Construction	67,241,635	0
Large C&I Retrofit	114,598,762	0
Small Business Energy Solutions	75,020,685	0
Education	0	0
Utility Specific (Energy Rewards RFP Program)	13,287,932	0
Other	<u>0</u>	<u>0</u>
 Total Commercial & Industrial Included for Incentive Calculation	 <b>270,149,013</b>	 <b>0</b>
<b>Residential:</b>		
Home Energy Assistance Program	7,201,690	0
Home Energy Solutions Program	12,430,541	0
ENERGY STAR Homes Program	3,987,604	0
ENERGY STAR Appliance Program	15,243,734	0
ENERGY STAR Lighting Program	67,325,855	0
Electro-Thermal Storage Units	0	0
Utility Specific: ENERGY STAR Homes - Geothermal)	<u>16,723,166</u>	<u>0</u>
 Total Residential Included for Incentive Calculation	 <b>122,912,589</b>	 <b>0</b>

**Unitil Energy System, Inc.  
Energy Efficiency Program Cost-Effectiveness - 2009**

	Total Resource Benefit/Cost Ratio	Net Present Value			Lifetime MWh Savings	Number of Cust. Served
		Benefit (\$000)	Utility Costs <sup>(1)</sup> (\$000)	Customer Costs (\$000)		
<b>Res Non-Low Income Programs</b>						
ENERGY STAR Homes	1.4	253.0	162.6	17.59	395	41
Home Energy Solutions Program	1.2	335.6	254.0	35.99	812	97
ENERGY STAR Lighting Program <sup>(2)</sup>	4.4	1,323.0	184.3	116.97	15,674	50,644 <sup>(2)</sup>
ENERGY STAR Appliances <sup>(2)</sup>	1.3	310.0	108.2	134.09	1,883	1,089 <sup>(2)</sup>
Res. EE Website / Energy Suite	-	n/a	24.0	n/a	n/a	n/a
A05b Res / K-12 Education	-	n/a	5.0	n/a	n/a	n/a
A06a ISO-Related Expenses Res Non-LI	-	n/a	2.9	n/a	n/a	n/a
<b>Subtotal Residential</b>	<b>2.1</b>	<b>\$ 2,221.6</b>	<b>\$ 741.10</b>	<b>304.65</b>	<b>18,764</b>	
<b>Residential Low Income Program</b>						
Home Energy Assistance Program	1.2	372.5	303.2	-	10,597 <sup>(3)</sup>	76
B06a ISO-Related Expenses Res LI	-	n/a	0.6	n/a	n/a	n/a
<b>Subtotal Residential LI</b>	<b>1.2</b>	<b>\$ 372.5</b>	<b>\$ 303.81</b>	<b>-</b>	<b>10,597</b>	<b>76</b>
<b>Commercial/Industrial Programs</b>						
New Constr. / Major Renovation	3.7	714.6	162.5	30.06	5,635	7
Large C&I Retrofit	2.5	1,799.8	352.8	367.11	19,059	17
Small C&I Retrofit	2.7	1,630.7	377.0	218.37	16,551	50
C&I EE Website / Energy Suite	-	n/a	14.5	n/a	n/a	n/a
C&I Education	-	n/a	10.0	n/a	n/a	n/a
C06a ISO-Related Expenses C&I	-	n/a	23.0	n/a	n/a	n/a
<b>Subtotal C&amp;I</b>	<b>2.7</b>	<b>\$ 4,145.1</b>	<b>\$ 939.84</b>	<b>615.53</b>	<b>41,245</b>	
<b>Total</b>	<b>2.3</b>	<b>\$ 6,739.2</b>	<b>\$ 1,984.7</b>	<b>920.18</b>	<b>70,606</b>	

(1) Utility Costs include direct program costs plus projected Shareholder Incentive.

(2) Target number of products purchased.

(3) The Home Energy Assistance (HEA) program is offered as a fuel-blind program. Estimated lifetime non-electric savings have been converted into kWh as follows to establish UES' HEA program savings goal:

$$[\text{Lifetime MMBtu} \div 0.003413] \div 1,000 = \text{Lifetime MWh.}$$

**Unitil Energy System, Inc.  
 Shareholder Incentive Calculation - 2009**

	<u>Planned</u>	
<b>Commercial/Industrial Incentive</b>		
1. Benefit/Cost Ratio	<b>2.67</b>	
2. Threshold Benefit / Cost Ratio	1.00	(1)
3. Lifetime kWh Savings	<b>41,245,061</b>	
4. Threshold Lifetime kWh Savings (65%)	26,809,290	(2)
5. Program Budgets	\$ 870,224	
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Shareholder Incentive	\$69,618	
9. Cap (12%)	\$104,427	
<b>Residential Incentive (including low-income)</b>		
10. Benefit / Cost Ratio	<b>1.92</b>	
11. Threshold Benefit / Cost Ratio	1.00	(1)
12. Lifetime kWh Savings	<b>29,361,042</b>	(3)
13. Threshold Lifetime kWh Savings (65%)	19,084,677	(2)
14. Program Budget	\$ 867,627	
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$69,409	
18. Cap (12%)	\$104,115	
19. TOTAL INCENTIVE	<b>\$ 139,028</b>	

**Notes**

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. Estimated budget for fossil savings in Fuel Blind Home Energy Solutions Pilot Program

\$ 99,879

**Unitil Energy System, Inc.**  
**Planned Benefit / Cost Ratio by Sector - 2008**

	<u>Planned</u>
<b>Commercial &amp; Industrial:</b>	
1. Benefits (Value) From Eligible Programs	\$ 4,145,092
2. Program Budgets - Excludes SHI	\$ 870,224
3. Customer Contribution	\$ 615,533
4. Estimated Shareholder Incentive	<u>\$ 69,618</u>
5. Total Costs Excluding Shareholder Incentive	<u>\$ 1,485,757</u>
6. Benefit/Cost Ratio - C&I Sector	<b>2.67</b>
<b>Residential:</b>	
7. Benefits (Value) From Eligible Programs	\$ 2,594,070
8. Program Budgets - Excludes SHI	\$ 967,506
9. Customer Contribution	\$ 304,646
10. Estimated Shareholder Incentive	<u>\$ 69,409</u>
11. Total Costs Excluding Shareholder Incentive	\$ 1,272,151
12. Benefit/Cost Ratio - Residential Sector	<b>1.92</b>



**Unitil Energy System, Inc.  
 Lifetime Energy Savings by Sector and Program - 2008**

	<u>Lifetime kWh Savings</u>
<b>Commercial &amp; Industrial:</b>	
Large C&I New Equipment & Construction	5,635,348
Large C&I Retrofit	19,058,974
Small Business Energy Solutions	16,550,739
Utility Specific Programs - C&I Web / Energy Suite	____n/a
<b>Total Commercial &amp; Industrial Included for Incentive Calculation</b>	<b>41,245,061</b>
<b>Residential:</b>	
Home Energy Assistance Program <sup>(1)</sup>	10,597,445
Home Energy Solutions Program	812,283
ENERGY STAR Homes Program	394,756
ENERGY STAR Appliance Program	1,882,681
ENERGY STAR Lighting Program	15,673,876
Utility Specific Programs - Res. EE Web / Energy Suite	____n/a
<b>Total Residential Included for Incentive Calculation</b>	<b>29,361,042</b>

(3) The Home Energy Assistance (HEA) program is offered as a fuel-blind program. Estimated lifetime non-electric savings have been converted into kWh as follows to establish UES' HEA program savings goal:

$$[\text{Lifetime MMBtu} \div 3,413] * 1,000 = \text{Lifetime MWh.}$$