

For Tariff Filing 2014

ENERGY STAR Refrigerator Rebate Program
 Aug-14 *matches KU rebate; includes advertising costs; incorporates contractor pricing*

<u>Assumption</u>	<u>Source</u>
Load Impacts Before Participant 600 kWh, 0.057 kW (coincident with winter system peak), 0.087 kW (summer)	New refrigerator meeting current Federal standards for efficiency
After Participant 500 kWh, 0.047 kW (coincident with winter system peak), 0.072 kW (summer)	New ENERGY STAR Refrigerator. Source: ENERGY STAR
Lifetime of savings 12 years	Source: ENERGY STAR
Generation Capacity Cost - EE = combined cycle, 100% summer \$119.00 in 2013 Avoided Electricity Energy Costs - PJM Market	Combined Cycle Baseload unit. 100% allocation to summer based on ACES July 1 2014 energy forward curve for AEP_Dayton. DSMore Scenario 1, 0.717 esc in 2015
Participant Costs \$ 40 one time;	Incremental cost for the more efficient ENERGY STAR model. Source: ENERGY STAR
Administrative Cost EK \$750 one time set up fee, \$13,750 fixed annual (2015-2017), \$10 per new participant Co-op \$0	Fixed annual cost includes advertising costs (\$7,000 per year), other marketing and EM&V (\$5,000), and monthly admin fee to contractor (\$1,750 per year). Per unit fee of \$10 is paid to contractor for servicing the rebate application. Contractor fees are pro-rated evenly across all the appliances in the Energy Star Appliance Rebate program. Co-op is not responsible for providing services to administer this program.
Rate Schedule - Retail Average Residential Rate for Co-ops Cust chrg \$9.62, Energy Rate \$.08966 Rate Schedule - Wholesale East Kentucky E-2 rate.	Current rates in effect as of June, 2011. Current rates in effect as of June, 2011.
Participation - 2,500 per year, 3 years (2015-2017). 10% Free Riders	Share increase of 20% in target market assuming multiplier effect of 2:1 (although free drivers not modelled). Free rider estimate is from California PUC Energy Efficiency Policy Manual.
Rebates Co-op to Participant \$100 EK to Co-op \$115	To match the LG&E/KU rebate (see tariff, DSM Adjustment Clause) 100% of Admin and Rebate plus 6 years net lost revenues

For Tariff Filing 2014

ENERGY STAR Freezer Rebate Program
 Aug-14 **matches KU rebate; includes advertising costs; incorporates contractor pricing**

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 673 kWh, 0.055 kW (coincident with winter system peak), 0.109 kW (summer)</p> <p>After Participant 606 kWh, 0.049 kW (coincident with winter system peak), 0.098 kW (summer)</p>	<p>New upright automatic defrost freezer meeting current Federal standards for efficiency. Source: ENERGY STAR</p> <p>New ENERGY STAR Freezer. Source: Vermont EE potential study</p>
<p>Lifetime of savings 12 years</p>	<p>Source: ENERGY STAR</p>
<p>Generation Capacity Cost - EE = combined cycle, 100% summer \$119.00 in 2013 Avoided Electricity Energy Costs - PJM Market</p>	<p>Combined Cycle Baseload unit. 100% allocation to summer based on ACES July 1 2014 energy forward curve for AEP_Dayton. DSMore Scenario 1, 0.717 esc in 2015</p>
<p>Participant Costs \$ 33 one time;</p>	<p>Incremental cost for the more efficient ENERGY STAR model. Source: ENERGY STAR</p>
<p>Administrative Cost</p> <p>EK \$750 one time set up fee, \$13,750 fixed annual (2015-2017), \$10 per new participant</p> <p>Co-op \$0</p>	<p>Fixed annual cost includes advertising costs (\$7,000 per year), other marketing and EM&V (\$5,000), and monthly admin fee to contractor (\$1,750 per year). Per unit fee of \$10 is paid to contractor for servicing the rebate application. Contractor fees are pro-rated evenly across all the appliances in the Energy Star Appliance Rebate program.</p> <p>Co-op is not responsible for providing services to administer this program.</p>
<p>Rate Schedule - Retail Average Residential Rate for Co-ops Cust chrg \$9.62, Energy Rate \$.08966</p> <p>Rate Schedule - Wholesale East Kentucky E-2 rate.</p>	<p>Current rates in effect as of June, 2011.</p> <p>Current rates in effect as of June, 2011.</p>
<p>Participation - 1,500 per year, 3 years (2015-2017). 10% Free Riders</p>	<p>Share increase of 20% in target market assuming multiplier effect of 2:1 (although free drivers not modelled). Free rider estimate is from California PUC Energy Efficiency Policy Manual.</p>
<p>Rebates Co-op to Participant \$50 EK to Co-op \$60</p>	<p>To match the LG&E/KU rebate (see tariff, DSM Adjustment Clause) 100% of Rebate plus 6 years net lost revenues</p>

For Tariff Filing 2014

ENERGY STAR Dish Washer Rebate Program
 Aug-14 **matches KU rebate; includes advertising costs; incorporates contractor pricing**

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 343 kWh, 0.06 kW (coincident with winter system peak), 0.03 kW (summer)</p> <p>After Participant 264 kWh, 0.05 kW (coincident with winter system peak), 0.02 kW (summer)</p>	<p>Typical electricity consumption for dishwasher and electric water heating for dish washing. Electricity savings from ENERGY STAR Clothes washers come from lower water heating and dish washing energy.</p> <p>ENERGY STAR dish washers save on average 44 kWh on water heating and 35 kWh on dish washing each year.</p>
<p>Lifetime of savings 10 years</p>	<p>Source: ENERGY STAR</p>
<p>Generation Capacity Cost - EE = combined cycle, 100% summer \$119.00 in 2013 Avoided Electricity Energy Costs - PJM Market</p>	<p>Combined Cycle Baseload unit. 100% allocation to summer based on ACES July 1 2014 energy forward curve for AEP_Dayton. DSMore Scenario 1, 0.717 esc in 2015</p>
<p>Participant Costs \$ 10 one time; \$-5 per year O&M cost (savings)</p>	<p>Difference between retail price of an ENERGY STAR dishwasher and a new standard efficiency washer. Source: ENERGY STAR. The negative \$5 per year O&M cost represents savings in water and sewer costs by using less water. Source: ENERGY STAR</p>
<p>Administrative Cost EK \$750 one time set up fee, \$13,750 fixed annual (2015-2017), \$10 per new participant</p> <p>Co-op \$0</p>	<p>Fixed annual cost includes advertising costs (\$7,000 per year), other marketing and EM&V (\$5,000), and monthly admin fee to contractor (\$1,750 per year). Per unit fee of \$10 is paid to contractor for servicing the rebate application. Contractor fees are pro-rated evenly across all the appliances in the Energy Star Appliance Rebate program.</p> <p>Co-op is not responsible for providing services to administer this program.</p>
<p>Rate Schedule - Retail Average Residential Rate for Co-ops Cust chrg \$9.62, Energy Rate \$.08966</p> <p>Rate Schedule - Wholesale East Kentucky E-2 rate.</p>	<p>Current rates in effect as of June, 2011.</p> <p>Current rates in effect as of June, 2011.</p>
<p>Participation - 2,400 per year, 3 years. (2014-2016) . 10% Free Riders</p>	<p>Share increase of 20% in target market assuming multiplier effect of 2:1 (although free drivers not modelled). Free Riders based on LG&E/KU.</p>
<p>Rebates Co-op to Participant \$50 EK to Co-op \$60</p>	<p>To match the LG&E/KU rebate (see tariff, DSM Adjustment Clause) 100% of Rebate plus 5 years net lost revenues</p>

For Tariff Filing 2014

ENERGY STAR Clothes Washer Rebate Program = "CLWSHR_R"
 Aug-14 **matches KU rebate; includes advertising costs; incorporates contractor pricing**

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 3,400 kWh, 0.73 kW (coincident with winter system peak), 0.31 kW (summer)</p> <p>After Participant 3,050 kWh, 0.66 kW (coincident with winter system peak), 0.28 kW (summer)</p>	<p>Typical electric water heater with typical electric dryer. Electricity savings from ENERGY STAR Clothes washers come from lower water heating and clothes drying energy.</p> <p>ENERGY STAR clothes washers save on average 250 kWh on water heating and 100 kWh on clothes drying each year.</p>
<p>Lifetime of savings 12 years</p>	<p>Source: Northeast Energy Efficiency Partnership (NEEP) planning document (Sept 2004).</p>
<p>Generation Capacity Cost - EE = combined cycle, 100% summer \$119.00 in 2015 Avoided Electricity Energy Costs - PJM Market</p>	<p>Combined Cycle Baseload unit. 100% allocation to summer based on ACES July 1 2014 energy forward curve for AEP_Dayton. DSMore Scenario 1, 0.717 esc in 2015</p>
<p>Participant Costs \$260 one time; \$-20 per year O&M cost (savings)</p>	<p>Difference between retail price of an ENERGY STAR clothes washer and a new standard efficiency washer. Source: NEEP (2004), ENERGY STAR (2011). The negative \$20 per year O&M cost represents <u>savings</u> in water and sewer costs by using less water.. Verified with more recent reports.</p>
<p>Administrative Cost EK \$750 one time set up fee, \$13,750 fixed annual (2015-2017), \$10 per new participant Co-op \$0</p>	<p>Fixed annual cost includes advertising costs (\$7,000 per year), other marketing and EM&V (\$5,000), and monthly admin fee to contractor (\$1,750 per year). Per unit fee of \$10 is paid to contractor for servicing the rebate application. Contractor fees are pro-rated evenly across all the appliances in the Energy Star Appliance Rebate program.</p> <p>Co-op is not responsible for providing services to administer this program.</p>
<p>Rate Schedule - Retail Average Residential Rate for Co-ops Cust chrg \$9.62, Energy Rate \$.08966 Rate Schedule - Wholesale East Kentucky E-2 rate.</p>	<p>Current rates in effect as of June, 2011.</p> <p>Current rates in effect as of June, 2011.</p>
<p>Participation - 2,225 per year, 3 years (2015-2017), 10% Free Riders</p>	<p>Share increase of 20% in target market assuming multiplier effect of 2:1 (although free drivers not modelled). Free Riders based on LG&E/KU.</p>
<p>Rebates Co-op to Participant \$75 EK to Co-op \$130</p>	<p>To match the LG&E/KU rebate (see tariff, DSM Adjustment Clause) 100% of Rebate plus 6 years net lost revenues</p>

For Tariff Filing 2014

Heat Pump Water Heater
 Aug-14 **matches KU rebate; includes advertising costs; incorporates contractor pricing**

Heat pump water heaters use a vapor compression refrigeration cycle to concentrate ambient heat instead of generating heat directly. Therefore, they can be two to three times more energy efficient than conventional electric resistance water heaters.

<u>Assumption</u>	<u>Source</u>
Load Impacts Before Participant 3,600 kWh, 0.84 kW (coincident with winter peak), 0.32 kW (summer)	Typical efficiency (EF=0.90) new electric hot water heater, 50 or more gallons
After Participant 1,400 kWh, 0.33 kW (coincident with winter system peak), 0.12 kW (summer)	ENERGY STAR rated integrated heat pump water heater (EF=2.35), tank size of at least 50 gallons
Lifetime of savings	13 Years (Lawrence Berkeley Lab, ACEEE)
Generation Capacity Cost - EE = combined cycle, 100% summer \$119.00 in 2013 Avoided Electricity Energy Costs - PJM Market	Combined Cycle Baseload unit. 100% allocation to summer based on ACES July 1 2014 energy forward curve for AEP_Dayton. DSMore Scenario 1, 0.717 esc in 2015
Participant Costs \$ 1,105 thru 2016, \$1,405 2017 on. 3% escalation	Cost premium associated with the installed cost of the heat pump water heater over and above the installed cost of a new conventional electric water heater. 30% Federal Tax credit is included through 2016. Total installed cost for HPWH is \$2,000. Installed cost of conventional electric water heater is \$595. Federal tax credit is \$ 300.
Administrative Cost EK \$750 one time set up fee, \$13,750 fixed annual (2015-2017), \$10 per new participant	Fixed annual cost includes advertising costs (\$7,000 per year), other marketing and EM&V (\$5,000), and monthly admin fee to contractor (\$1,750 per year). Per unit fee of \$10 is paid to contractor for servicing the rebate application. Contractor fees are pro-rated evenly across all the appliances in the Energy Star Appliance Rebate program.
Co-op \$0	Co-op is not responsible for providing services to administer this program.
Rate Schedule - Retail Average Residential Rate for Co-ops Cust chrg \$9.62, Energy Rate \$.08966 Rate Schedule - Wholesale East Kentucky E-2 rate.	Current rates in effect as of June, 2011.
Participation - 725 new per year, 3 years (2015-2017). 0% free riders.	Goal of 10% of applicable market, which is the replacement market for single family homes that currently have an electric hot water heater that is 50 gallons or larger.
Rebates Co-op to Participant \$ 300 EK to Co-op \$ 685	To match the LG&E/KU rebate (see tariff, DSM Adjustment Clause) Covers 100% of coop admin cost, rebate, plus 7 years estimated net lost revenues.

For Tariff Filing 2014

ASHP standard replacement to SEER 15

Aug-14 **matches KU rebate; includes advertising costs; incorporates contractor pricing**
 Encourages customers to upgrade their replacement air source heat pump from standard SEER 13 to high efficient SEER 15 heat pumps

<u>Assumption</u>	<u>Source</u>
Load Impacts Before Participant 7,669 kWh, 8.1 kW (coincident with winter peak), 2.1 kW (summer)	Standard efficiency heat pump: SEER 13, HSPF 7.7 1,700 square foot home, 3 ton unit
After Participant 6,865 kWh, 8.1 kW (coincident with winter system peak), 1.8 kW (summer)	High efficiency heat pump: SEER 15, HSPF 8.5. 1,700 square foot home, 3 ton unit
Lifetime of savings	20 years
Generation Capacity Cost - EE = combined cycle, 100% summer \$119.00 in 2013 Avoided Electricity Energy Costs - PJM Market	Combined Cycle Baseload unit. 100% allocation to summer based on ACES July 1 2014 energy forward curve for AEP_Dayton. DSMore Scenario 1, 0.717 esc in 2015
Participant Costs \$ 750 thru 2015; \$1,000 for 2016 on. 3% escalation	Cost premium (\$1,000) associated with SEER 15 heat pump over and above the installed cost of a SEER 13 heat pump. \$250 Kentucky tax credit is included through 2015. Cost premium based on Energy Star data.
Administrative Cost EK \$750 one time set up fee, \$21,750 fixed annual (2015-2017), \$10 per new participant Co-op \$0	Fixed annual cost includes advertising costs, marketing and EM&V (\$20,000 per year), and monthly admin fee to contractor (\$1,750 per year). Per unit fee of \$10 is paid to contractor for servicing the rebate application. Contractor fees are pro-rated evenly across all the appliances in the Energy Star Appliance Rebate program. Co-op is not responsible for providing services to administer this program.
Rate Schedule - Retail Average Residential Rate for Co-ops Cust chrg \$9.62, Energy Rate \$.08966 Rate Schedule - Wholesale East Kentucky E-2 rate.	Current rates in effect as of June, 2011. Current rates in effect as of June, 2011.
Participation - 2,000 new per year, 3 years (2015-2017). 0% free riders.	targets 20% of the eligible market = residential customers replacing their air source heat pump at the end of its useful life
Rebates Co-op to Participant \$ 300 EK to Co-op \$ 675	To match the LG&E/KU rebate (see tariff, DSM Adjustment Clause). \$100 plus \$100 more per SEER improvement above the Federal standard Covers 100% of coop admin cost, rebate, plus 5 years estimated net lost revenues.

For Tariff Filing 2014

Aug-14 ENERGY STAR Residential Central Air Conditioning program w/ proper sizing & installation
matches KU rebate; includes advertising costs; incorporates contractor pricing

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 2,092 kWh, 2.07 kW (coinc. with summer system peak)</p> <p>After Participant 1,563 kWh, 1.55 kW (coinc. with summer system peak).</p>	<p>Standard efficiency new Central air conditioner (SEER 13)</p> <p>High efficiency new Central Air Conditioner (SEER 15), proper sizing and installation. Savings from SEER 15 are 279 kWh. Savings from proper sizing/installation are 250 kWh.</p>
<p>Lifetime of savings</p> <p>Generation Capacity Cost - EE = combined cycle, 100% summer \$119.00 in 2013</p> <p>Avoided Electricity Energy Costs - PJM Market</p>	<p>15 Years</p> <p>Combined Cycle Baseload unit. 100% allocation to summer based on ACES July 1 2014 energy forward curve for AEP_Dayton. DSMore Scenario 1, 0.717 esc in 2015</p>
<p>Participant Costs \$ 300 through 2015, then \$550. 3% escalation</p>	<p>Difference in installed cost (\$550) between SEER 13 Central AC and SEER 15 CAC - based on ENERGY STAR . Less the \$250 KY tax credit thru 2015.</p>
<p>Administrative Cost</p> <p>EK \$750 one time set up fee, \$13,750 fixed annual (2015-2017), \$10 per new participant</p> <p>Co-op \$0</p>	<p>Fixed annual cost includes advertising costs (\$7,000 per year), other marketing and EM&V (\$5,000), and monthly admin fee to contractor (\$1,750 per year). Per unit fee of \$10 is paid to contractor for servicing the rebate application. Contractor fees are pro-rated evenly across all the appliances in the Energy Star Appliance Rebate program.</p> <p>Co-op is not responsible for providing services to administer this program.</p>
<p>Rate Schedule - Retail Average Residential Rate for Co-ops Cust chrg \$9.62, Energy Rate \$.08966</p> <p>Rate Schedule - Wholesale East Kentucky E-2 rate.</p>	<p>Current rates in effect as of June, 2011.</p> <p>Current rates in effect as of June, 2011.</p>
<p>Participation - 2,600 per year, 3 years (2015 -2017), 10% free riders</p>	<p>targets 25% of the replacement market each year. Assumes 15 year life so approx 7% of existing households with CAC represent replacement market annually. Free Riders from Xcel DSM plan (2009).</p>
<p>Rebates</p> <p>Co-op to Participant \$300 EK to Co-op \$400</p>	<p>\$300 to match KU rebate (\$100 plus \$100 per 1 SEER improvement), (see tariff, DSM Adjustment Clause).</p> <p>100% reimbursement of rebate plus 7 years net lost revenues.</p>

Agg all ENERGY STAR Appliances rebate program- for 2014 Tariff Filing; includes actual pricing from contractor; PJM avoided energy costs; avoided CC capacity costs

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$ 12,774,893	Revenue Declines	(\$17,198,401)
Rebates From EK	\$10,731,588	Administrative Costs	\$0
		Rebates Paid To Consumers	(\$6,412,685)
Total Benefits	\$23,506,481	Total Costs	(\$23,611,086)
Benefit / Cost Ratio: 1.00			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$11,533,273	Up Front Investment	(\$12,162,775)
Rebates From Distribution System	\$ 6,058,868		
Reductions in O&M costs	\$874,427		
Total Benefits	\$18,466,568	Total Costs	(\$12,162,775)
Benefit / Cost Ratio: 1.52			

Total Resource Benefits		Total Resource Costs	
Avoided Energy Costs	\$9,672,875	Up Front Customer Investment	\$(12,948,580)
Avoided Gen Capacity Costs	\$8,598,489	Distribution System Admin. Costs	\$0
Avoided Transmission Expense	\$1,130,709	EK Administrative Costs	(\$692,778)
Reduced Customer O&M costs	\$874,427		
Total Benefits	\$20,276,501	Total Costs	(\$13,641,358)
Benefit / Cost Ratio: 1.49			

EK Benefits		EK Costs	
Avoided Energy Costs	\$9,672,875	Decrease In Revenue	\$(12,774,893)
Avoided Gen Capacity Costs	\$8,598,489	Rebates Paid	(\$10,882,188)
Avoided Transmission Expense	\$1,130,709	Administrative Costs	(\$702,231)
Total Benefits	\$19,402,074	Total Costs	(\$24,359,312)
Benefit / Cost Ratio: 0.80			

Societal Benefits		Societal Costs	
Avoided Energy Costs	\$10,802,794	Up Front Customer Investment	(\$12,621,273)
Avoided Gen Capacity Costs	\$9,617,246	Distribution System Admin. Costs	\$0
Avoided Transmission Expense	\$1,263,808	EK Administrative Costs	(\$702,231)
Environmental Externalities	\$0		
Reduced Customer O&M costs	\$ 874,427		
Total Benefits	\$22,558,275	Total Costs	(\$13,323,504)
Benefit / Cost Ratio: 1.69			

Combined RIM:			
Benefits:	\$19,402,074	Costs:	(\$24,313,318)
Benefit / Cost Ratio: 0.80			