

DSM

Demand Side Management
2023 Annual Report





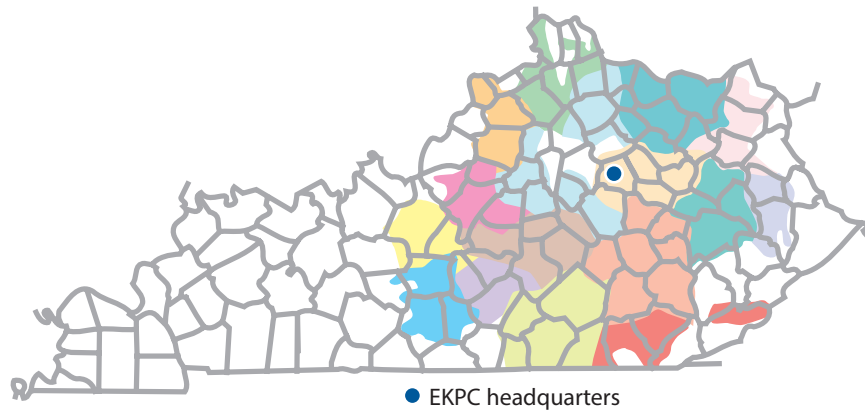
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Who We Are

Located in the heart of the Bluegrass state, East Kentucky Power Cooperative is a not-for-profit generation and transmission (G&T) electric utility with headquarters in Winchester, Ky. Our cooperative has a vital mission: to safely generate and deliver affordable, reliable, sustainable electric power to 16 owner-member cooperatives serving more than one million Kentuckians.

Together, with our 16 owner-members, we're known as Kentucky's Touchstone Energy Cooperatives. The member co-ops distribute energy to over 554,000 Kentucky homes, farms, businesses and industries across 87 counties. We're leaders in energy efficiency and environmental stewardship. And we're committed to providing power to improve the lives of people in Kentucky.



Sixteen distribution cooperatives, which are called the member systems, own EKPC. The 16 co-ops include:

- Big Sandy RECC
- Blue Grass Energy Cooperative
- Clark Energy Cooperative
- Cumberland Valley Electric
- Farmers RECC
- Fleming-Mason Energy Cooperative
- Grayson RECC
- Inter-County Energy
- Jackson Energy Cooperative
- Licking Valley RECC
- Nolin RECC
- Owen Electric Cooperative
- Salt River Electric Cooperative
- Shelby Energy Cooperative
- South Kentucky RECC
- Taylor County RECC

East Kentucky Power Generation

Coal	Generation	Natural Gas	Generation	Landfill	Generation
Spurlock	1,346 net MW	Smith	Summer	Bavarian	4.6 net MW
Cooper	341 net MW	Combustion	753 net MW	Green Valley	2.3 net MW
		Turbine	Winter	Hardin	2.3 net MW
Total	1,687 net MW	Units	989 net MW	Pendleton	3.0 net MW
		Bluegrass	Summer	Glasgow*	0.9 net MW
Hydro	Generation	Combustion	501 net MW	Total Landfill	13.1 net MW
Southeastern	170 MW	Turbine	Winter		
Power Adm.		Units	567 net MW	Solar	
(SEPA)		Total Natural Gas Summer	1,254 net MW	Generation	
		Total Natural Gas Winter	1,556 net MW	Cooperative Solar	8.5 net MW

* Under an existing agreement, a third party receives the output of Glasgow in a 10-year power purchase agreement.

Button-Up Weatherization:

Since the early 1990s, EKPC and its owner-member cooperatives have offered this program to improve a home's energy efficiency, comfort, and reduce energy use. This program offers incentives to members who air seal the shell of their home with the end goal of reducing heat loss in the home. Any member who resides in a site-built or manufactured home that is at least two years old and uses electricity as their primary source of heat is eligible.

Button-Up Weatherization with Air Sealing:

The Button-Up encourages members to air seal the envelope of their home. Air sealing is one of the most cost effective ways to improve the efficiency of a home. A blower door test is required before and after air sealing is completed to demonstrate the impact in kW demand reduction, and an incentive is paid based on that reduction. Additional incentives are paid for increasing ceiling insulation and/or sealing ductwork.

In 2023, 28 Button-Up rebates were provided to members, resulting in a lifetime savings of 1,016 MWh and 2,032,831 pounds of carbon dioxide emissions.



ENERGY STAR® Manufactured Home:

The ENERGY STAR® Manufactured Home Program began in 2014. End-use members who purchase and install an ENERGY STAR® Manufactured Home are eligible for a rebate. ENERGY STAR® Manufactured Homes are certified by a third-party administrator, Systems Building Research Alliance (SBRA) in order to ensure quality control.

An ENERGY STAR® certified manufactured home is a home that has been designed, produced and installed by the home manufacturer to meet ENERGY STAR® requirements for energy efficiency. These manufactured homes feature efficient heating and cooling equipment, water heaters, properly installed insulation, high-performance windows, tight construction and sealed ducts.

This program is available to all end-use members who qualify.

In 2023, 23 rebates were provided to members, resulting in a lifetime savings of 1,401 MWh and 2,801,400 pounds of carbon dioxide emissions.



Touchstone Energy Home:

Since 2003, EKPC and its owner-member cooperatives have offered this program to increase energy efficiency in new-home construction. This program is designed to encourage new homes to be built to higher standards for thermal integrity and equipment efficiency, as well as to choose a geothermal or an air-source heat pump, rather than less efficient forms of heating and cooling. Homes built to Touchstone Energy Home standards typically use 30 percent less energy than the same home built to typical construction standards. Plans are submitted before the home is built, a pre-drywall inspection is made, and a blower door test is administered after the home is built to verify that the home meets the standard.

This program is targeted towards the residential new construction market and members who are constructing new site-built homes.

In 2023, 494 Touchstone Energy Home rebates were provided to members, resulting in a lifetime savings of 31,340 MWh and 62,678,720 pounds of carbon dioxide emissions.

EKPC's owner-members have also used this program to partner with Kentucky's affordable housing builders. Relationships with these organizations have led to improved efficiency in affordable housing and lower monthly energy costs for recipients of these homes.



Heat Pump Retrofit:

For decades, EKPC and its owner-member cooperatives have offered this program to lower the cost of heating homes and increase comfort. This program provides incentives for members to replace their existing resistance heat source with a high-efficiency heat pump through two levels of rebates.

Level 1 offers a rebate for a federal minimum standard heat pump. Level 2 offers a rebate for a ENERGY STAR® level heat pump or higher heat pump. Popularity of mini-split ductless heat pumps has risen in recent years. The retrofit program also offers a special incentive for mini-split systems. The existing heating system must be two years or older to qualify for incentives unless the heat pump is being installed in a new manufactured home. New manufactured homeowners who install a heat pump qualify based on the levels above.

The program is targeted to members who currently use a resistance heat source. Incentives are offered when the homeowner's primary source of heat is an electric resistance furnace, ceiling cable heat, or baseboard heat in both site-built and manufactured homes.

In 2023, 361 Heat Pump Retrofit rebates were provided to members, resulting in a lifetime savings of 53,247 MWh and 106,494,560 pounds of carbon dioxide emissions.



Direct Load Control:

Since 2008, EKPC and its owner-member cooperatives have offered this program to manage peak usage. This program offers incentives to members who enroll central air-conditioners. Switches are installed and, during periods of high demand, the utility briefly cycles the appliance off in order to reduce system peaks and save on costs for peak power. Although EKPC's system typically peaks in winter, member's heating appliances are not interrupted to lower peak. Member comfort and safety are top priority.

This program is targeted to any member with central air-conditioning or heat pump. Beginning in 2019, EKPC also began offering a thermostat program that includes a qualifying Wi-Fi enabled thermostat so that end use members could enroll their smart thermostats in direct load control events. Enrollees in this program help lower energy demand during EKPC's system peaks.



CARES:

The Community Assistance Resources for Energy Savings (CARES) program began in early 2015, and provides an incentive to enhance the weatherization and energy efficiency services provided to the end-use members by the Kentucky Community Action Agencies (CAA) network and Kentucky's Affordable Housing Organizations (AHO). EKPC and its owner-members provide an incentive to the CAA implementing the project on behalf of the end-use member.

This program is available to end-use members who qualify for weatherization and energy-efficiency services through their local CAA in all service territories of participating cooperatives. The maximum incentive possible per household is \$2,000.

In 2023, 120 CARES incentives were provided, resulting in a lifetime savings of 8,374 MWh and 16,747,740 pounds of carbon dioxide emissions.



Impact Measures:

System summary of 2023 DSM program savings

DSM program totals (totals for installed energy-efficiency measures and total DLC participation for 2023)

All programs	Participation	Annual Energy Savings (MWh)	Summer Demand Savings (MW)	Winter Demand Savings (MW)	2023 program costs*	Lifetime energy savings (MWh)	Cost of demand saved (\$/kW)	Cost of energy saved (\$/kWh)	Lifetime CO2 savings (lbs)
All DSM Programs	32,140	5,162	27.019	7.559	\$4,396,489	95,378	\$68	0.027	190,755,251

Button-Up Weatherization

Residential program	Participation	Annual Energy Savings (MWh)	Summer Demand Savings (MW)	Winter Demand Savings (MW)	2023 program costs	Measure life (years)	Lifetime energy savings (MWh)	Cost of energy saved (\$/kWh)	Lifetime CO2 savings (lbs)
Button-Up	28	68	0.016	0.052	\$29,044	15	1,016	\$0.03	2,032,831

CARES

Residential program	Participation	Annual Energy Savings (MWh)	Summer Demand Savings (MW)	Winter Demand Savings (MW)	2023 program costs	Measure life (years)	Lifetime energy savings (MWh)	Cost of energy saved (\$/kWh)	Lifetime CO2 savings (lbs)
CARES	120	558	0.085	0.170	\$293,840	15	8,374	\$0.04	16,747,740

* Includes \$903,561 program administration and promotional expenses.

ENERGY STAR® Manufactured Home

Residential program	Participation	Annual Energy Savings (MWh)	Summer Demand Savings (MW)	Winter Demand Savings (MW)	2023 program costs	Measure life (years)	Lifetime energy savings (MWh)	Cost of energy saved (\$/kWh)	Lifetime CO2 savings (lbs)
ES Manufactured Home	23	93	0.011	0.021	\$49,220	15	1,401	\$0.04	2,801,400

Heat Pump Retrofit

Residential program	Participation	Annual Energy Savings (MWh)	Summer Demand Savings (MW)	Winter Demand Savings (MW)	2023 program costs	Measure life (years)	Lifetime energy savings (MWh)	Cost of energy saved (\$/kWh)	Lifetime CO2 savings (lbs)
Heat Pump	361	2,662	0.122	0.000	\$616,645	20	53,247	\$0.01	106,494,560

Touchstone Energy Home

Residential program	Participation	Annual Energy Savings (MWh)	Summer Demand Savings (MW)	Winter Demand Savings (MW)	2023 program costs	Measure life (years)	Lifetime energy savings (MWh)	Cost of energy saved (\$/kWh)	Lifetime CO2 savings (lbs)
TSE Home Prescriptive	24	76	0.017	0.063	\$34,800	20	1,523	\$0.02	3,045,120
TSE Home Performance	470	1,491	0.334	1.227	\$681,500	20	29,817	\$0.02	59,633,600

Direct Load Control Cumulative

Residential program	Participation	Annual Energy Savings (MWh)	Summer Demand Savings (MW)	Winter Demand Savings (MW)	2023 program costs	Cost of Demand saved (\$/KW)
DLC Air Conditioner	15,157	76	15.157	0.000	\$708,185.37	\$46.72
DLC Water Heater	11,588	116	4.288	6.026	\$509,550.28	\$118.84
Thermostats	4,369	22	6.990	0.000	\$570,143.32	\$81.56
Totals	31,114	213.51	26.435	6.026	\$1,787,878.97	\$69.63

2023 Basic Program Assumptions ¹

Measure: Button-Up Weatherization with Air Sealing

Annual kWh Saved:	2,253
Winter Demand Savings:	1.74
Summer Demand Savings:	0.53
Lifetime of Savings:	20 years
Installation Rate:	100%
TRC: ²	1.68

Measure: Heat Pump Federal Standard

From Electric Furnace & CAC to
Heat Pump Federal Standard

Annual kWh Saved:	7,533
Winter Demand Savings:	0
Summer Demand Savings:	0.32
Lifetime of Savings:	20 years
Installation Rate:	100%
TRC: ²	1.60

Measure: Heat Pump ENERGY STAR®

From Electric Furnace & CAC to
ENERGY STAR Heat Pump

Annual kWh Saved:	7,978
Winter Demand Savings:	0
Summer Demand Savings:	0.45
Lifetime of Savings:	20 years
Installation Rate:	100%
TRC: ²	1.60

Measure: Touchstone Energy Home

Prescriptive or Performance

Annual kWh Saved:	3,172
Winter Demand Savings:	2.94
Summer Demand Savings:	0.70
Lifetime of Savings:	20 years
Installation Rate:	100%
TRC:	2.10

Measure: Wi-fi Enabled Thermostat

Annual kWh Saved:	36
Winter Demand Savings:	0.00
Summer Demand Savings:	1.20
Lifetime of Savings:	15 years
Installation Rate:	100%
TRC:	2.17

Measure: CARES

Annual kWh Saved:	4,495
Winter Demand Savings:	1.34
Summer Demand Savings:	0.66
Lifetime of Savings:	15 years
Installation Rate:	100%
TRC:	1.15

Measure: ENERGY STAR® Manufactured Home

Annual kWh Saved:	4,060
Winter Demand Savings:	0.93
Summer Demand Savings:	0.47
Lifetime of Savings:	15 years
Installation Rate:	100%
TRC:	1.62

¹ Savings numbers are "ex ante" or as planned gross savings except where noted.

² Total Resource Cost (TRC) is an overall program benefits/costs analysts ratio.

Kentucky's Touchstone Energy® Cooperatives

Big Sandy RECC Blue Grass Energy Clark Energy Cumberland Valley Electric Farmers RECC
Fleming-Mason Energy Grayson RECC Inter-County Energy Jackson Energy Licking Valley RECC Nolin RECC
Owen Electric Salt River Electric Shelby Energy South Kentucky RECC Taylor County RECC



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