

Direct Load Control of Residential Air Conditioners and Heat Pumps: Bring Your Own Thermostat

2024 CPCN

System year 1 is 2025

Case: Bring Your Own Thermostat ("BYOT")

Reduce peak demand and energy usage through smart thermostat control of residential air conditioners

Assumption

Source

Load Impacts

Before Participant
Air Conditioner savings
6.5 kWh, 0.00 kW (coincident with winter system peak), **1.05 kW** (summer)

Based on average of M&V reports for Hoosier Energy (2021) and CenterPoint (2023); kWh savings based on 15 4-hour events

Lifetime of savings 20 years.

Life of program. Program models all devices in the field. The participation represents the load that is available to the program each year..

Discount rate for TRC and RIM

5 percent per EKPC financial data ; 3.5 % societal test from Mercatus Center report

Generation Capacity Cost - \$174.60 per kW-year (no escalation). 73% winter 27% summer.

Avoided costs of a RICE unit. Updated escalators to match. Allocation is 73% winter 27% summer. Summer values based on PJM capacity performance market December 2023 with IHS Markit forecast, start year is 2024.

Avoided Electricity Energy Costs - PJM Market, AEP-Dayton hub, **\$45.96 /MWh** in 2025

based on December 26, 2023 ACES Forward prices for AEP_Dayton hub. **\$45.96 /MWh** in 2025. DSMore **Scenario 9, 0.53 esc in 2025**

Transmission Capacity Cost - OATT tariff \$ 44.34 per kW-year in 2025

Point-to-point rate, 2023-24. OATT. 2.8 % escalation rate based on 10 yr PPI.. Applied to summer coincident peak.

Distribution Capacity Cost - \$ 4.93 per kW-year in 2025

Based on marginal cost of distribution. 2.8 % escalation rate based on 10 yr PPI. . Applied to summer coincident peak.

Participant Costs \$ 110 per new participant (\$110,000 in 2025).. 2% esc. Tax credit (benefit): \$0

cost to install new smart thermostat. One time cost for new participants none for this program

Administrative Cost

EK **\$25,000** (2025 value) fixed annual (2025-2044). 2% esc. . Per device fee of **\$24** annually 2% esc

Fix admin cost for EK staff program admin (estimate)

Co-op **\$0** per new participant

No administrative costs incurred by member cooperatives

Rate Schedule - Retail

Median Residential Rate for Co-ops
Cust chrg **\$16.09**, Energy Rate **\$.088229**
Rate Schedule - Wholesale

Current rates in effect as of January 2024.. **includes Environmental Surcharge and FAC**

East Kentucky E-2 rate.

Current rates in effect as of January 2024. **includes Environmental Surcharge and FAC**

Participation -2025: 8,000 (existing plus new). 2026-2039: 1,000 new per year.. 0% Free Riders

Budget estimate plus 2024 actual

Rebates

Co-op to Participant **\$ 110 one-time for new participants,; \$20 per year for all participants**, 2% esc
EK to Co-op **All rebate payments**, 2% esc

Based on tariff. One time rebate is for installing the thermostat (\$100) and enrolling in the DR program (\$10). Annual credit is \$20 per year..

Based on tariff.