

Energy Efficiency Overview

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Disclaimer



These comments are on behalf of Staff and should not be construed as representing the positions of the Commission.

Energy Efficiency



Defined as: “Reducing the consumption of energy while maintaining or improving the end-use customer’s existing level of functionality, or while maintaining or improving the utility system functionality”

(OAC 4901:1-39)



Image source: www.londeed.com

Energy Efficiency



○ Legislation

- ✦ **Senate Bill 221 – effective date 7/31/2008**
created a three “tier” Alternative Energy Portfolio Standard
 - Renewable Energy - 12.5% of Ohio’s electricity must be generated from renewable energy resources by 2025
 - Energy Efficiency - cumulative, annual energy savings in excess of twenty-two per cent by the end of 2025
 - Advanced Energy - allows for 12.5% of electricity generation to come from advanced energy resources by 2025
- ✦ **Beginning in 2009, SB 221 requires an electric distribution utility (EDU) to implement energy efficiency programs that achieve energy savings**
- ✦ **Energy savings baselines = the average total kilowatt-hours of distribution service sold to retail customers of the electric utility in the preceding three calendar years as reported in the electric utility’s most recent long-term forecast report**

○ Rules

- ✦ **Ohio Administrative Code [\(OAC\) 4901:1-39](#)**

SB 315 Update



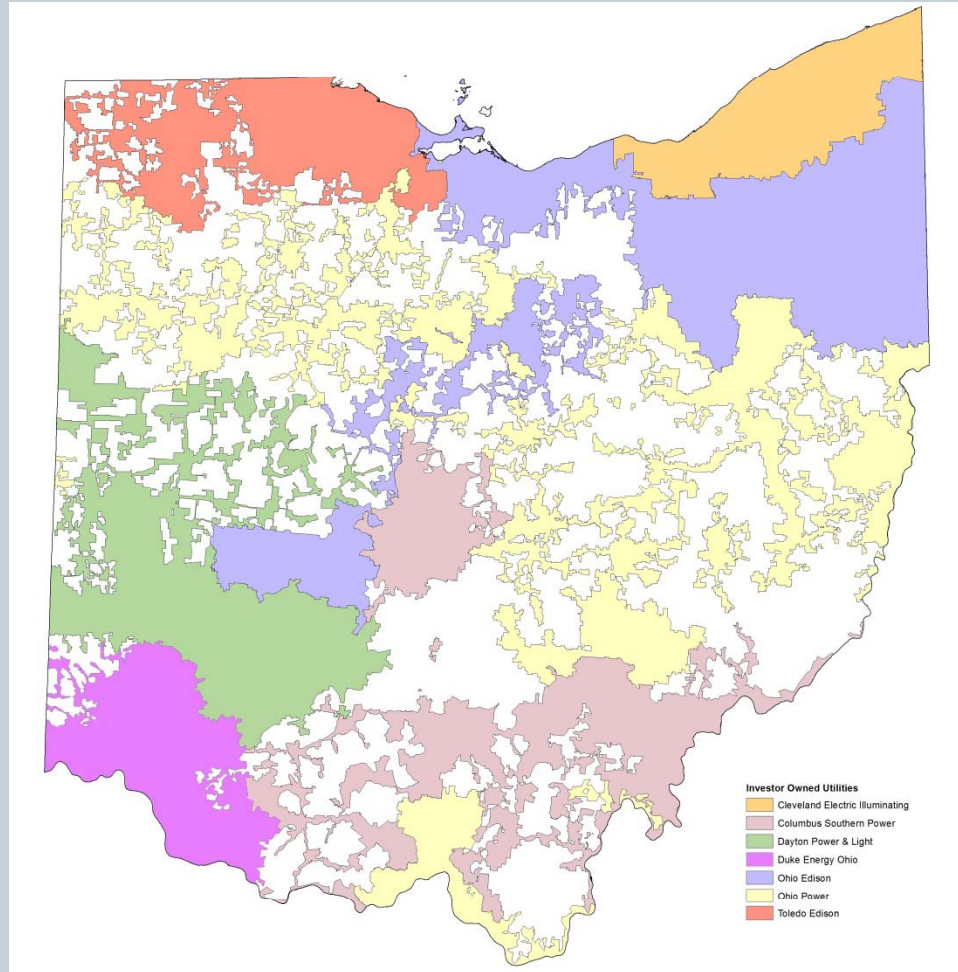
- Energy efficiency and peak demand reduction programs may include:
 - New combined heat and power systems
 - New waste energy recovery systems
 - Cost beneficial smart grid investment programs
- Inclusion of a waste energy recovery system in an EDU energy efficiency program precludes its consideration as an advanced energy resource or a renewable energy resource
 - Double counting of resources is **NOT** allowed in SB 315.

Energy Savings Benchmarks



Year	Additional Reduction	Cumulative Reduction
2009	0.30%	0.30%
2010	0.50%	0.80%
2011	0.70%	1.50%
2012	0.80%	2.30%
2013	0.90%	3.20%
2014	1.00%	4.20%
2015	1.00%	5.20%
2016	1.00%	6.20%
2017	1.00%	7.20%
2018	1.00%	8.20%
2019	2.00%	10.20%
2020	2.00%	12.20%
2021	2.00%	14.20%
2022	2.00%	16.20%
2023	2.00%	18.20%
2024	2.00%	20.20%
2025	2.00%	22.20%

Ohio EDU territories



Peak Demand Reduction (PDR)

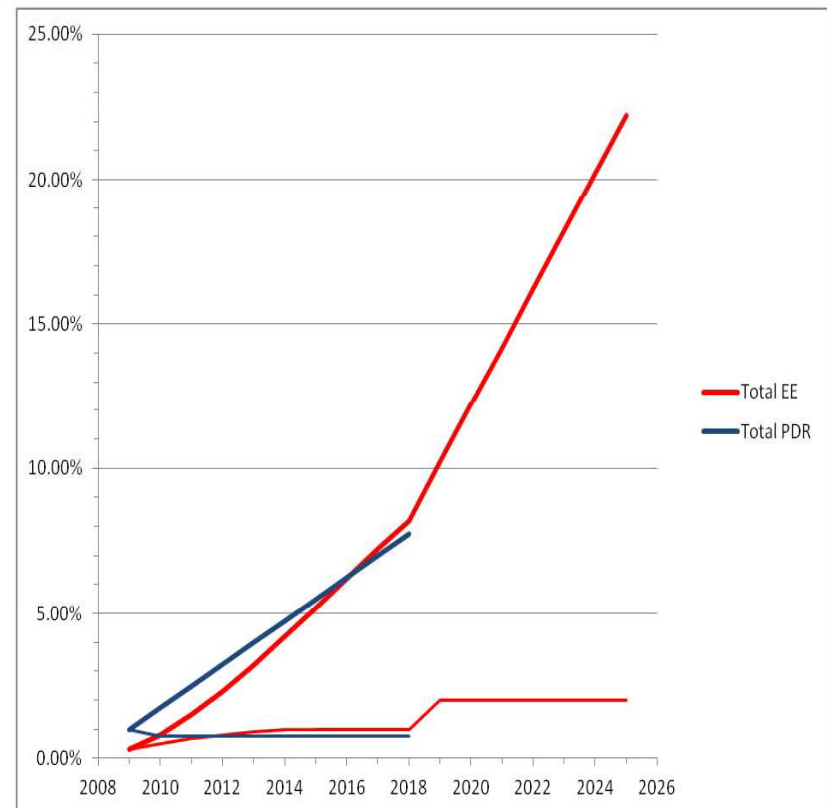


- Beginning in 2009 an EDU must implement peak demand reduction programs designed to achieve a 1% reduction in peak demand in 2009 and an additional .75% reduction each year through 2018 (OAC 4901:1-39-02)
- Peak Demand Baselines = the average peak demand on the utility in the preceding three calendar years (ORC 4928.66)

Peak Demand Reduction and Energy Efficiency Benchmarks



Year	Added EE	Total EE	Added PDR	Total PDR
2009	0.30%	0.30%	1.00%	1.00%
2010	0.50%	0.80%	0.75%	1.75%
2011	0.70%	1.50%	0.75%	2.50%
2012	0.80%	2.30%	0.75%	3.25%
2013	0.90%	3.20%	0.75%	4.00%
2014	1.00%	4.20%	0.75%	4.75%
2015	1.00%	5.20%	0.75%	5.50%
2016	1.00%	6.20%	0.75%	6.25%
2017	1.00%	7.20%	0.75%	7.00%
2018	1.00%	8.20%	0.75%	7.75% *
2019	2.00%	10.20%		
2020	2.00%	12.20%		
2021	2.00%	14.20%		
2022	2.00%	16.20%		
2023	2.00%	18.20%		
2024	2.00%	20.20%		
2025	2.00%	22.20%		



*program will be evaluated in 2018 regarding future PDR targets

DSIRE™

Database of State Incentives for Renewables & Efficiency

U.S. DEPARTMENT OF
ENERGY

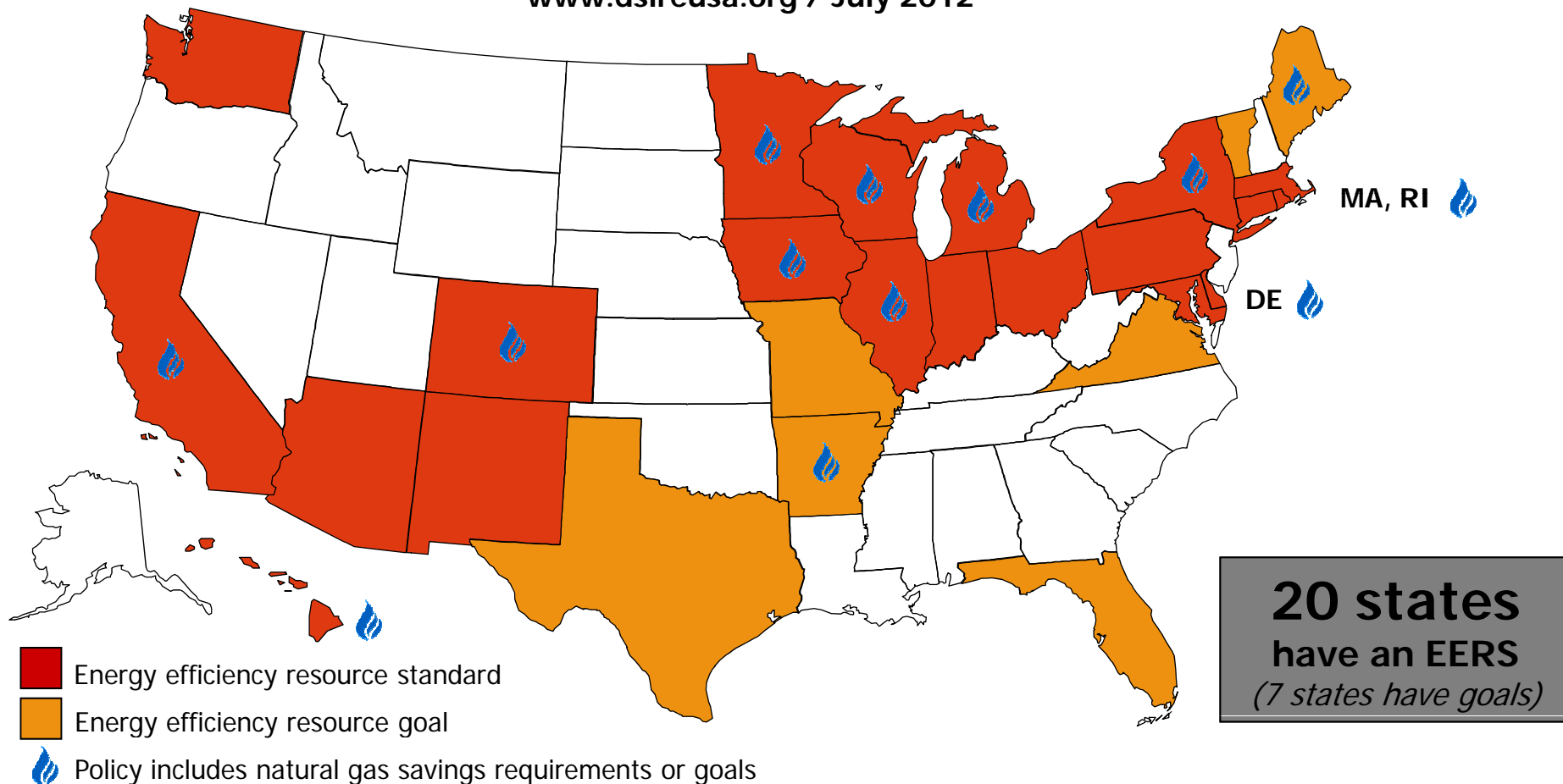
Energy Efficiency &
Renewable Energy

IREC
INTERSTATE RENEWABLE ENERGY COUNCIL

**NORTH CAROLINA
SOLAR CENTER**

Energy Efficiency Resource Standards

www.dsireusa.org / July 2012



Note: See following slide for a brief summary of policy details. For more details on EERS policies, see www.dsireusa.org and www.aceee.org/topics/eers.

EERS Policy Details

AZ: 22% cumulative electricity savings by 2020; 6% cumulative gas savings by 2020

AR: 0.75% of 2010 electric sales reduction by 2013; 0.4% of 2010 gas sales reduction by 2013

CA: Varies by utility

CO: Electricity sales and demand reduction of 5% of 2006 numbers by 2018 (statutory requirement); natural gas savings requirements vary by utility

CT: 4% of retail load (includes CHP and waste heat recovery)

DE: Electricity and peak demand savings equivalent to 15% of 2007 numbers by 2015; natural gas savings equivalent to 10% of 2007 natural gas consumption by 2015

FL: 7,842 GWh cumulative reductions from 2010-2019 (statewide goal); 3,024 MW cumulative summer peak demand reduction from 2010-2019, 1,937 MW, cumulative winter peak demand reduction from 2010-2019 (statewide goal)

HI: 4,300 GWh reduction in electricity use by 2030

IL: 2.0% reduction of 2008 electricity sales by 2015; 1.1% reduction of 2008 peak load demand by 2018; 8.6% cumulative natural gas savings by 2020

IN: 2.0% electricity sales reduction by 2019

IA: Varies by utility

ME: 30% reduction of electricity and natural gas sales by 2020

MD: 15% reduction in per capita energy consumption by 2015, compared to 2007; 15% reduction in per capital peak demand by 2015, compared to 2007

MA: Reduce 1,103 GWh electricity in 2012 (statewide); reduce 24.7 million therms by 2012 (statewide)

MI: 1.0% annual reduction of previous year retail electricity sales by 2012; 0.75% annual reduction of previous year retail natural gas sales by 2012

MN: 1.5% reduction of previous 3-year average retail electric sales by 2010; 1.5% reduction of previous 3-year average retail natural gas sales by 2010

MO: 9.9% cumulative electricity savings by 2020; an additional 1.9% each year thereafter. 9% cumulative peak reduction by 2020; an additional 1% each year thereafter.

NM: 10% of 2005 total retail kWh sales by 2020

NY: 15% reduction relative to projected electricity use in 2015; gas savings of 112 Bcf annually by 2020

OH: 22.0% reduction of previous 3-year average retail electricity sales by 2025

PA: 3% of projected June 2009 - May 2010 electricity consumption by May 31, 2013; 4.5% of measured June 2007 - May 2008 peak demand by May 31, 2013

RI: Varies by utility

TX: 25% reduction in annual growth in demand 2012; 30% reduction in annual growth in demand 2013

VT: 320,000 MWh electricity savings (3-year goal for 2012, 2013, 2014); summer peak kW savings: 60,800 (3-year goal for 2012, 2013, 2014)

VA: 10% electricity savings by 2022 relative to 2006 base sales

WA: Varies by utility

WI: 2011-2014: Net annual electric energy savings of 1,816,320,000 kWh; net annual natural gas savings of 73,040,000 therms

Note: For more details on EERS policies, see www.dsireusa.org and www.aceee.org/topics/eers.

Mercantile Applications



- OAC 4901: 1-39-05 allows a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's demand reduction, demand response, or energy efficiency programs for integration with the electric utility's demand reduction, demand response, and energy efficiency programs.
 - If approved, this allows mercantile customers to be compensated for historic projects
- “Mercantile customer” means a commercial or industrial customer if the electricity consumed is for nonresidential use and the customer consumes more than seven hundred thousand kilowatt hours per year or is part of a national account involving multiple facilities in one or more states. ([ORC 4928.01 \(A\)\(19\)](#))

Mercantile Applications



- Total historical mercantile applications filed to date:
+1300
- Project types:
 - lighting retrofits
 - HVAC
 - Compressed air
 - Energy Management System
 - ...



EDU Filing requirements



- **Program portfolio plans must be filed by April 15th every three years** (OAC 4901:1-39-04)
 - ✦ Demonstrate that the program is cost-effective
 - ✦ Current program evaluation
 - ✦ Proposed program
- **Portfolio status reports must be filed by March 15th of every year** (OAC 4901: 1-39-05)
 - Performance of approved energy efficiency and PDR programs over previous year
 - ✦ Compliance demonstration
 - ✦ Program performance assessment

AEP Ohio Residential Programs



- **Lighting Rebates (SMART Lighting Program)**
Discounts on ENERGY STAR® certified CFLs or LEDs from a number of participating retailers. No coupons or rebates needed ; 12-bulb limit per purchase.
- **Appliance Rebates (ENERGY STAR Appliance Rebate Program)**
Any AEP Ohio residential electric customer residing in Ohio who purchases an ENERGY STAR® certified appliance between April 1 and December 31, 2012 is eligible for a rebate.
- **Appliance Recycling Program**
Remove and recycle operable second refrigerators and freezers (and operable room air conditioners during p/u of fridge/freezer). Customers can sign up online. Customer receives a check after recycling is completed.
- **In-home Energy Programs**
In-home audits, tools, and rebates to help identify and correct areas in homes that may be wasting energy.
- **Online Energy Checkup (Home Energy Reports)**
No cost, online tool to help identify ways to improve energy efficiency in the home.
- **Community Assistance Program**
Customers enrolled in an AEP Ohio payment assistance plan can receive free energy efficiency and repair services for their home
- **ENERGY STAR® New Homes**
Residential new construction homes located within *AEP Ohio/Columbia Gas of Ohio* territory in Ohio can receive incentive payments for meeting specified ENERGY STAR efficiency standards.
- **Energy Check Toolkit Library Lending Program (Borrow a Kill-A-Watt Meter)**
- **Education Programs for Kids**

AEP Ohio Non-Residential Programs



AEP Ohio's Prescriptive Program – (Non-residential only) Customers must submit pre-approval application to AEP Ohio prior to purchasing equipment or starting project. Maximum incentive is 50% of project costs, up to \$300,000 per project.

- Heating and Cooling (HVAC)
- Lighting
- Motors and Drives
- Refrigeration
- Miscellaneous Food Preparation & Storage Equipment
- Agriculture and Miscellaneous

AEP Custom Program- program for all energy efficient improvements that reduce energy consumption &/or PD not already covered by other AEP Ohio Programs

- (Non-residential only) Customer must submit pre-approval application to AEP Ohio prior to purchasing equipment or starting project. Incentive amount is customized to the specific results of the energy savings technologies implemented.

New Construction Program – for new construction or major renovations to encourage participants to exceed standard building practices to achieve increased efficiency above current code requirements.

- Customers encouraged to contact AEP Ohio Business Programs Efficiency Team early in design process and must also submit pre-approval application to AEP Ohio. Incentives for whole building approach and individual measures are available.

Express Program – designed to help small business customers fund common energy efficiency projects such as lighting, sensors, programmable thermostats, electronically commutated motors, refrigeration controls and strip curtains. Projects are developed through AEP Ohio trade allies (program contractors).

- (Business customers that use <200,000 kWh/yr.) Program contractor submits application to AEP Ohio prior to purchasing equipment or starting project. Within 30 days of completion, project must be inspected prior to incentive payment. Projects are funded up to 100% of the total contract cost.

Self-Direct (Mercantile Customers only) - Program allows C/I customers to go back 3 years on already completed EE projects. Only for C/I customers that consume >700,000 kWh/yr. and project must be cost-effective.

- Customer must submit applications and supporting documents and if approved by AEP Ohio and PUCO, one time payment is made or rider exemption is applied. Payment is 75% of calculated incentive under Prescriptive or Custom Programs.

First Energy Residential Programs



- **Direct Load Control** - Offers residential customers a programmable thermostat that can be used to achieve year round electric savings for those with electric heat and/or central air conditioning.
- **Home Energy Analyzer (Online Audit)** - Online audit program allows a customer to enter specific data about their home and receive customized tips for energy savings.
- **Appliance Turn-In** - Residential customers are eligible for a cash incentive and removal of their older inefficient secondary appliances (refrigerators, freezers and room air conditioners).
- **EE Products - HVAC & Water Heating, Appliances, Consumer Electronics:** Program materials available in over 470 retail store locations . HVAC Portion of Program – Total of 400+ HVAC contractors.
- **Efficient New Homes** - Provides a rebate to local builders for achieving energy efficiency targets through a combination of building shell and appliance upgrades. To qualify for this program, the house must exceed the standard building code by 15 percent or 30 percent.
- **Comprehensive Residential Retrofit**
- **CFL Program**
- **Low income - Community Connections (OPAE)** - Weatherization measures and client education to low-income customers. Administered by OPAE which coordinates the work through a network of agencies and subcontractors

First Energy Non-Residential Programs

Equipment programs include:

- Lighting – standard and non-standard
- Motors and Drives
- Traffic Signals
- Refrigeration & Commercial Food Service
- HVAC Incentives Program
- Specialty Equipment
 - Commercial Water Heaters
 - Commercial Energy Load Measures
 - Laundry Equipment
 - Vending Machine Measures
- **Custom Incentive Program**
 - projects that do not meet the eligibility criteria for other FirstEnergy utility business programs.
- **Audit Program** - Customer completed energy audits recommending installation of efficient equipment or process changes. Eligible audits will recommend implementation of measures offered by the Company. The audit measure is dependent on implementation and approval of an audit recommended measure offered by the Company
- **Mercantile Customer Program – Customers who have already completed an energy efficiency project and thus are not eligible to participate in other incentive programs**
 - Customer must use more than 700,000 kWh per year for non-residential purposes,
 - or be part of a national account that includes multiple facilities in one or more states
- **C/I New construction - builders of new residential construction are eligible to receive \$400 per home plus \$0.10 per kWh saved for homes that perform 15 percent better than the 2006 International Energy Conservation Code**
 - incentives to builders of energy efficient homes in the companies' Ohio service territories
 - ENERGY STAR® certification is a pre-requisite for participation
 - Max payment of \$1200 per home

Existing Program Name	New Program Name
Residential Programs	
Appliance Turn-In Program	Appliance Turn-In Program
Comprehensive Residential Retrofit Program	Home Performance Program
Online Audit Program	
Efficient New Homes Program	
Energy Efficient Products Program	Energy Efficient Products Program
CFL Program	
Direct Load Control Program	Direct Load Control Program
Community Connections Program	Low Income Program
Small Enterprise Programs	
C&I Equipment Program - Small	C&I Energy Efficient Equipment Program - Small
C&I Equipment Program (Industrial Motors) - Small	
C&I Equipment Program (Commercial Lighting) - Small	
C&I New Construction Program	Energy Efficient Buildings Program - Small
C&I Audits	
Mercantile-Utility (Large Enterprise) Programs	
C&I Equipment Program - Large	C&I Energy Efficient Equipment Program - Large
C&I Equipment Program (Commercial Lighting) - Large	
C&I Equipment Program (Industrial Motors) - Large	
Technical Assessment Umbrella Program	Energy Efficient Buildings Program - Large
Technical Assessment Umbrella Program	
C&I Equipment Program - Large	Demand Reduction Program
C&I Interruptible Load Program	
Demand Response	
Government Programs	
Government Lighting Program	Government Tariff Lighting Program
Other Programs	
Mercantile Self-Direct	Mercantile Customer Program
Transmission & Distribution Programs	T&D Improvements
N/A	Conservation Voltage Reduction Study
Smart Grid Modernization Initiative	Smart Grid Modernization Initiative

* Details on program changes can be found in PUCO dockets for case numbers: 12-2190-EL-POR, 12-2191-EL-POR, 12-2192-EL-POR

More information on First Energy Ohio EE Programs can be found at <https://www.energysaveohio.com>

DUKE Energy Ohio Residential Programs



HOME ENERGY HOUSE CALL

- Free in-home energy assessment designed to help the customer learn how their home uses energy and how they can save on their monthly bills

SMART SAVER INCENTIVE PROGRAM

- Rebate program for existing homes or new builds that install a high efficiency furnace, heat pump or air conditioner.

POWER MANAGER

- Voluntary program that pays the customer for reducing their air conditioning use during times of high demand for electricity. Free load management switch is installed on outside of home which will cycle your air conditioner off and on when demand is especially high. One time credit paid for signing up and credit on electric bill when event occurs.

LOW INCOME SERVICES

- **OHIO HOME WEATHERIZATION** - Services provided to eligible customers are based on home's specific energy usage and needs. May include Furnace or heat pump clean and tune, health and safety check, energy efficient light bulbs, water heater wraps, weather stripping and piping wrap, duct sealing, wall and attic insulation, and other air leakage sealing measures.
- **OHIO ELECTRIC RESIDENTIAL LOW INCOME PILOT PROGRAM**- The Ohio Electric Residential Low Income Pilot Program provides assistance to low-income electric customers by making lower rates available to eligible customers. The program will accept up to 10,000 participants that meet the eligibility guidelines
- **ENERGY MAINTENANCE SERVICE** - Poor heating and cooling equipment maintenance can cause major energy waste in a home. Homeowners often do not have the knowledge or the physical capabilities to maintain their equipment themselves. This is especially true of the elderly and disabled customers. Therefore, Duke Energy is offering an Energy Maintenance Service.

PREPAID BILLING SERVICES (approved for research purposes) - This is an option of paying for electrical use prior to consumption allowing customers to control their bills and energy use.

Residential – Custom Programs

- **HOME ENERGY COMPARISON REPORT** – Customers that sign up will receive a report in the mail that compares the energy use of their home to similar homes in the area.
- **PERSONALIZED ENERGY REPORT**- Personalized report that demonstrates how a home uses energy and provides tips on energy reduction.

DUKE Energy Ohio Non- Residential Programs



ENERGY ASSESSMENTS – available as:

- Online Assessments – Customer input facility data and receives tips on energy reduction
- Off-site Assessments – Customer can discuss facility energy usage over the phone with a professional engineer and receive a detailed report assessing energy usage and ways to implement energy-saving ideas
- On-Site Assessments - On-site visit and investigation of energy-saving opportunities. Customer will receive a comprehensive report detailing the findings and potential projects with paybacks. On-site assessment fee can be recovered through implementation of Smart Saver Incentives.

SMART SAVER INCENTIVE PROGRAM

- Customer can receive incentive payments for installing high-efficiency lighting, HVAC, pumps and other qualifying equipment (Prescriptive and Custom rebates available).

MERCANTILE SELF DIRECT PROGRAM

- Rebate program is for past energy efficiency initiatives that have not received Smart Saver incentives. Qualifying customers who installed energy efficiency equipment or implemented certain energy efficiency measures **on or after January 1, 2009** can take advantage of this program. Customers must also use more than 700,000 kilowatt-hours (kWh) per year – or be part of an account with multiple locations.

POWERSHARE - Demand Response Program that rewards the customer for making adjustments to energy consumption levels during peak time periods. 3 levels available: Emergency Option, Call Option, and Quote Option.

Large Businesses - Custom solutions

ENERGY INFORMATION AND CONTROL SERVICES

- A single source provider of technology-based energy management solutions.

SMART BUILDING ADVANTAGE

- A whole building approach which evaluates customer information and on-site assessments to realize maximum energy efficiency for facility

PROPERTY MANAGER'S CFL PROGRAM

- Program to provide the customer with energy efficient compact fluorescent bulbs (CFLs) and upgrade the entire property's lighting for less.

SCHOOL INCENTIVE PROGRAM

- Incentives to schools to install high efficiency equipment in applications involving new construction, retrofit and replacement of failed equipment.

ENERGY EFFICIENCY EDUCATION PROGRAM FOR SCHOOLS

- This program is offered to schools and is currently available for third and fourth grade classes. This program educates the students about energy sources and energy efficiency in homes and schools and provides them with the ability to conduct a home energy audit of their homes.

DP&L Residential Programs



Lighting Rebates – discounted prices on CFL at local retail stores.

HVAC – Instant rebate incentives in the form of a credit shown on the contractor's invoice for qualifying heating and cooling systems. No paperwork required.

- Participating contractors list available on website

Residential HVAC Diagnostics and Tune-Up – DP&L customers receive instant savings in the form of a credit shown on your contractor's invoice. No paperwork required.

- Participating contractors list available on website

Smart Energy Assistance Program - Residential Low Income Affordability –

- Eligible customers can receive a free home and energy use audit along with energy improvements.

Residential Appliance Recycling – Free appliance pick up and \$25 rebate.

- Refrigerator or freezer must be empty and in working condition.
- Unit must be 10-30 cubic feet in size

DP&L Non-Residential Programs



Rapid Rebate Program

- Payments offered to Business and Government customers for installation of energy efficient lighting, HVAC, motors, drives, compressed air.

Custom Rebate Program

- Payments offered to Business and Government customers for installation of customized, industry-specific or facility-specific applications not covered by Rapid Rebates Program.

New Construction Rebates

- Lighting Power Density (LPD) Reduction for Interior Lighting
- Whole Building Energy Performance Baseline Improvements

Large Customer Self-Direct Program (Mercantile) - one-time rebate or ongoing discount on your DP&L bill for improvements during the three prior calendar years.

- Customer must use more than 700,000 kWh annually or belonging to a national or regional account and
- Installed energy-saving equipment in the last three years.

Government Energy Audit Rebates

- Comprehensive energy analysis of facility (fee). DP&L will reimburse customer 50% of the cost of the audit and will pay the remaining 50% if customer implements identified electricity-saving projects within 1 year of the audit, and the amount of the investment is equal to or greater than the cost of the audit.

Questions?

