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FILE

EXHIBIT NO. _____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of)
Columbus Southern Power Company for)
Approval of its Electric Security Plan; an)
Amendment to its Corporate Separation)
Plan; and the Sale or Transfer of Certain)
Generating Assets)

and)

In the Matter of the Application of)
Ohio Power Company for Approval of)
its Electric Security Plan; and an)
Amendment to its Corporate Separation)
Plan)

Case No. 08-

917

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Case No. 08-

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DIRECT TESTIMONY
OF
KAREN L. SLONEKER
ON BEHALF OF
COLUMBUS SOUTHERN POWER COMPANY AND
OHIO POWER COMPANY

Filed: July 31, 2008

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INDEX TO DIRECT TESTIMONY OF
KAREN L. SLONEKER
PUCO CASE NO. 08- 917 EL-UNC
PUCO CASE NO. 08- 918 EL-UNC

<u>SUBJECT</u>	<u>PAGE</u>
PERSONAL DATA.....	1
PURPOSE OF TESTIMONY.....	3
gridSMART – PHASE 1.....	3
ENERGY EFFICIENCY AND DEMAND RESPONSE	18

1 **PERSONAL DATA**

2 **Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?**

3 A. My name is Karen L. Sloneker. My business address is 850 Tech Center Drive,
4 Gahanna, OH 43230.

5 **Q. BY WHOM YOU ARE EMPLOYED AND IN WHAT CAPACITY?**

6 A. I am employed by the American Electric Power Service Corporation (AEPSC) as
7 Director of Customer Services and Marketing for Columbus Southern Power
8 Company (CSP) and Ohio Power Company (OPCo), collectively known as AEP Ohio
9 (AEP Ohio or the Companies). AEPSC is a subsidiary of the American Electric Power
10 Company Inc. (AEP) and provides technical and other services to AEP Ohio and other
11 operating units within the AEP System.

12 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL**
13 **EXPERIENCE?**

14 A. I earned a bachelor's degree in Electrical Engineering from The Ohio State University
15 and completed AEP's Management Development Program as well. In addition, I
16 completed professional development programs in Customer Relationship Management
17 and Systems Thinking, and the Fundamentals of Accounting and Finance from The
18 Ohio State University Fisher College of Business.

19 I have 26 years of electric utility experience and have held various positions in
20 the areas of engineering, information technology, customer service and marketing. I
21 began my career in 1982 as a Performance Engineer at CSP's Conesville Generating
22 Station in Conesville, OH. In 1985, I became a Power Engineer for CSP in Columbus
23 serving as a liaison between CSP and its large commercial and industrial customers.

1 Three years later, I was promoted to Energy Services Supervisor for the Columbus
2 Division. In 1990, I joined AEPSC as Marketing and Customer Services Training
3 Manager. I returned to CSP in 1993 when I was named Marketing and Customer
4 Service General Office Manager. I was promoted to Ohio Key Accounts
5 Manager/Commercial and Industrial Segment Manager in 1995. I joined the AEPSC
6 IT organization in 1998 as IT Account Manager and was named Application Delivery
7 Managing Director in 2003. In 2004, I was named to my current position as Customer
8 Services and Marketing Director for AEP Ohio.

9 **Q. WHAT ARE YOUR RESPONSIBILITIES AS DIRECTOR OF CUSTOMER**
10 **SERVICES AND MARKETING?**

11 A. I am responsible for customer account management, as well as meter-related
12 operations across AEP Ohio's service territory. I am responsible for the overall
13 design, development, implementation, analysis, and administration of AEP Ohio's
14 field customer services activities including measurement, meter reading, and meter
15 revenue operations. I am responsible for the resolution of customer inquiries such as
16 power quality, quality of service, and billing. I ensure the timely and accurate
17 reading of meters and connecting and disconnecting service, respectively.

18 In addition, I am responsible for formulating, implementing, and
19 administering policies, practices, and programs pertaining to local account
20 management of residential, commercial, and industrial customers. I am also
21 responsible for the deployment of demand response (DR) and energy efficiency (EE)
22 programs for AEP Ohio customers.

1 **PURPOSE OF TESTIMONY**

2 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

3 A. The purpose of my testimony is to discuss and support the phased-in implementation
4 of AEP Ohio gridSMARTsm initiatives in CSP's service territory. The gridSMART
5 concept is described later in my testimony; furthermore, I explain the technology
6 associated with this effort and the expected benefits. In addition, I propose the
7 advancement of a collaborative group to help AEP Ohio develop energy efficiency
8 and demand response programs suitable for our customers. I also support the
9 Companies' proposed implementation of initial energy efficiency and demand
10 response programs starting in 2009.

11 **Q. WHAT EXHIBITS DO YOU SPONSOR IN THIS PROCEEDING?**

12 A. I am sponsoring EXHIBITS KLS-1 and KLS-2. EXHIBIT KLS-1 provides an
13 overview of net costs related to the Companies' gridSMART Phase 1 initiative.
14 EXHIBIT KLS-2 summarizes the DR and EE programs, including estimated costs and
15 benefits, being proposed by the Companies to help achieve targets mandated through
16 Am. Sub S. B. No. 221 (S.B. 221).

17
18 **gridSMART – PHASE 1**

19 **Q. PLEASE EXPLAIN THE TERM "gridSMART".**

20 A. Begun in 2007, gridSMART is a multi-year initiative by AEP and its operating
21 companies that includes a suite of customer programs and advanced technology
22 initiatives that will move AEP Ohio into a new era of energy delivery and customer
23 service. It includes consumer programs, new energy delivery system technologies,

1 integrated future generation and storage devices, and advanced internal system
2 efficiencies.

3 **Q. WHY IS AEP OHIO PROPOSING THE gridSMART INITIATIVE?**

4 **A.** Several converging factors make the timing right for these types of advances. These
5 include the following:

- 6 • Equipment maintenance needs, the high cost of new facilities to serve
7 growing load, more stringent environmental requirements and increasing fuel
8 and other costs of production are causing electricity prices to increase at an
9 unprecedented rate. The various options provided through gridSMART will
10 help enable customers to become more energy efficient, reduce demand and
11 manage costs.
- 12 • Advanced communications and control technologies are becoming more
13 affordable and more accessible, and easier to use than ever before. In
14 addition, a new generation of customers is becoming increasingly
15 comfortable with new technology. The types of systems included in the
16 gridSMART effort can provide customers greater control with pricing
17 information to facilitate usage decisions for energy efficiency options.
18 Advanced communications to and from the consumer in near real-time can
19 enable new options for the more efficient management of power generation
20 and use. This two-way communication permits the utility to more efficiently
21 manage generation and distribution of power. It also empowers the
22 consumer by providing them the information and options to proactively

1 manage their power requirements, reducing at their election, their short
2 power demands.

- 3 • Consumers are becoming increasingly aware of greenhouse gas emissions
4 and are concerned about sustainable action to address global climate change.
5 Energy efficiency and conservation options are initiatives included in the
6 gridSMART effort.

- 7 • Much of the electricity delivery system is 20 to 30 years old or older.
8 Existing equipment needs to be updated to accommodate new technologies
9 and new facilities are needed to support the growth in customer
10 requirements. Instead of replacing like-for-like equipment, gridSMART
11 enables the Companies to install new technologies and advanced data and
12 communications systems that better respond to energy needs and service
13 reliability expectations.

- 14 • Customers' expectations concerning reliability are changing as further
15 described by Companies' witness Mr. Boyd. Adoption of sensitive
16 electronics through all levels of society has increased the need and
17 expectation for a reliable supply of high quality electric power. New
18 technologies associated with gridSMART will help improve service
19 reliability to better match customer expectations.

- 20 • Customers also are interested in having greater control over their energy
21 usage. The gridSMART capabilities provide more accurate information to
22 facilitate usage decisions, as well as programs and pricing options focused on
23 energy efficiency and demand reduction.

- Demand response initiatives will be needed in order to meet increasing load growth requirements while deferring the need for new baseload generation. Advanced Meter Infrastructure (AMI) and Home Area Network (HAN) will enable customers to reduce demand by turning off or cycling appliances.

These factors alone and in any combination are helping drive AEP Ohio's response to what is a dramatically changing landscape of electricity distribution. As another significant benefit of gridSMART, these initiatives will help minimize employees' exposure to injuries from work-related accidents and occasional confrontational customer interactions. S.B. 221 better enables the Companies to move forward with a plan that addresses these issues.

Q. DOES AEP OHIO PLAN TO IMPLEMENT gridSMART IN OHIO?

A. Yes. AEP Ohio is planning to implement gridSMART initiatives throughout its service territory over a 7-10 year period if appropriate regulatory treatment is granted by the Commission. To effectively install and implement the technologies associated with this effort, AEP Ohio is proposing a phased-in approach to implementing specific gridSMART initiatives. These initiatives, which will be described in greater detail later in my testimony, focus on three main components. These include AMI, Distribution Automation (DA), and HAN. These components individually have specific Company and customer benefits. However, when combined, gridSMART Phase 1 will offer customers the flexibility to control their energy usage by receiving timely energy and pricing information, while allowing the Companies to improve safety, reliability and customer service efficiencies.

1 Q. WHAT DOES AEP OHIO EXPECT TO ACHIEVE THROUGH THE
2 IMPLEMENTATION OF gridSMART PHASE 1?

3 A. Phase 1 will enable AEP Ohio to gain experience to subsequently implement future
4 installations throughout the rest of our service territory and help us address any
5 unforeseen problems associated with deploying these technologies to a diverse
6 customer base on a smaller scale. The Companies believe that the experience gained
7 during the Phase 1 installation will prepare us for a more efficient and effective
8 implementation to our broader customer base and service territory throughout Ohio.

9 In addition, AEP Ohio expects customers in the Phase 1 area to receive the
10 following benefits:

- 11 1. Better information concerning their electricity usage, both on a real-
12 time and historical basis;
- 13 2. Greater control over their energy usage decisions allowing them to
14 conserve energy, save money and help to protect the environment;
- 15 3. Improved meter reading accuracy; and
- 16 4. Fewer outages and shorter outage durations.

17 Through implementation of Phase 1, AEP Ohio expects to achieve;

- 18 1. Improved safety for our employees, reduce outage events and
19 duration,
- 20 2. Real-time information for system operation purposes,
- 21 3. Enhance system operation and outage restoration, and
- 22 4. Demand reduction through new tariff offerings and the education of
23 customers regarding energy costs and technology benefits.

1 **Q. HOW DOES AEP OHIO ACCOMPLISH THIS WORK TODAY?**

2 A. Much of the work associated with meter reading, electricity usage management and
3 outage restoration is performed manually and prompted by customer inquiries.
4 Although technology has allowed us to improve our processes and procedures, the
5 Companies have had limited capability to provide real-time information to our
6 customers and our employees on usage and outage causes.

7 Today, the only means for customers to see their usage pattern is through a
8 monthly bill. To get that information, AEP Ohio employees have to physically read
9 the meters each month. That involves driving approximately 450,000 miles to read
10 customer meters on a monthly basis. Although the Companies strive to read every
11 customer's meter each month, certain impediments, such as dogs, fences or weather
12 can prohibit us from reaching that goal. On average, the Companies read
13 approximately 95 percent of the meters each month.

14 Another manual process involves connecting and disconnecting meters. On
15 average, our employees disconnect and reconnect approximately 31,500 meters each
16 month by driving to the customers' premises and physically performing the work.

17 Service restoration is another process involving manual inputs and processes.
18 These include public notification of a service interruption, manual assessment of
19 facilities to locate the cause of an outage, manual assessment of the distribution
20 system prior to restoration via circuit ties, manual restoration, visual inspections of
21 capacitor status and manual switching.

1 **Q. HOW WILL gridSMART CHANGE THIS PROCESS?**

2 A. Through the implementation of gridSMART components, much of the work I
3 described earlier will move from manual and reactive to automated and proactive.
4 Meters will be read, disconnected and reconnected remotely improving meter
5 reading accuracy, on-demand meter reading and service requests, while reducing
6 vehicle accidents and employee exposure to injuries. Service restoration will
7 become more efficient, allowing remote manual switching of devices and improved
8 system information for planning.

9 **Q. PLEASE DESCRIBE EACH COMPONENT OF THE gridSMART**
10 **INITIATIVE AND RELATED BENEFITS.**

11 A. There are three main components of gridSMART Phase 1. These include AMI, DA,
12 and HAN, as mentioned previously.

13 **Advanced Meter Infrastructure (AMI)**

14 Three features comprise the AMI system: "smart" meters, two-way communications
15 networks and the information technology systems to support their interaction. AMI
16 uses internal communications systems to convey real-time energy use and load
17 information to both AEP Ohio and to the customer.

18 AMI provides capability to monitor equipment and can quickly convey
19 information about certain malfunctions and operating conditions. It also facilitates
20 customers' ability to achieve benefits related to certain future customer-owned
21 advanced technologies and appliances.

22 AMI, when paired with tariff options and the HAN, can empower customers
23 to control their energy usage by providing real-time information and usage data,

1 allowing them to better understand their energy consumption and potentially reduce
2 their electricity bill. In addition, AMI can help speed service restoration through
3 better information about the facilities involved. Customers also can receive faster
4 response to service requests, including meter reading and service connection, due to
5 remote execution of those activities.

6 Because AMI allows for remote connect or disconnect, AEP Ohio is able to
7 improve service response and worker safety. Power quality monitoring can improve
8 customer satisfaction while tamper detection capability deters energy theft. Less
9 personal interaction with energized equipment also improves employee and public
10 safety.

11 **Distribution Automation (DA)**

12 DA is an integral part of the gridSMART initiative due to the reliability benefits it
13 provides to every customer through the use of advanced technology.

14 DA provides real-time control and monitoring of selected electrical
15 components within the distribution system. The electrical components to be controlled
16 and monitored include capacitor banks, voltage regulators, reclosers, and automated
17 line switches. These electrical components will be connected via a two-way wireless
18 communication system to AEP Ohio's dispatch operations center. The capacitor
19 banks, voltage regulators, and reclosers will be equipped with sensors, which provide
20 information on operational status and analog data such as voltage or current. When an
21 interruption occurs, automated switches isolate a circuit by automatically opening (de-
22 energizing) or closing (re-energizing), depending on its location. Customers not
23 directly affected by the fault are immediately transferred to another source, if

1 available, thereby restoring their service sooner. The communication system used by
2 DA also will allow for a pathway for the customers' meters to communicate real-time
3 information.

4 DA can help minimize sustained outages experienced by customers and
5 reduce durations of those outages that do occur through advanced detection and
6 isolation of certain system faults. In addition, DA can improve power quality
7 through remote monitoring and control of power regulating equipment.

8 DA capabilities allow AEP Ohio to monitor equipment status, detect faults in
9 the distribution system, notify controllers about a fault location and optimize service
10 restoration activities. The technology used provides faster identification of outage
11 locations and equipment involved, automates switching to reroute the flow of power
12 when the normal route has been interrupted, monitors with voltage fluctuation alerts,
13 improves system efficiency through automated load management and supply and
14 demand matching, and enhances employee and public safety due to less exposure to
15 energized equipment.

16 **Home Area Network (HAN)**

17 The HAN, located within customers' homes, allows customers to conserve energy and
18 save money through increased information and control of their electric usage.
19 Customers would receive a programmable communicating thermostat (PCT) in their
20 homes or businesses. PCTs have the ability to receive electrical energy consumption
21 data from the meter, store the data, and provide the customer with real-time and
22 historical energy usage. The PCT can receive price signals from electric meters and be
23 programmed to regulate temperature accordingly, allowing the customer to regulate

1 their indoor temperature in response to daily or seasonal electric price fluctuations
2 while maintaining an acceptable level of comfort. Advanced PCTs available today
3 also have the capability to cycle air conditioning on and off upon receiving a critical
4 peak signal from the electric meter.

5 Another HAN enabled component is a Load Control Switch (LCS). An LCS
6 is a device installed ahead of a major electrical appliance that can either turn the
7 appliance on or off or cycle the appliance on and off as in the case of an air
8 conditioning unit. For customers that choose a direct load control or interruptible
9 tariff, the LCS would receive commands from the electric meter, respond
10 accordingly, and send a signal back to the meter to confirm action has been taken.

11 Today, customers can only determine energy usage after the fact through
12 their monthly bill. The HAN can provide real-time and historical electrical usage,
13 providing the customer with the knowledge and opportunity to control usage,
14 conserve energy and save money. In addition, HAN enables AEP Ohio to provide
15 the customer pricing options including time-differentiated rates. Data collected by
16 the HAN can help AEP Ohio shape future pricing programs to suit customers' needs.
17 In addition, as customers save money by shifting load to off-peak hours, it helps
18 AEP Ohio reduce demand and potentially defers the need for new generation.

19 **Q. PLEASE DESCRIBE THE IMPLEMENTATION PLAN FOR PHASE 1 OF**
20 **gridSMART.**

21 **A.** AEP Ohio proposes to implement gridSMART Phase 1 in the northeast area of central
22 Ohio over a three-year period. The 36-month timeframe is necessary in order to
23 effectively install the technology and equipment. The proposed area includes

1 approximately 100 square miles located primarily in urban residential communities,
2 including parts of Columbus, Gahanna, New Albany, Bexley, Whitehall,
3 Reynoldsburg, Westerville and Blacklick. These areas include approximately 110,000
4 meters and 70 distribution circuits.

5 This section of AEP Ohio's service territory was selected primarily because it
6 is best suited for distribution automation, has a significant amount of both 13kV and
7 34.5kV circuits, has identified high-growth areas with future plans for new
8 distribution and transmission stations, has diverse income levels, includes a good
9 blend of industrial, commercial and residential customers, and has a large amount of
10 connect and disconnect orders related to customer requests and credit issues.

11 In addition, AEP Ohio proposes the installation of additional DA switches on
12 circuits in other areas not included in the Phase 1 effort to help broaden the scope of
13 the grid management initiative rather than waiting for full implementation.
14 Although customers served on these circuits will not be able to take advantage of
15 advanced meter infrastructure programs offered through gridSMART Phase 1, they
16 will be able to experience improved reliability benefits and be on their way to
17 gridSMART technologies.

18 **Q. WHY IS IT IMPORTANT TO HAVE BOTH 13kV AND 34.5kV CIRCUITS**
19 **FOR THIS IMPLEMENTATION?**

20 **A.** AEP Ohio's core distribution system in the Phase 1 area is made up of mostly 13 kV
21 circuits, while our 34.5 kV circuits represent a large customer base with a higher
22 customer count per circuit. Using the technology on both system voltages allows us

1 to operate gridSMART as the Companies would for our entire customer base but on
2 a smaller scale.

3 **Q. WILL THE COMPONENTS YOU DESCRIBED BE INSTALLED**
4 **THROUGHOUT THE THREE-YEAR PERIOD?**

5 A. Yes, AEP Ohio proposes to install the DA, AMI and HAN in phases over the three-
6 year period. Following Commission approval, AMI meters will be deployed during
7 the first year along with IT and infrastructure support. Also during the first year,
8 AEP Ohio will begin engineering and IT infrastructure support for DA.

9 During year 2, AEP Ohio will deploy DA and begin much of the marketing
10 and deployment of HAN as well. In year 3, DA deployment will be completed and
11 measurement and evaluation of the gridSMART Phase 1 will begin.

12 **Q. DOES AEP OHIO PLAN TO OFFER NEW PRICING OPTIONS**
13 **ASSOCIATED WITH THE gridSMART INSTALLATION?**

14 A. Yes, AEP Ohio is developing time-differentiated pricing options for customers to be
15 offered with the implementation of gridSMART Phase 1, which are further
16 explained in the testimony of Companies' witness Mr. Roush.

17 **Q. WHY IS AEP OHIO PROPOSING TO IMPLEMENT A PHASED**
18 **APPROACH TO gridSMART?**

19 A. AEP Ohio serves more than 1.4 million customers in Ohio. To fully implement all
20 components of gridSMART throughout our service territory at one time could be
21 cost and resource prohibitive to do. In addition, to ensure the effectiveness of the
22 system, a phased approach will help AEP Ohio address implementation issues before
23 additional installations are planned.

1 **Q. DOES AEP OHIO PLAN ADDITIONAL INSTALLATIONS OF gridSMART**
2 **COMPONENTS?**

3 A. Yes, it does. As Mr. Boyd testifies, AEP Ohio proposes to install additional DA
4 switches on circuits in other areas not included in the Phase 1 effort during the ESP
5 period. Assuming appropriate cost recovery of gridSMART costs, the Companies
6 plan to continue installation and implementation of gridSMART components
7 throughout the remaining portion of their service territories in the same
8 implementation manner as Phase 1.

9 **Q. WHAT ARE THE NET COSTS ASSOCIATED WITH IMPLEMENTING**
10 **gridSMART?**

11 A. As shown in EXHIBIT KLS-1, the estimated net costs of this first phase is
12 approximately \$109 million over a three-year period. Recovery of net costs related
13 to gridSMART Phase 1 is supported by Companies' witness Mr. Roush.

14 **Q. WHAT WILL HAPPEN TO THE METERS THAT ARE REPLACED AS**
15 **PART OF gridSMART PHASE 1?**

16 A. AEP Ohio plans to replace all meters associated with this initiative. Those that can
17 be reused will be redeployed in other parts of the AEP Ohio service territory.
18 Meters that are obsolete will be retired. The Companies estimate that 30 percent or
19 33,000 meters of the 110,000 meters identified in Phase 1 will be obsolete and
20 retired upon removal. EXHIBIT KLS-1 reflects the net book value of the 33,000
21 meters valued at \$1.9 million which is included in the net cost estimate.

1 **Q. DOES THE COST ESTIMATE SHOWN IN EXHIBIT KLS-1 INCLUDE**
2 **OPERATIONAL SAVINGS THAT WILL ACCRUE TO AEP OHIO UPON**
3 **IMPLEMENTATION OF THE FIRST PHASE OF grid SMART?**

4 **A.** Yes. EXHIBIT KLS-1 reflects our estimate of operational savings associated with
5 gridSMART Phase 1. With a phased approach to implementation, not all of the
6 operational savings materialize in the initial phase and some additional savings will
7 occur as full implementation is pursued. For example, additional savings will occur
8 after the initial phase as a result of improved planning and investments for distribution
9 improvements that will be based on operational performance data obtained during the
10 third year of the ESP period and in subsequent years. As meter reading is fully
11 automated within AEP Ohio's territory, call volume related to billing estimates will
12 decrease, and billing analysis and rebilling will not be required to the extent that it is
13 today. AEP Ohio does anticipate operational savings of \$2.7 million during
14 gridSMART Phase 1, which helps to reduce the net cost of the initiative.

15 **Q. WHAT IS THE ROLE OF SOCIETAL BENEFITS, INCLUDING CUSTOMER**
16 **BENEFITS, WHEN EVALUATING SMART METERING**
17 **IMPLEMENTATION?**

18 **A.** There are varying opinions on this subject. AEP Ohio believes there are substantial
19 customer and societal benefits associated with smart metering and smart grid
20 deployment by an electric utility. Some benefits accrue directly to customers of the
21 utility such as bill savings and some are more indirect such as the development of a
22 more robust energy market. Other benefits accrue to society as a whole such as
23 environmental benefits and assumed improved national security.

1 **Q. DID AEP OHIO ATTEMPT TO QUANTIFY THE CUSTOMER AND**
2 **SOCIETAL BENEFITS AS PART OF ITS PROPOSAL IN THIS CASE?**

3 A. No, it did not. From the above discussion, it quickly becomes apparent that some
4 societal and customer benefits can be quantified and others are very difficult to
5 quantify. Beyond the difficulty of that exercise, however, AEP Ohio does not believe
6 it is necessary for the Commission to make specific findings about the quantification
7 of customer and societal benefits as part of approving gridSMART Phase 1 in this
8 case. Smart metering deployment will clearly empower customers with information
9 and capabilities that will help them use energy more wisely and ultimately control their
10 energy bills, while also improving reliability. S.B. 221's reference to "acquisition and
11 deployment of advanced metering, including the costs of any meters prematurely
12 retired as a result of the advance metering implementation" suggests that the General
13 Assembly has already recognized the potential customer and societal benefits. And if
14 the Commission's vision of the future is clearly aligned with the capabilities and
15 benefits associated with smart metering and smart grid technologies, deployment of
16 that technology becomes a critical step toward realizing those capabilities. To that
17 end, the customer and societal benefits of smart metering are already sufficiently
18 evident to support a decision to deploy the technology without imposing a requirement
19 that all such quantified benefits be specifically monetized and mathematically shown
20 to equal or exceed the net costs. Stated differently, AEP Ohio believes the proposed
21 deployment is a prudent investment to make and it stands ready to undertake
22 gridSMART Phase 1 subject to the Commission verifying that the deployment

1 promotes the policies of the State of Ohio and authorizing appropriate regulatory
2 recovery.

3 **ENERGY EFFICIENCY AND DEMAND RESPONSE**

4 **Q. PLEASE DEFINE THE TERMS DEMAND RESPONSE (DR) AND ENERGY**
5 **EFFICIENCY (EE) AS YOU USE THEM IN YOUR TESTIMONY.**

6 **A.** DR refers to controlling electric load through specific customer-focused strategies.
7 DR includes strategic load management, valley filling, peak shaving and load
8 shaping. The ultimate objective of DR programs is to reduce the demand for electric
9 power particularly in times of peak consumption.

10 EE focuses on reducing electric energy usage through specific customer-
11 focused strategies. These strategies include but are not exclusive to:

- 12 • Conservation measures such as weather stripping, caulking and adding
13 insulation to walls, floors, and ceilings to reduce the amount of energy
14 required to heat or cool buildings.
- 15 • Efficiency improvements such as deploying newer technologies (i.e. compact
16 fluorescent lamps rather than incandescent) or proper sizing of equipment for
17 heating, cooling or manufacturing process.
- 18 • Facility operating strategies, such as daylight dimming (reducing indoor
19 lighting during the day), changing thermostat settings, and process
20 improvements.
- 21 • AEP Ohio's internal energy efficiency programs or measures, include but are
22 not limited to, the following:

- Any method or any modification or replacement of any property, process, device, structure, or equipment that increases the generation output of an electric generating facility to the extent such efficiency is achieved without additional carbon dioxide emissions by that facility.
- Transmission and distribution infrastructure improvements that reduce line losses (transformers, conductors, etc.).
- Other energy efficiency programs or measures impacting the utility's facilities.

EE programs also have the secondary benefit of peak demand reduction as Companies' witness Mr. Castle testifies. The amount of associated peak demand reduction depends on the EE measure and the usage pattern unique to the utility service territory.

Q. PLEASE DESCRIBE THE MANDATES DEFINED BY S.B. 221.

A. Beginning in 2009, AEP Ohio must implement energy efficiency programs that achieve specific annual energy savings by the end of 2025 and peak demand reduction programs designed to achieve specified peak demand reductions by 2018. According to S. B. 221, AEP Ohio is required to implement energy efficiency programs that achieve energy savings in 2009 of at least 0.3 percent of the total, annual average, and normalized kWh sales during the preceding three calendar years. This requirement increases an additional 0.5 percent in 2010, 0.7 percent in 2011, 0.8 percent in 2012, 0.9 percent in 2013, 1 percent per year from 2014 to 2018, and 2 percent per year thereafter so as to achieve a cumulative energy savings of 22.2 percent by the end of 2025.

1 In addition, AEP Ohio must implement programs designed to reduce peak
2 demand by 1 percent in 2009 and increase that reduction by an additional 0.75
3 percent each year through 2018.

4 Mr. Castle supports the calculation of the benchmarks.

5 **Q. HOW DOES AEP OHIO INTEND TO ACHIEVE EE AND PEAK DEMAND**
6 **REDUCTION REQUIREMENTS?**

7 A. AEP Ohio is proposing to implement several familiar DR and EE programs as soon
8 as practical to achieve some results in 2009. At this time, the Companies do not
9 have program participation, program costs, impacts and other data that are specific
10 for their service territories. To establish these estimates for purposes of this filing,
11 AEP Ohio used data from other AEP operating companies, including AEP Texas,
12 that are involved in a number of EE and DR initiatives.

13 The programs the Companies are proposing, including estimated costs and
14 benefits are described in greater detail in EXHIBIT KLS-2. Much of the data
15 included in program impacts have been derived from the ongoing programs in other
16 AEP operating companies. The programs proposed include:

- 17 • **Residential Standard Offer Program, Small Commercial and Industrial**
18 **Standard Offer Program and Commercial and Industrial Standard**
19 **Offer Program:** These programs provide incentives for the installation of a
20 wide range of measures that reduce customer energy usage.
- 21 • **Targeted Energy Efficient Weatherization Program:** This program is
22 designed to facilitate the installation of a wide range of cost effective
23 weatherization upgrades and other measures in homes where customers'

1 total annual household incomes are at or below 125 to 200 percent of the
2 federal poverty guidelines.

- 3 • **Low Income Weatherization Program:** Similar to the Targeted Energy
4 Efficient Weatherization Program, this program targets customers with total
5 annual household incomes at or below 125 percent of federal poverty
6 guidelines and are eligible for energy assistance.
- 7 • **Residential and Small Commercial Compact Fluorescent Lighting**
8 **Program:** The program is designed to promote use of compact fluorescent
9 lights in homes and small commercial businesses.
- 10 • **Commercial and Industrial Lighting Program:** This program provides
11 financial incentives for the installation of new, high-efficiency lighting
12 systems that will reduce energy and cost.
- 13 • **State & Municipal Light Emitting Diode (LED) Program:** This program
14 provides incentives for the installation of new LED traffic signals in either a
15 new intersection or replacing an existing traffic signal.
- 16 • **Energy Star® New Homes Program:** This incentive-based program is
17 designed to improve residential new construction practices.
- 18 • **Energy Star® Home Appliance Program:** The program provides financial
19 incentives for the purchase of certain new appliances with an Energy Star
20 rating that reduce customer energy costs and usage for residential and small
21 commercial customers.
- 22 • **Renewable Energy Technology Program:** The program provides
23 residential and commercial customers financial incentives for the installation

1 of solar and wind equipment that reduces customer non-renewable energy
2 costs and usage.

- 3 • **Industrial Process Partners Program:** This program is open to large
4 industrial and government customers and is designed to support market
5 transformation through a partnering approach. A customer that commits to
6 improving energy efficiency by a predetermined level becomes a company
7 “partner” and gains access to financial support and assistance to identify and
8 implement electricity savings.

9 In addition, AEP Ohio recognizes that S.B. 221 also allows committed
10 capabilities of mercantile customers to be integrated into an electric distribution
11 utility’s DR and EE programs, subject to certain conditions, and the Companies
12 intend to work with those customers and other stakeholders to explore these options.

13 **Q. IS AEP OHIO PLANNING TO CONDUCT A MARKET POTENTIAL STUDY**
14 **(MPS) FOR EE AND PEAK DEMAND REDUCTION?**

15 **A.** Yes, a MPS for AEP Ohio’s service territory will be performed by an independent
16 third-party contractor. AEP Ohio issued a Request for Proposal (RFP) on June 23,
17 2008 and is currently reviewing responses it has received. It is AEP Ohio’s intent to
18 have the MPS completed later this fall, prior to issuing the RFP for EE
19 implementation. AEP Ohio is proposing to use the results of the MPS to finalize the
20 costs of proposed DR and EE programs. Further, the MPS will be used as part of a
21 collaborative process with various stakeholders to determine additional peak demand
22 reduction and EE program offerings in AEP Ohio’s service territory.

1 **Q. WILL EVALUATION, MONITORING, AND VERIFICATION ANALYSIS**
2 **BE CONSIDERED FOR EACH PROGRAM?**

3 A. Yes. Evaluation, monitoring and verification analyses will be considered for each
4 program with the exception of the baseline education and information programs.
5 Because the plan currently relies on available data to determine costs and impacts
6 for Ohio in lieu of territory-specific data, an effective Evaluation, Monitoring and
7 Verification (EM&V) plan must be considered. EM&V activities would likely be
8 performed by independent program evaluation contractors. Costs for these activities
9 are included in EXHIBIT KLS-2.

10 **Q. PLEASE EXPLAIN THE COLLABORATIVE PROCESS AEP OHIO**
11 **PROPOSES?**

12 A. AEP Ohio recognizes the importance of implementing energy efficiency and demand
13 response programs to allow customers even more options to control their energy usage.
14 To determine what programs would be appropriate and most effective for AEP Ohio
15 customers, the Companies are proposing the development of a collaborative group
16 consisting of vested partners and facilitated by Battelle, an international science and
17 technology enterprise that explores emerging areas of science and supports community
18 and education programs to promote an enhanced quality of life for communities.

19 Using the MPS recommendations, AEP Ohio will work cooperatively with
20 this group to validate and/or change the initial EE and DR programs being offered
21 and recommend new programs that cover all customer classes, including low income
22 customers. The Companies propose to use a third-party contractor(s) to manage and
23 implement these programs with a performance guarantee requirement to ensure

1 compliance with S.B. 221 goals. AEP Ohio also will be implementing a general
2 energy education program for DR and EE initiatives.

3 **Q. PLEASE PROVIDE AN OVERVIEW OF THE GENERAL ENERGY**
4 **EDUCATION PROGRAM?**

5 A. The General Energy Education Program uses various resources to inform all customer
6 classes of the importance of cost-effectively improving energy efficiency in homes and
7 businesses to reduce energy costs. AEP Ohio proposes to employ various means,
8 including educational outreach and promotion via media advertising, brochures, fact
9 sheets and website information. A sampling of programs that might be included in the
10 General Energy Education Program are:

- 11 • HVAC/Energy Rating Training and Certification for residential and small
12 commercial customers
- 13 • Energy Efficiency education programs for students, builders, food services
14 personnel and hospital staffs
- 15 • Information Outreach for Large Commercial and Industrial customers
16 including seminars and/or workshops on targeted subjects such as motors and
17 lighting

18 **Q. DOES AEP OHIO HAVE ANY SPECIFIC DEMAND RESPONSE**
19 **PROGRAMS PLANNED TO MEET THE SEPARATE DEMAND**
20 **REDUCTION REQUIREMENTS OF S.B. 221?**

21 A. Yes, AEP Ohio proposes to expand the availability of the Interruptible Tariff to
22 commercial and industrial customers. This effort is addressed in Mr. Roush's
23 testimony. In addition, the gridSMART initiative includes a residential and small

1 commercial customer direct load control program to test the viability and acceptance
2 of load control primarily on air conditioning units.

3 **Q. WHAT ARE THE ESTIMATED COSTS ASSOCIATED WITH**
4 **IMPLEMENTING THE PROPOSED EE AND DR PROGRAMS?**

5 A. AEP Ohio estimates that the total cost to implement the proposed EE and DR
6 programs described in testimony over the three-year ESP period is approximately
7 \$178 million. Program costs and associated benefits are outlined in EXHIBIT KLS-
8 2. Program costs per year are shown in Table 1 below. Higher costs are anticipated
9 in 2010 and 2011 as programs are ramped up.

10 **Table 1**

11 **Program Costs Per Year**

Year	Total EE and DR Program Costs
2009	\$30,329,675
2010	\$63,020,250
2011	\$84,399,875
Total	\$177,749,800

12 **Q. WHAT OVERALL BENEFITS DOES AEP OHIO EXPECT TO ACHIEVE**
13 **WITH THE DR AND EE PROGRAMS?**

14 A. AEP Ohio anticipates achieving several benefits through its proposed strategy.
15 These benefits include:

- 16 • Changes in customers' behaviors, attitudes, awareness and knowledge
17 about energy use, energy savings and energy efficient technologies.
- 18 • Energy savings to meet S.B. 221 benchmarks.
- 19 • Reduction in peak electric demand to meet S.B. 221 benchmarks.

1 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

2 **A. Yes, it does.**

**gridSMART Phase 1
Estimated Net Costs**

AMI

O&M	\$8,613,000
Capital	\$45,854,025
Subtotal	\$54,467,025

DA

O&M	\$1,150,000
Capital	\$33,499,500
Subtotal	\$34,649,500

HAN

O&M	\$4,724,000
Capital	\$9,832,350
Subtotal	\$14,556,350

Advertising

O&M	\$6,000,000
Capital	\$0
Subtotal	\$6,000,000

Total Phase 1 Costs

O&M	\$20,487,000
Capital	\$89,185,875

Write Off of Obsolete Meters	\$1,904,608
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Operational Savings

AMI Cost Savings	(\$1,747,000)
AMI Revenue Benefits	(\$980,000)
Total Operational Savings	(\$2,697,000)

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AMI Costs Estimate

CAPITAL	Year 1	Year 2	Year 3	Total
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Meter Purchase

Direct purchase cost	\$24,865,000	\$0	\$0	\$24,865,000
Overhead Rate	48%	n/a	n/a	n/a
Loaded Meter Purchase Cost	\$36,675,875	\$0	\$0	\$36,675,875

Meter Installation cost

Residential meters	\$1,515,000	\$0	\$0	\$1,515,000
Overhead Rate	31%	n/a	n/a	n/a
Loaded cost	\$1,984,650	\$0	\$0	\$1,984,650

Meter Installation cost

C&I meters	\$450,000	\$0	\$0	\$450,000
Overhead Rate	93%	n/a	n/a	n/a
Loaded cost	\$868,500	\$0	\$0	\$868,500

Total Loaded Meter Costs	\$39,529,025	\$0	\$0	\$39,529,025
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Telecom

Towers	\$3,400,000	\$0	\$0	\$3,400,000
Overhead Rate	48%	n/a	n/a	n/a
Loaded cost	\$5,015,000	\$0	\$0	\$5,015,000

IT

IT Infrastructure	\$1,000,000	\$0	\$0	\$1,000,000
Overhead Rate	31%	n/a	n/a	n/a
Loaded cost	\$1,310,000	\$0	\$0	\$1,310,000

O&M

	Year 1	Year 2	Year 3	Total
Internal Labor	\$550,000	\$550,000	\$550,000	\$1,650,000
Overhead Rate	62%	62%	62%	
Loaded Internal Labor O&M	\$891,000	\$891,000	\$891,000	\$2,673,000
Wi-Max Fee	\$1,980,000	\$1,980,000	\$1,980,000	\$5,940,000

Overhead Rates

36%	0%	11%	6%	26%	31%
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DA Costs Estimate

CAPITAL	Year 1	Year 2	Year 3	Total
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Internal Labor

Direct Labor	\$450,000	\$650,000	\$50,000	\$1,150,000
Overhead Rate	93%	93%	93%	
Loaded Meter Purchase Cost	\$868,500	\$1,254,500	\$96,500	\$2,219,500

Outside Services

Outside Services	\$2,250,000	\$3,250,000	\$250,000	\$5,750,000
Overhead Rate	31%	31%	31%	
Loaded cost	\$2,947,500	\$4,257,500	\$327,500	\$7,532,500

Material

Direct Material	\$6,300,000	\$9,100,000	\$700,000	\$16,100,000
Overhead Rate	48%	48%	48%	
Loaded cost	\$9,292,500	\$13,422,500	\$1,032,500	\$23,747,500

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O&M	Year 1	Year 2	Year 3	Total
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Outside Services	\$450,000	\$650,000	\$50,000	\$1,150,000
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Distribution Automation Direct Costs

Capital	\$9,000,000	\$13,000,000	\$1,000,000	\$23,000,000
O&M	\$450,000	\$650,000	\$50,000	\$1,150,000

DA Resource Allocation

5%	25%	70%	100%

Overhead Rates

36%	0%	11%	6%	26%	31%

HAN Costs Estimate

CAPITAL	Year 1	Year 2	Year 3	Total
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Equipment

Direct purchase cost	\$606,000	\$3,030,000	\$3,030,000	\$6,666,000
Overhead Rate	48%	48%	48%	
Loaded Equipment Cost	\$893,850	\$4,469,250	\$4,469,250	\$9,832,350

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O&M	Year 1	Year 2	Year 3	Total
Internal Labor	\$100,000	\$100,000	\$100,000	\$300,000
Overhead Rate	62%	62%	62%	
Loaded Internal Labor O&M	\$162,000	\$162,000	\$162,000	\$486,000
Customer Incentives/Education	\$808,000	\$1,715,000	\$1,715,000	\$4,238,000

Residential Meters	101,000	101,000	101,000		
Participation Rate	2.0%	10.0%	10.0%		
Direct Capital Cost	\$606,000	\$3,030,000	\$3,030,000	\$6,666,000	
Direct O&M Costs					
Customer Incentives	\$303,000	\$1,515,000	\$1,515,000	\$3,333,000	
Customer Education	\$505,000	\$200,000	\$200,000	\$905,000	
Administrative	\$100,000	\$100,000	\$100,000	\$300,000	
Total Direct O&M	\$908,000	\$1,815,000	\$1,815,000	\$4,538,000	
Overhead Rates					
36%	0%	11%	6%	26%	31%

Advertising Costs Estimate

O&M	Year 1	Year 2	Year 3	Total
Outside Services	\$3,000,000	\$2,000,000	\$1,000,000	\$6,000,000

AMI Operational Benefits

Cost Savings	Year 1	Year 2	Year 3	Total
Safety Improvements	\$0	\$50,000	\$50,000	\$100,000
Meter Replacement & Testing Avoidance	\$0	\$25,000	\$25,000	\$50,000
Accurate meter reads	\$0	\$50,000	\$50,000	\$100,000
On Demand Meter Reads	\$0	\$50,000	\$50,000	\$100,000
Usage on Inactive Accounts	\$0	\$50,000	\$50,000	\$100,000
Identification of "Dead" meters	\$0	\$10,000	\$10,000	\$20,000
Reduction of cost associated with Meter Reading	\$0	\$600,000	\$600,000	\$1,200,000
Ability to map momentary & sustained outages	\$0	\$13,500	\$13,500	\$27,000
Offset of future new meter purchases	\$0	\$25,000	\$25,000	\$50,000
Total	\$0	\$873,500	\$873,500	\$1,747,000

Revenue Benefits	Year 1	Year 2	Year 3	Total
Meter Replacement & Testing Avoidance	\$0	\$100,000	\$100,000	\$200,000
Usage on Inactive Accounts	\$0	\$50,000	\$50,000	\$100,000
Reduction of "Lost" Meter revenue	\$0	\$75,000	\$75,000	\$150,000
Reduction of uncollected revenue write-offs	\$0	\$50,000	\$50,000	\$100,000
Better Tools to reduce theft	\$0	\$200,000	\$200,000	\$400,000
Total	\$0	\$475,000	\$475,000	\$950,000

Obsolete Meters

Obsolete Meters	33,000
Total Meters	816,000
Percent Obsolete	4.04%
NBV of all CSP Meters	\$47,095,757

**DSM/EE
Program Descriptions**

**AEP OHIO
LOW INCOME WEATHERIZATION PROGRAM**

Program Overview

The AEP Ohio Low-Income Weatherization Program targets customers with total annual household incomes at or below 125% of federal poverty guidelines, are eligible for energy assistance, receive electric service from AEP Ohio, and are owner-occupants of the residence. The program is designed to facilitate the installation of a wide range of cost effective weatherization upgrades and other measures in eligible dwellings. In general, these services may involve blower door diagnostics, insulation, thermal envelope sealing, water heating efficiency and conservation measures, air duct sealing, heating and cooling inspections, compact fluorescent lamps (CFLs), water saver devices and other measures included in state weatherization program standards. However, only specific energy efficiency and conservation measures, approved by AEP Ohio, may qualify for incentives under the program.

The program is further designed to work with existing state and federal weatherization agency programs, and their subcontractors. The state weatherization agencies will be responsible for all necessary data collection (forms to be developed by AEP Ohio), providing a detailed breakdown of measures installed, invoices, customer release forms, and other information deemed necessary by AEP Ohio to document energy savings and cost.

Additional goals of the program may be to:

- Achieve customer energy and cost savings
- Educate customers on the benefits of continued or expanded energy efficiency and conservation efforts including, but not limited to, a change in customer usage habits through energy education
- Supplement the resources of existing state and federal weatherization programs to allow more eligible dwellings to be treated on an annual basis

Delivery Method: Utilize the expertise of existing state weatherization program personnel to install long lasting energy efficiency and conservation measures. Lists of potentially eligible customers will be compiled, including customers meeting the Low Income Home Energy Assistance Program (LIHEAP) qualification criteria. Upon execution of a confidentiality agreement by the state weatherization agencies, this customer list will be provided to the agencies for implementation. AEP Ohio reserves the right to expand this program to other qualified Energy Efficiency Service Providers (EESPs).

**DSM/EE
Program Descriptions**

Rationale: Educate low-income customers on the benefits of continued or expanded energy efficiency and conservation efforts including, but not limited to, a change in the customer's usage habits. These funds may supplement the resources of existing state and federal weatherization programs to allow additional eligible dwellings to receive long-lasting weatherization services over the coming years.

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$2,886,000	1,300	\$0.93	\$3,700
CSP	\$2,886,000	1,300	\$0.93	\$3,700
Total	\$5,772,000	2,600	\$0.93	\$3,700

**DSM/EE
Program Descriptions**

**AEP OHIO
TARGETED ENERGY EFFICIENCY (TEE) WEATHERIZATION PROGRAM**

Program Overview

The AEP Ohio Targeted Energy Efficiency Weatherization Program targets customers with total annual household incomes between 126% and 200% of federal poverty guidelines that are eligible for energy assistance, receive electric service from AEP Ohio, and are owner-occupants of the residence. The program is designed to facilitate the installation of a wide range of weatherization upgrades and other measures in eligible dwellings. In general, these services may involve blower door diagnostics, insulation, thermal envelope sealing, water heating efficiency and conservation measures, air duct sealing, heating and cooling inspections, compact fluorescent lamps (CFLs), water saver devices and other measures included in state weatherization program standards. However, only specific energy efficiency and conservation measures, as approved by AEP Ohio, may qualify for incentives under the program.

The program is designed to work with select energy efficiency service providers (EESPs) and existing state and federal weatherization agency programs, and their subcontractors. The service provider will be responsible for all necessary data collection (forms to be developed by AEP Ohio), providing a detailed breakdown of measures installed, invoices, customer release forms, and other information deemed necessary by AEP Ohio to document energy savings and cost.

Additional goals of the program may be to:

- Educate customers on the benefits of continued or expanded energy efficiency and conservation efforts including, but not limited to, a change in customer usage habits through energy education
- Supplement the resources of existing state and federal weatherization programs to allow more eligible dwellings to be treated on an annual basis

Delivery Method: Utilize the expertise of select contractors and/or existing state weatherization program personnel to install long-lasting energy efficiency and conservation measures. Lists of potentially eligible customers will be compiled, including customers meeting the Low Income Home Energy Assistance Program (LIHEAP) qualification criteria as modified above. Upon execution of a confidentiality agreement by the selected contractor(s) and/or state weatherization agencies, this customer list will be provided to the agencies for implementation.

**DSM/EE
Program Descriptions**

Rationale: Educate low-income customers on the benefits of continued or expanded energy efficiency and conservation efforts including, but not limited to, a change in the customer's usage habits. These funds may supplement the resources of existing state and federal weatherization programs to allow additional eligible dwellings to receive long-lasting weatherization services over the coming years.

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$6,000,000	5,000	\$0.89	\$8,571
CSP	\$6,000,000	5,000	\$0.89	\$8,571
Total	\$12,000,000	10,000	\$0.89	\$8,571

DSM/EE
Program Descriptions

AEP OHIO
RESIDENTIAL STANDARD OFFER PROGRAM

Program Overview

The Residential Standard Offer Program provides incentives for the installation of a wide range of measures that reduce energy (kWh) usage for AEP Ohio residential customers. This program may be implemented by AEP Ohio or by offering monetary incentives to energy efficiency service providers (EESPs), or others deemed appropriate by AEP Ohio for installation of a wide range of measures in representative building types such as weatherization, appliances, water heating, lighting, space conditioning, and building shell measures.

Additional results of the program may be to:

- Encourage private sector delivery of energy efficiency products and services.
- Reduces barriers to achieving energy efficiency by streamlining program.

Delivery Method: Incentive-based program managed by AEP Ohio and/or marketed to EESPs. AEP Ohio may manage the process and/or contract with EESPs, using standard offer contracts and incentives; program administration and inspections may be performed by AEP, or by a third-party.

Rationale: Under this program, EESPs will be paid based on achieved kWh reductions. All reductions, or impacts, will be calculated using engineering estimates. If measures are installed that do not provide savings to the customer, the EESP will not receive reimbursement. Pre approved measures, such as those defined above, will qualify for reimbursement. Any additional measures would have to be pre approved by AEP Ohio to qualify under the program.

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$14,668,000	32,000	\$0.27	\$1,910
CSP	\$12,768,000	28,000	\$0.23	\$1,520
Total	\$27,436,000	60,000	\$0.25	\$1,715

**DSM/EE
Program Descriptions**

**AEP OHIO
RESIDENTIAL COMPACT FLUORESCENT LIGHTING (CFL) PROGRAM**

Program Overview

The AEP Ohio Residential Compact Fluorescent Lighting (CFL) Program is designed to educate and influence residential customers of AEP Ohio to purchase, install and use compact fluorescent lighting in their homes. Eligible CFLs must be Energy Star® certified. To encourage customers to purchase CFLs as replacements for standard incandescent light bulbs, two options are under consideration: a) direct mail CFLs to AEP Ohio residential customers along with energy efficiency educational materials to encourage further purchases of CFLs and other energy saving measures or b) a monetary incentive to help offset some of the higher initial cost of CFLs. AEP Ohio could work with retailers to promote CFL's in their stores, where applicable, through the use of point-of-purchase educational materials, rebate coupons, bill inserts, advertising, and/or in-store special events. If deemed appropriate, AEP Ohio may elect to use other mechanisms to promote this program.

Additional objectives of the program are to:

- Achieve customer energy and cost savings
- Educate customers on the benefits of CFL technology and the cost saving advantages over standard incandescent bulbs
- Encourage customers to purchase additional CFL's, without additional utility incentives, as a long-term standard bulb replacement strategy

Delivery Method: CFLs could be mailed direct to customers or customers could receive a rebate coupon through a bill insert, redeemable at retail locations. If deemed appropriate, AEP Ohio may elect to use other mechanisms to promote this program.

Rationale: Participating customers could be provided incentives to switch from incandescent to high-efficiency CFLs, making the switch from standard incandescent bulbs more affordable. In conjunction with consumer education, this effort may lead the customer to install additional energy-efficiency improvements within their home.

**DSM/EE
Program Descriptions**

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$3,610,000	600,000	\$0.12	\$3,008
CSP	\$3,910,000	650,000	\$0.12	\$3,008
Total	\$7,520,000	1,250,000	\$0.12	\$3,008

**DSM/EE
Program Descriptions**

**AEP OHIO
ENERGY STAR® NEW HOMES PROGRAM**

Program Overview

The Energy Star® New Homes Program leverages the nationally-recognized Energy Star name to improve residential new construction practices. The program design recognizes and addresses several key market and technical barriers to investments in energy efficient new home construction. Such barriers include:

- **Lack of incentive.** Because builders who make design decisions do not pay the energy bills associated with the homes, builders may have less incentive to provide customers with energy efficient homes.
- **Limited technical skills.** Builders and subcontractors may lack the technical skills needed to construct energy efficient homes.
- **Lack of information.** Consumers, builders, realtors, lenders, appraisers and others may have limited education on the benefits of energy efficiency; therefore may not know how to differentiate between efficient and standard homes.

The program strategy may include:

ENERGY STAR certification

- Marketing assistance to builders of ENERGY STAR homes
- Technical assistance to builders and their subcontractors
- Education on the benefits of ENERGY STAR homes for consumers and other market actors
- Incentives for builders if needed to attract participation
- Use of independent Home Energy Rating System (HERS) Raters for verification

Additional objectives of the program are to:

- Achieve customer energy and cost savings
- Increase customer awareness of and demand for energy efficient homes
- Increase the number of builders having the technical capacity to supply energy efficient homes

Delivery Method: AEP Ohio may utilize a competitive bidding process to secure a qualified contractor to design and implement this program. Although it would be AEP Ohio's preference to select a single third-party contractor to implement

DSM/EE Program Descriptions

this energy efficiency / conservation initiative, AEP Ohio may, if deemed necessary and at its sole discretion, seek additional contractors to effectively implement this program across its service territory.

Rationale: To qualify as Energy Star, a home must meet or exceed a performance standard of at least 15% more energy efficient than homes built to 2004 International Residential Code (IRC) and must meet Energy Star guidelines. Homes achieving this standard will typically include effective insulation, high performance windows, tight construction and ducts, lighting and other high-efficiency cost-effective measures. Through increased customer satisfaction, comfort and lower energy bills, the program could encourage builders to adopt Energy Star measures going forward and label future homes as "Energy Star."

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$725,000	700	\$0.58	\$2,071
CSP	\$1,500,000	1,500	\$0.56	\$2,000
Total	\$2,225,000	2,200	\$0.56	\$2,023

**DSM/EE
Program Descriptions**

**AEP OHIO
ENERGY STAR® HOME APPLIANCE PROGRAM**

Program Overview

The Energy Star® Home Appliance Program provides financial incentives for the purchase of certain new appliances with an Energy Star rating that reduce customer energy costs and usage for residential customers. This program targets the existing retrofit market.

Additional objectives of the program may be to:

- Increase customer awareness of the Energy Star label
- Encourage private sector delivery of energy efficiency products and services.
- Achieve customer energy and cost savings

Delivery Method: This is an incentive-based program marketed to residential customers using bill inserts, media promotion, and contact with major HVAC and appliance dealers to explain the program and encourage participation. If deemed appropriate, AEP Ohio may elect to use other mechanisms to promote this program.

Rationale: Assist market transformation by encouraging customers to purchase higher efficiency equipment, rather than baseline appliances, to save energy and money. The incentive will be designed to help offset a portion of the incremental cost of Energy Star rated equipment.

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$9,000,000	50,000	\$0.90	\$2,400
CSP	\$9,000,000	50,000	\$0.90	\$2,400
Total	\$18,000,000	100,000	\$0.90	\$2,400

**DSM/EE
Program Descriptions**

**AEP OHIO
RENEWABLE ENERGY TECHNOLOGY PROGRAM**

Program Overview

The Renewable Energy Technology Program provides residential and commercial customers financial incentives for the installation of solar and wind equipment that reduces customer non-renewable energy costs and usage. The incentive is limited to 5 kW per residence and 10 kW per commercial building. This program targets new and retrofit markets and is intended to provide some assistance in market transformation efforts.

Additional objectives of the program may be to:

- Increase customer awareness of new technologies.
- Encourage private sector delivery of renewable energy products and services.
- Achieve non-renewable energy and cost savings

Delivery Method: This is an incentive-based program marketed to residential and commercial customers using bill inserts, media promotion, and contact with wind and solar installers to explain the program and encourage participation. If deemed appropriate, AEP Ohio may elect to use other mechanisms to promote this program.

Rationale: Encourage customers to purchase and install wind and solar renewable energy equipment to save non-renewable energy and reduce their impact on the environment. The incentive will be designed to help offset a portion of the installation of the equipment and assist in developing a viable market for this technology while reducing the kWh and kW required from the electric utility.

**DSM/EE
Program Descriptions**

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$2,918,125	290	\$2.65	\$2,875
CSP	\$2,314,375	230	\$2.65	\$2,875
Total	\$5,232,500	520	\$2.65	\$2,875

DSM/EE
Program Descriptions**AEP Ohio**
General Energy Education Program**Program Overview**

The General Energy Education Program will use a variety of resources to inform and educate all customer classes on the importance of cost-effectively improving energy efficiency in homes and businesses to reduce energy costs. A sampling of programs that might be included are:

- Educational Outreach and Promotion including media advertising, brochures, fact sheets and website information.
- HVAC/Energy Rating Training and Certification for residential, small commercial customers and building owners and operators.
- Displays educating customers on energy efficiency, demand response and gridSMART technology.
- Energy Efficiency education programs for teachers and students.
- Information Outreach for Large Commercial & Industrial customers including seminars and/or workshops on targeted subjects such as motors and lighting.
- Other Energy Efficiency education training programs for targeted audiences such as builders, food service personnel and hospital staffs.

Delivery Method: Mass media, trade shows, public gatherings such as fairs, website, third party contractors, seminars and workshops

Rationale: Energy education is a key component in successfully achieving energy efficiency improvements in all AEP Ohio Operating Company customer segments.

Budget:

Operating Company	Residential Budget	C&I Budget	Total
OPCo	\$6,000,000	\$1,500,000	\$7,500,000
CSP	\$6,000,000	\$1,500,000	\$7,500,000
Total	\$12,000,000	\$3,000,000	\$15,000,000

**DSM/EE
Program Descriptions**

**AEP OHIO
SMALL COMMERCIAL AND INDUSTRIAL STANDARD OFFER PROGRAM**

Program Overview

The Small C&I Standard Offer Program provides incentives for the installation of a wide range of measures that reduce energy usage for small commercial and industrial customers. These are retail non-residential customers with a maximum demand that does not exceed 100 kW. This program may be implemented by AEP Ohio and/or by offering monetary incentives to energy efficiency service providers (EESPs) on the basis of savings, which are standardized savings values or formulas for a wide range of measures in representative building types or other engineering calculations agreed to by the utility. Eligible measures could include appliances, water heating, lighting, space conditioning, and building shell measures. AEP Ohio reserves the right to divide incentive dollars between the public (schools and government), commercial and industrial market segments, as deemed appropriate.

Additional results of the program may be to:

- Encourage private sector delivery of energy efficiency products and services.
- Achieve customer energy and cost savings.

Delivery Method: Incentive-based program managed by AEP Ohio or marketed to EESPs. AEP Ohio may manage the process or contract with EESPs, using standard offer contracts and incentives; program administration and inspections may be performed by AEP Ohio, or by a third-party.

Rationale: Participating customers could realize a reduction in their annual energy use and costs as well as a potential improvement in comfort and/or affected processes. AEP Ohio will realize a reduction in energy use from its small commercial and industrial customer segment. The Standard Offer Program concept allows a wide range of measures to be targeted and encourages participation from AEP Ohio customers.

**DSM/EE
Program Descriptions**

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$2,660,000	4,400	\$0.12	\$504
CSP	\$2,412,500	4,000	\$0.12	\$503
Total	\$5,072,500	8,400	\$0.12	\$503

**DSM/EE
Program Descriptions**

**AEP OHIO
Medium Commercial and Industrial Lighting Program**

Program Overview

The Commercial and Industrial Lighting Program (C&I Lighting) provides financial incentives for the installation of new high efficiency lighting systems that will reduce energy and cost, in a non-residential facility in either a new construction or retrofit application. AEP Ohio reserves the right to divide incentive dollars between the public (schools and government), commercial and industrial market segments, as deemed appropriate.

The program serves Commercial and Industrial customers who are retail non-residential customers of AEP Ohio and who have demands between 100 and 1000 kW. This program will be implemented by AEP Ohio or by offering monetary incentives to energy efficiency service providers (EESPs), based on engineering calculations or verified kWh savings.

Additional goals of the program may be to:

- Encourage private sector delivery of energy efficiency products and services
- Achieve customer energy and cost savings

Delivery Method: Incentive-based program managed by AEP Ohio or marketed through EESPs. AEP Ohio may manage the process or contract with EESPs, using standard offer contracts and incentives; program administration and inspections may be performed by AEP Ohio, or by a third-party.

Rationale: High efficiency lighting often has a higher cost of installation than standard lighting. This program will provide incentives to customers which will help offset those higher costs. AEP Ohio will realize a reduction in energy use from this customer segment.

**DSM/EE
Program Descriptions**

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$12,915,000	356	\$0.13	\$363
CSP	\$7,590,000	210	\$0.13	\$361
Total	\$20,505,000	566	\$0.13	\$362

DSM/EE
Program Descriptions

AEP OHIO
LARGE COMMERCIAL AND INDUSTRIAL STANDARD OFFER PROGRAM

Program Overview

The Commercial and Industrial Standard Offer Program provides financial incentives for the installation of a wide range of measures that reduce customer energy usage in non-residential facilities with a maximum peak demand that exceeds 100 kW in either a new construction or retrofit application. Eligible measures could include motors, processes, water heating, lighting, space conditioning, and building shell measures. AEP Ohio reserves the right to divide incentive dollars between the public (schools and government), commercial and industrial market segments, as deemed appropriate.

This program may be implemented by AEP Ohio and/or by offering monetary incentives to energy efficiency service providers (EESPs) on the basis of savings, which are standardized savings values or formulas for a wide range of measures in representative building types or other engineering calculations agreed to by the utility.

Additional goals of the program may be to:

- Encourage private sector delivery of energy efficiency products and services
- Achieve customer energy and cost savings

Delivery Method: Incentive-based program managed by AEP Ohio or marketed through EESPs. AEP Ohio may manage the process or contract with EESPs, using standard offer contracts and incentives; program administration and inspections may be performed by AEP Ohio, or by a third-party.

Rationale: Participating customers will realize a reduction in their annual energy use and costs as well as a potential improvement in comfort and/or affected processes. AEP Ohio will realize a reduction in energy use from its commercial and industrial customer segment. The Standard Offer Program concept allows a wide range of measures to be targeted and encourages participation from AEP Ohio customers.

**DSM/EE
Program Descriptions**

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$19,657,500	545	\$0.20	\$975
CSP	\$18,202,500	505	\$0.20	\$974
Total	\$37,860,000	1,050	\$0.20	\$974

DSM/EE
Program Descriptions

AEP OHIO
STATE & MUNICIPAL LIGHT EMITTING DIODE (LED) PROGRAM

Program Overview

The State and Municipal LED Program provides incentives to AEP Ohio customers for the installation of new LED traffic signals. This program will save customers money, and reduce energy usage.

The incentives will be paid to the government entity on the basis of estimated savings. Energy savings for traffic signals are pre-calculated engineering estimates.

Delivery Method: Incentive-based program managed by AEP Ohio or marketed through EESPs. AEP Ohio may manage the process or contract with EESPs, using standard offer contracts and incentives; program administration and inspections may be performed by AEP Ohio, or by a third-party.

Rationale: Participating customers will realize a reduction in their annual energy use and will also realize savings on maintenance costs due to the longer life of LEDs. AEP Ohio will realize a reduction in energy consumption from its state and municipality customers. This program will help promote LED technologies.

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$283,000	3,500	\$0.09	\$809
CSP	\$381,800	6,100	\$0.07	\$626
Total	\$664,800	9,600	\$0.07	\$693

DSM/EE
Program Descriptions

AEP OHIO
LARGE INDUSTRIAL PROCESS PARTNERS PROGRAM

Program Overview

The Industrial Process Partners Program (IPPP) is open to large industrial and government customers in AEP Ohio service territories greater than 1000 kW. The IPPP is designed to support market transformation through a partnering approach with our large industrial and government customers. A customer that commits to improving energy efficiency by a predetermined level partners with AEP Ohio, gaining access to financial support and assistance to identify and implement energy savings. AEP Ohio could provide matching funding, resources and incentives. High level executive commitment by the customer to achieve the savings is a key part of the process for large industrial and government end users. Due to the complexity of this customer segment, process audits could be completed through a qualifying third party contractor as selected by the customer and AEP Ohio. Educational assistance and promotional material could also be provided to encourage customers to identify energy savings opportunities and thus accelerate customer transformation.

Additional objectives of the program are to:

- Achieve customer energy and cost savings
- Increase awareness and commitment to conservation of our large customers
- Customer partnership and collaboration

Delivery Method: Incentive-based program managed by AEP Ohio through its Account managers or marketed through Energy Efficiency Service Providers (EESPs). AEP Ohio may manage the process or contract with EESPs, using standard offer contracts and incentives; program administration and inspections may be performed by AEP Ohio, or by a third-party.

Rationale: Partnering with our largest customers provides a major opportunity to significantly reduce energy consumption and demand within the AEP Ohio service territory.

**DSM/EE
Program Descriptions**

Expected results:

Operating Company	Program Cost	# of Participants	\$/kWh	\$/kW
OPCo	\$15,000,000	33	\$0.23	\$1,515
CSP	\$5,462,000	22	\$0.25	\$1,655
Total	\$20,462,000	55	\$0.23	\$1,550

Ohio Power Company DSM/EE 3-Year Plan Residential Energy Efficiency Programs

Program	Year	Participants	Percent Penetration	Total \$	Total Measure \$	Total Admin \$*	Cost Per Participant	Annualized mWh Savings	mW Savings	\$ Per kWh	\$ Per kW
Low-Income Weatherization	2009	300	0.4%	\$666,000	\$556,000	\$111,000	\$2,220	720	0	\$0.93	\$3,700
Potential customers =	2010	500	0.7%	\$1,110,000	\$925,000	\$185,000	\$2,220	1200	0	\$0.93	\$3,700
75000	2011	500	0.7%	\$1,110,000	\$925,000	\$185,000	\$2,220	1200	0	\$0.93	\$3,700
	3-Year Total	1300	1.7%	\$2,886,000	\$2,405,000	\$481,000	\$2,220	3120	1	\$0.93	\$3,700
Targeted EE Weatherization	2009	1000	2.5%	\$1,200,000	\$1,000,000	\$200,000	\$1,200	1350	0	\$0.89	\$8,571
Potential customers =	2010	2000	5.0%	\$2,400,000	\$2,000,000	\$400,000	\$1,200	2700	0	\$0.89	\$8,571
40000	2011	2000	5.0%	\$2,400,000	\$2,000,000	\$400,000	\$1,200	2700	0	\$0.89	\$8,571
	3-Year Total	5000	12.5%	\$6,000,000	\$5,000,000	\$1,000,000	\$1,200	6750	1	\$0.89	\$8,571
Residential Standard Offer	2009	4000	1.3%	\$1,900,000	\$1,520,000	\$380,000	\$475	6720	1	\$0.28	\$1,879
Potential customers =	2010	14000	4.7%	\$6,384,000	\$5,320,000	\$1,064,000	\$456	23520	3	\$0.27	\$1,900
300000	2011	14000	4.7%	\$6,384,000	\$5,320,000	\$1,064,000	\$456	23520	3	\$0.27	\$1,900
	3-Year Total	32000	10.7%	\$14,668,000	\$12,160,000	\$2,508,000	\$456	53760	8	\$0.27	\$1,910
Residential CFL	2009	600000	100.0%	\$3,600,000	\$1,500,000	\$2,100,000	\$6	29760	1	\$0.12	\$3,000
Potential customers =	2010	0	0.0%	\$10,000	\$0	\$10,000	N.A.	0	0	N.A.	N.A.
600000	2011	0	0.0%	\$0	\$0	\$0	N.A.	0	0	N.A.	N.A.
	3-Year Total	600000	100.0%	\$3,610,000	\$1,500,000	\$2,110,000	\$6	29760	1	\$0.12	\$3,008
Energy Star New Homes	2009	0	0.0%	\$125,000	\$0	\$125,000	N.A.	0	0	N.A.	N.A.
Potential customers =	2010	200	7.7%	\$225,000	\$100,000	\$125,000	\$1,125	360	0	\$0.63	\$2,250
2600	2011	500	19.2%	\$375,000	\$250,000	\$125,000	\$750	900	0	\$0.42	\$1,500
	3-Year Total	700	26.9%	\$725,000	\$350,000	\$375,000	\$1,036	1260	0	\$0.58	\$2,071
Energy Star Appliance	2009	5000	0.2%	\$900,000	\$750,000	\$150,000	\$180	1000	0	\$0.90	\$2,400
Potential customers =	2010	20000	0.8%	\$3,600,000	\$3,000,000	\$600,000	\$180	4000	2	\$0.90	\$2,400
2400000	2011	25000	1.0%	\$4,500,000	\$3,750,000	\$750,000	\$180	5000	2	\$0.90	\$2,400
	3-Year Total	50000	2.1%	\$9,000,000	\$7,500,000	\$1,500,000	\$180	10000	4	\$0.90	\$2,400
Renewable Energy Tech.	2009	40	0.0%	\$402,500	\$350,000	\$52,500	\$10,063	152	0	\$2.65	\$2,875
Potential customers =	2010	100	0.0%	\$1,006,250	\$875,000	\$131,250	\$10,063	380	0	\$2.65	\$2,875
300000	2011	150	0.1%	\$1,509,375	\$1,312,500	\$196,875	\$10,063	570	1	\$2.65	\$2,875
	3-Year Total	290	0.0%	\$2,918,125	\$2,537,500	\$380,625	\$10,063	1101	1	\$2.65	\$2,875
General Energy Education	2009					\$2,000,000					
	2010					\$2,000,000					
	2011					\$2,000,000					
	3-Year Total					\$6,000,000					
Total Residential	2009	610340	100.4%	\$10,793,500	\$5,675,000	\$5,118,500	\$18	39702	3	\$0.27	\$3,604
	2010	36800	6.1%	\$16,736,250	\$12,220,000	\$4,516,250	\$455	32160	6	\$0.52	\$2,841
	2011	42150	6.9%	\$18,278,375	\$13,557,500	\$4,720,875	\$434	33890	7	\$0.54	\$2,774
	3-Year Total	689290	113.4%	\$45,807,125	\$31,452,500	\$14,354,625	\$66	105751	15	\$0.43	\$2,960

Ohio Power Company DSM/EE 3-Year Plan Commercial & Industrial Energy Efficiency Programs

Program	Year	Participants	Percent Penetration	Total		Total \$	Measure \$	Admin \$*	Cost Per Participant	Annualized		\$ Per kW	\$ Per kWh
										Savings mWh	Savings mW		
Small C&I Standard Offer Potential customers = 32000	2009	800	2.5%	\$500,000	\$400,000	\$100,000	\$625	4000	1.0	\$0.13	\$521		
	2010	1500	4.7%	\$900,000	\$750,000	\$150,000	\$600	7500	1.8	\$0.12	\$500		
	2011	2100	6.6%	\$1,260,000	\$1,050,000	\$210,000	\$600	10500	2.5	\$0.12	\$500		
	3-Year Total	4400	13.8%	\$2,660,000	\$2,200,000	\$460,000	\$605	22000	5.3	\$0.12	\$504		
Medium C&I Lighting Potential customers = 4230	2009	66	1.6%	\$2,475,000	\$1,980,000	\$495,000	\$37,500	17820	6.6	\$0.14	\$375		
	2010	120	2.8%	\$4,320,000	\$3,600,000	\$720,000	\$36,000	32400	12.0	\$0.13	\$360		
	2011	170	4.0%	\$6,120,000	\$5,100,000	\$1,020,000	\$36,000	45900	17.0	\$0.13	\$360		
	3-Year Total	356	8.4%	\$12,915,000	\$10,680,000	\$2,235,000	\$36,278	96120	35.6	\$0.13	\$363		
Large C&I Standard Offer Potential customers = 4630	2009	25	0.5%	\$937,500	\$750,000	\$187,500	\$37,500	4500	0.9	\$0.21	\$1,014		
	2010	210	4.5%	\$7,560,000	\$6,300,000	\$1,260,000	\$36,000	37800	7.8	\$0.20	\$973		
	2011	310	6.7%	\$11,160,000	\$9,300,000	\$1,860,000	\$36,000	55800	11.5	\$0.20	\$973		
	3-Year Total	545	11.8%	\$19,657,500	\$16,350,000	\$3,307,500	\$36,069	98100	20.2	\$0.20	\$975		
State & Municipal LED Potential customers = 7000	2009	500	7.1%	\$69,000	\$19,000	\$50,000	\$138	470	0.1	\$0.15	\$1,380		
	2010	1500	21.4%	\$107,000	\$57,000	\$50,000	\$71	1410	0.2	\$0.08	\$713		
	2011	1500	21.4%	\$107,000	\$57,000	\$50,000	\$71	1410	0.2	\$0.08	\$713		
	3-Year Total	3500	50.0%	\$283,000	\$133,000	\$150,000	\$81	3290	0.4	\$0.09	\$809		
Large Industrial Process Potential customers = 320	2009	3	0.9%	\$1,500,000	\$750,000	\$750,000	\$500,000	6000	0.9	\$0.25	\$1,667		
	2010	10	3.1%	\$4,500,000	\$2,500,000	\$2,000,000	\$450,000	20000	3.0	\$0.23	\$1,500		
	2011	20	6.3%	\$9,000,000	\$5,000,000	\$4,000,000	\$450,000	40000	6.0	\$0.23	\$1,500		
	3-Year Total	33	10.3%	\$15,000,000	\$8,250,000	\$6,750,000	\$454,545	66000	9.9	\$0.23	\$1,515		
General Energy Education	2009			\$500,000									
	2010			\$500,000									
	2011			\$500,000									
	3-Year Total			\$1,500,000									
Total C&I	2009	1394	1.9%	\$5,981,500	\$3,899,000	\$2,082,500	\$4,291	32790	9.4	\$0.18	\$634		
	2010	3340	4.5%	\$17,887,000	\$13,207,000	\$4,680,000	\$5,355	99110	24.7	\$0.18	\$724		
	2011	4100	5.5%	\$28,147,000	\$20,507,000	\$7,640,000	\$6,865	153610	37.1	\$0.18	\$758		
	3-Year Total	8834	11.8%	\$52,015,500	\$37,613,000	\$14,402,500	\$5,888	285510	71.3	\$0.18	\$730		

**Columbus Southern Power DSM/EE 3-Year Plan
Residential Energy Efficiency Programs**

Program	Year	Participants	Percent Penetration	Total \$	Total Measure \$	Total Admin \$*	Cost Per Participant	Annualized		\$ Per kWh	\$ Per kW
								mWh Savings	mW Savings		
Low-Income Weatherization	2009	300	0.7%	\$666,000	\$555,000	\$111,000	\$2,220	720	0	\$0.93	\$3,700
Potential customers =	2010	500	1.1%	\$1,110,000	\$925,000	\$185,000	\$2,220	1200	0	\$0.93	\$3,700
45000	2011	500	1.1%	\$1,110,000	\$925,000	\$185,000	\$2,220	1200	0	\$0.93	\$3,700
3-Year Total		1300	2.9%	\$2,886,000	\$2,405,000	\$481,000	\$2,220	3120	1	\$0.93	\$3,700
Targeted EE Weatherization	2009	1000	2.3%	\$1,200,000	\$1,000,000	\$200,000	\$1,200	1350	0	\$0.89	\$8,571
Potential customers =	2010	2000	4.5%	\$2,400,000	\$2,000,000	\$400,000	\$1,200	2700	0	\$0.89	\$8,571
44000	2011	2000	4.5%	\$2,400,000	\$2,000,000	\$400,000	\$1,200	2700	0	\$0.89	\$8,571
3-Year Total		5000	11.4%	\$6,000,000	\$5,000,000	\$1,000,000	\$1,200	6750	1	\$0.89	\$8,571
Residential Standard Offer	2009	4000	1.2%	\$1,824,000	\$1,520,000	\$304,000	\$456	8000	1	\$0.23	\$1,520
Potential customers =	2010	12000	3.6%	\$5,472,000	\$4,560,000	\$912,000	\$456	24000	4	\$0.23	\$1,520
330000	2011	12000	3.6%	\$5,472,000	\$4,560,000	\$912,000	\$456	24000	4	\$0.23	\$1,520
3-Year Total		28000	8.3%	\$12,768,000	\$10,640,000	\$2,128,000	\$456	56000	8	\$0.23	\$1,520
Residential CFL	2009	650000	100.0%	\$3,900,000	\$1,625,000	\$2,275,000	\$6	32240	1	\$0.12	\$3,000
Potential customers =	2010	0	0.0%	\$10,000	\$0	\$10,000	N.A.	0	0	N.A.	N.A.
650000	2011	0	0.0%	\$0	\$0	\$0	N.A.	0	0	N.A.	N.A.
3-Year Total		650000	111.6%	\$3,910,000	\$1,625,000	\$2,285,000	\$6	32240	1	\$0.12	\$3,000
Energy Star New Homes	2009	0	0.0%	\$250,000	\$0	\$250,000	N.A.	0	0	N.A.	N.A.
Potential customers =	2010	500	8.3%	\$500,000	\$250,000	\$250,000	\$1,000	900	0	\$0.56	\$2,000
8000	2011	1000	16.7%	\$750,000	\$500,000	\$250,000	\$750	1800	1	\$0.42	\$1,500
3-Year Total		1500	25.0%	\$1,500,000	\$750,000	\$750,000	\$1,000	2700	1	\$0.56	\$2,000
Energy Star Appliance	2009	5000	0.2%	\$900,000	\$750,000	\$150,000	\$180	1000	0	\$0.90	\$2,400
Potential customers =	2010	20000	0.8%	\$3,600,000	\$3,000,000	\$600,000	\$180	4000	2	\$0.90	\$2,400
2400000	2011	25000	1.0%	\$4,500,000	\$3,750,000	\$750,000	\$180	5000	2	\$0.90	\$2,400
3-Year Total		50000	2.1%	\$9,000,000	\$7,500,000	\$1,500,000	\$180	10000	4	\$0.90	\$2,400
Renewable Energy Tech.	2009	30	0.0%	\$301,875	\$262,500	\$39,375	\$10,063	114	0	N.A.	N.A.
Potential customers =	2010	80	0.0%	\$805,000	\$700,000	\$105,000	\$10,063	304	0	\$2.65	\$2,875
330000	2011	120	0.0%	\$1,207,500	\$1,050,000	\$157,500	\$10,063	456	0	\$2.65	\$2,875
3-Year Total		230	0.1%	\$2,314,375	\$2,012,500	\$301,875	\$10,063	873	1	\$2.65	\$2,875
General Energy Education	2009					\$2,000,000					
	2010					\$2,000,000					
	2011					\$2,000,000					
3-Year Total						\$6,000,000					
Total Residential	2009	660330	108.6%	\$11,041,875	\$5,712,500	\$5,329,375	\$17	43424	3	\$0.25	\$3,346
	2010	35080	5.8%	\$15,897,000	\$11,435,000	\$4,462,000	\$453	33104	6	\$0.48	\$2,560
	2011	40620	6.7%	\$17,439,500	\$12,785,000	\$4,654,500	\$429	35156	7	\$0.50	\$2,500
3-Year Total		736030	110.7%	\$44,378,375	\$29,932,500	\$14,445,875	\$60	111683	16	\$0.40	\$2,692

**Columbus Southern Power DSM/EE 3-Year Plan
Commercial & Industrial Energy Efficiency Programs**

Program	Year	Participants	Percent Penetration	Total \$	Total Measure \$	Total Admin \$*	Cost Per Participant	Annualized Savings mWh	mW Savings	\$ Per kWh	\$ Per kW
Small C&I Standard Offer Potential customers = 26300	2009	500	1.9%	\$312,500	\$250,000	\$62,500	\$625	2500	0.6	\$0.13	\$521
	2010	1400	5.3%	\$840,000	\$700,000	\$140,000	\$600	7000	1.7	\$0.12	\$500
	2011	2100	8.0%	\$1,260,000	\$1,050,000	\$210,000	\$600	10500	2.5	\$0.12	\$500
	3-Year Total	4000	15.2%	\$2,412,500	\$2,000,000	\$412,500	\$603	20000	4.8	\$0.12	\$503
Medium C&I Lighting Potential customers = 4200	2009	20	0.5%	\$750,000	\$600,000	\$150,000	\$37,500	5400	2.0	\$0.14	\$375
	2010	70	1.7%	\$2,520,000	\$2,100,000	\$420,000	\$36,000	18900	7.0	\$0.13	\$360
	2011	120	2.9%	\$4,320,000	\$3,600,000	\$720,000	\$36,000	32400	12.0	\$0.13	\$360
	3-Year Total	210	5.0%	\$7,590,000	\$6,300,000	\$1,290,000	\$36,143	56700	21.0	\$0.13	\$361
Large C&I Standard Offer Potential customers = 4500	2009	15	0.3%	\$562,500	\$450,000	\$112,500	\$37,500	2700	0.6	\$0.21	\$1,014
	2010	195	4.3%	\$7,020,000	\$5,850,000	\$1,170,000	\$36,000	35100	7.2	\$0.20	\$973
	2011	295	6.6%	\$10,620,000	\$8,850,000	\$1,770,000	\$36,000	53100	10.9	\$0.20	\$973
	3-Year Total	505	11.2%	\$18,202,500	\$15,150,000	\$3,052,500	\$36,045	90900	18.7	\$0.20	\$974
State & Municipal LED Potential customers = 12230	2009	1100	9.0%	\$91,800	\$41,800	\$50,000	\$83	1034	0.1	\$0.09	\$835
	2010	2500	20.4%	\$145,000	\$95,000	\$50,000	\$58	2350	0.3	\$0.06	\$580
	2011	2500	20.4%	\$145,000	\$95,000	\$50,000	\$58	2350	0.3	\$0.06	\$580
	3-Year Total	6100	49.9%	\$381,800	\$231,800	\$150,000	\$63	5734	0.6	\$0.07	\$626
Large Industrial Process Potential customers = 120	2009	1	0.8%	\$296,000	\$80,000	\$216,000	\$296,000	1000	0.2	\$0.30	\$1,973
	2010	6	5.0%	\$1,476,000	\$480,000	\$996,000	\$246,000	6000	0.9	\$0.25	\$1,640
	2011	15	12.5%	\$3,690,000	\$1,200,000	\$2,490,000	\$246,000	15000	2.3	\$0.25	\$1,640
	3-Year Total	22	18.3%	\$5,462,000	\$1,760,000	\$3,702,000	\$248,273	22000	3.3	\$0.25	\$1,655
General Energy Education	2009					\$500,000					
	2010					\$500,000					
	2011					\$500,000					
	3-Year Total					\$1,500,000					
Total C&I	2009	1636	2.2%	\$2,512,800	\$1,421,800	\$1,091,000	\$1,536	12634	3.4	\$0.20	\$736
	2010	4171	5.6%	\$12,501,000	\$9,225,000	\$3,276,000	\$2,997	69350	17.0	\$0.18	\$733
	2011	5030	6.7%	\$20,536,000	\$14,795,000	\$5,740,000	\$4,083	113350	27.9	\$0.18	\$735
	3-Year Total	10837	14.4%	\$35,548,800	\$25,441,800	\$10,107,000	\$3,280	195334	48.4	\$0.18	\$735

**AEP Ohio DSM/EE 3-Year Plan
All Programs**

OP	Year	Participants	Percent Admin \$	Total \$	Total Measure \$	Total Admin \$	Cost Per Participant	Annualized	mW Savings	\$ Per kWh	\$ Per kW
								mWh Savings			
Total Residential	2009	610,340	47.4%	\$10,793,500	\$5,675,000	\$5,118,500	\$18	39702	3	\$0.27	\$3,604
	2010	36,800	27.0%	\$16,735,250	\$12,220,000	\$4,515,250	\$455	32160	6	\$0.52	\$2,841
	2011	42,160	25.8%	\$18,278,375	\$13,557,500	\$4,720,875	\$434	33890	7	\$0.54	\$2,774
	3-Year Total	689,290	31.3%	\$45,807,125	\$31,452,500	\$14,354,625	\$66	105751	15	\$0.43	\$2,960
Total C&I	2009	1,394	34.8%	\$5,981,500	\$3,899,000	\$2,082,500	\$4,291	32790	9	\$0.18	\$634
	2010	3,340	26.2%	\$17,887,000	\$13,207,000	\$4,680,000	\$5,355	99110	25	\$0.18	\$724
	2011	4,100	27.1%	\$28,147,000	\$20,507,000	\$7,640,000	\$6,865	153610	37	\$0.18	\$758
	3-Year Total	8,834	27.7%	\$52,015,500	\$37,613,000	\$14,402,500	\$5,888	285510	71	\$0.18	\$730
Total OP DSM/EE Program Total	2009	611,734	42.9%	\$16,775,000	\$9,574,000	\$7,201,000	\$27	72492	12	\$0.23	\$1,350
	2010	40,140	26.6%	\$34,622,250	\$25,427,000	\$9,196,250	\$983	131270	31	\$0.26	\$1,131
	2011	46,250	26.6%	\$46,425,375	\$34,064,500	\$12,360,875	\$1,004	167500	44	\$0.25	\$1,062
	3-Year Total	698,124	29.4%	\$97,822,625	\$69,065,500	\$28,757,125	\$140	391261	87	\$0.25	\$1,127
CSP											
Total Residential	2009	660,330	48.3%	\$11,041,875	\$5,712,500	\$5,329,375	\$17	43424	3	\$0.25	\$3,346
	2010	35,080	28.1%	\$15,897,000	\$11,435,000	\$4,462,000	\$453	33104	8	\$0.48	\$2,560
	2011	40,620	26.7%	\$17,439,500	\$12,785,000	\$4,654,500	\$429	35156	7	\$0.50	\$2,500
	3-Year Total	736,030	32.5%	\$44,378,375	\$29,932,500	\$14,445,875	\$60	111683	16	\$0.40	\$2,692
Total C&I	2009	1,636	43.4%	\$2,512,800	\$1,421,800	\$1,091,000	\$1,536	12634	3	\$0.20	\$736
	2010	4,171	26.2%	\$12,501,000	\$9,225,000	\$3,276,000	\$2,997	69350	17	\$0.18	\$733
	2011	5,030	28.0%	\$20,535,000	\$14,795,000	\$5,740,000	\$4,083	113350	28	\$0.18	\$735
	3-Year Total	10,837	28.4%	\$35,548,800	\$25,441,800	\$10,107,000	\$3,280	195334	48	\$0.18	\$735
Total CSP DSM/EE Program Total	2009	661,966	47.4%	\$13,554,675	\$7,134,300	\$6,420,375	\$20	56058	7	\$0.24	\$2,019
	2010	39,251	27.2%	\$28,398,000	\$20,650,000	\$7,738,000	\$723	102454	23	\$0.28	\$1,221
	2011	45,650	27.4%	\$37,974,500	\$27,580,000	\$10,394,500	\$832	148506	35	\$0.26	\$1,088
	3-Year Total	746,867	30.7%	\$79,927,175	\$55,374,300	\$24,552,875	\$107	307017	65	\$0.26	\$1,232