

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of)	
Ohio Edison Company, The Cleveland)	
Electric Illuminating Company, and the)	Case Nos. 09-1947-EL-POR
Toledo Edison Company for Approval of)	09-1948-EL-POR
Their Energy Efficiency and Peak)	09-1949-EL-POR
Demand Reduction Program Portfolio)	
Plans for 2010 through 2012 and)	
Associated Cost Recovery Mechanisms)	
)	
In the Matter of the Application of)	
Ohio Edison Company, The Cleveland)	Case Nos. 09-1942-EL-EEC
Electric Illuminating Company, and the)	09-1943-EL-EEC
Toledo Edison Company for Approval)	09-1944-EL-EEC
of Their Initial Benchmark Reports)	
)	
In the Matter of the Energy Efficiency)	
and Peak Demand Reduction Program)	Case Nos. 09-580-EL-EEC
Portfolio of Ohio Edison Company, The)	09-581-EL-EEC
Cleveland Electric Illuminating Company,)	09-582-EL-EEC
and the Toledo Edison Company)	
)	

DIRECT TESTIMONY OF

GEOFFREY C. CRANDALL

**ON BEHALF OF
THE ENVIRONMENTAL LAW AND POLICY CENTER**

Filed: February 17, 2010

INTRODUCTION AND BACKGROUND

Q. What is your name and business address?

A. My name is Geoffrey C. Crandall. My business address is MSB Energy Associates, Inc.,
1800 Parmenter Street Suite 204, Middleton, Wisconsin 53562.

Q. On whose behalf are you testifying today?

A. I am testifying on behalf of the Environmental Law and Policy Center.

Q. Please describe your background and experience in the field of gas and electric utility regulation.

A. I am a principal and the Vice President of MSB Energy Associates, Inc. I have over 35 years of experience in utility regulatory issues, including energy efficiency, conservation and load management resources program design and implementation, resource planning, restructuring, mergers, fuel, purchase power and gas cost recovery and planning analysis, and related issues. I have provided expert testimony before more than a dozen public utility regulatory bodies throughout the United States. I have provided expert testimony before the United States Congress on several occasions.

My experience includes over 15 years of service on the Staff of the Michigan Public Service Commission (MPSC). In my tenure at the MPSC, I served as an analyst in the Electric Division (Rates and Tariff section) involving rate as well as fuel and purchase power cases. I also served as the Technical Assistant to the Chief of Staff and Supervisor of the Energy Conservation Section involving residential and commercial energy efficiency programs. I also served as the Division Director of the Industrial, Commercial and Institutional Division. In that capacity, I was Director of the Division that had

1 responsibility for the energy efficiency and conservation program design, funding, and
2 implementation of Michigan utility and DOE-funded programs and initiatives involving
3 Industrial, Commercial and Institutional gas and electric customers throughout Michigan.
4

5 In 1990, I was hired by MSB Energy Associates, Inc. and have served clients throughout
6 the United States on numerous projects related to energy efficiency and load management
7 program development, system planning, fuel, purchase power and gas cost recovery
8 assessments, electric restructuring, customer impact analyses, and other issues. My
9 curriculum vitae is attached as Exhibit GCC-1.

10 **Q. What is the purpose of your testimony?**

11 A. The purpose of my testimony is to address the reasonableness of the proposed
12 FirstEnergy Corp's (FirstEnergy) Energy Efficiency and Peak Demand Reduction
13 Program Portfolio Plan (EE&PDR) for 2010 through 2012 that was submitted jointly by
14 Ohio Edison Company, The Cleveland Electric Illuminating Company and the Toledo
15 Edison Company on December 15, 2009 to the Public Utilities Commission of Ohio
16 (Commission or PUCO). I will refer to these three companies collectively as
17 "FirstEnergy." In my testimony I describe my assessment of the proposed EE&PDR plan
18 overall and make suggestions regarding modifications and improvements.

19 **Q. Have you reached any conclusions concerning the EE&PDR submitted by**
20 **FirstEnergy?**

21 A. Yes. My most significant concerns are 1) the inaccuracy of technology cost data used by
22 FirstEnergy in its analysis and modeling of potential energy efficiency technologies; 2)
23 the need for clear direction from the PUCO regarding accounting and program cost

1 tracking information; 3) the underutilization of solid state lighting (SSL) technologies; 4)
2 the suggested approach to Evaluation, Measurement and Verification (EMV) and; 5) the
3 need for heightened customer awareness of energy efficiency opportunities and consumer
4 education regarding energy use.

5 **OVERALL ASSESSMENT OF THE PROPOSED EE & PDR PLAN**

6 **Q. Have you reviewed any documents or material in developing your opinions?**

7 A. Yes.

8 **Q. What have you reviewed to develop your opinions on the EE&PDR Plan?**

9 A. I have reviewed the application, testimony, exhibits, and responses to discovery questions
10 in conjunction with this application. I have also reviewed the applicable statutory
11 sections from the Ohio Revised Code.

12 **Q. Could you please describe the Applicant's plan for meeting the requirements of**
13 **Ohio Revised Code Section 4928.66.**

14 A. FirstEnergy has proposed an EE&PDR plan consisting of seventeen programs. The Plan
15 includes programs for customers in the residential, low-income residential, small
16 commercial, small industrial, large commercial, large industrial, and governmental
17 customer sectors. Strategies to cover major energy consuming devices in homes,
18 businesses and industry are addressed. The proposed programs include various energy
19 efficiency and demand response technologies including the elimination of appliances and
20 room air conditioners that are underutilized and inefficient as well as more efficient
21 appliances, lighting, heating and cooling equipment, and measures to improve the
22 efficiency of existing equipment.

23 **Q. What is your overall opinion of the EE&PDR plan submitted?**

1 A. I believe there are a number of program flaws that are contained in this application. I
2 explain my specific concerns and recommendations below.

3 **NEED FOR ENERGY AWARENESS AND CONSUMER EDUCATIONAL EMPHASIS**

4 **Q. Do you have concerns regarding the proposed EE&PDR programs with respect to**
5 **consumer awareness and energy use education?**

6 A. Yes. The proposed EE&PDR plan does not include strategies or a sufficient level of
7 effort to build customer awareness of energy efficiency options and the desirable impacts
8 that result from energy efficiency. The proposed EE&PDR plan needs to be modified to
9 include more emphasis on educational and consumer awareness of the energy and dollar
10 impact of decisions consumers make in selecting and using appliances, TV sets,
11 entertainment systems, and plug loads.

12 **Q. Specifically, what is the concern regarding customer use of home electronic**
13 **equipment?**

14 A. The proliferation of consumer electronics is resulting in an increased need for electricity.
15 Examples of consumer electronics include XBOX 360, Playstations, Blue-ray DVD
16 players, big screen high-definition plasma, and Liquid Crystal Display (LCD) TV sets.
17 These products are gaining in popularity. The Environmental Protection Agency (EPA)
18 estimates that in the United States there are approximately 1.5 billion power supplies that
19 are used in various devices. These power supplies consume about 300 billion kilowatt-
20 hours (KWh) per year, or about 11% of the national annual electricity usage. The
21 expected rate of growth for these power supplies is expected to be 49% in the commercial
22 sector, 3% in the industrial sector and 27% in the residential sector from 2005 to 2030,
23 according to the U.S. Department of Energy's *Energy Outlook 2008*. According to the

1 EPA, LCD TV sets typically use less energy than comparable plasma sets. A typical 28-
2 inch conventional cathode ray tube (CRT) set uses about 100 watts of electricity. A
3 typical 42-inch LCD set might consume twice that amount, while a plasma set could use
4 five times as much, depending on the model and the programming. Furthermore, the
5 EPA indicates that for the largest screen sizes (60 inches and up), projection TVs are
6 quite energy efficient, using 150-200 watts—which is far less than the energy a plasma
7 set would use.

8
9 EPA now includes TV systems in their ENERGY STAR labeling program. The
10 requirements in effect today, are that the ENERGY STAR rated units use up to 30% less
11 energy than their counterparts. In September 2009, the EPA adopted a new ENERGY
12 STAR version 4.0 and 5.0 for TV sets. See Exhibit GCC-2. The criteria for Version 4.0
13 that takes effect in May 2010, will offer consumers a savings of more than 40%. Version
14 5.0, which takes effect May 2012 includes ENERGY STAR qualified TVs that will be as
15 much as 65 percent more efficient than models currently on the market.

16
17 The implications of the increased use of energy attributable to consumer electronics has
18 not gone unnoticed in other states. California has recently reacted to this phenomenon.
19 In November 2009, the California Energy Commission (CEC) approved mandatory
20 energy efficiency standards for TVs. See Exhibit GCC- 3. The standard requires that
21 beginning in 2011, televisions sold in California would consume 33% less energy.
22 Beginning in 2013, televisions sold in the state would consume 49% less energy. For
23 example, a 36-inch screen would consume 148 watts by 2011 and 95 watts by 2013.

1 According to the CEC, the savings to the consumer will be between \$50 and \$250 over
2 the life of the TV.

3
4 Ohio has ample potential to reduce plug load inefficiencies. In the study done by the
5 American Council for an Energy-Efficient Economy in March 2009, over 1,000 gigawatt-
6 hours (GWh) of savings from plug loads was identified for Ohio. Plug load energy
7 efficiency had the second lowest cost of only \$0.024/kWh. See Table 2 (page 13) of the
8 ACEEE report.

9
10 Growth in sales of high definition plasma, large screen TV's and other consumer
11 electronics in the FirstEnergy service territory has the potential to unravel and negate
12 energy savings resulting from implementation of FirstEnergy's EE&PRD plan.

13 **Q. Please explain the opportunities to improve energy efficiency involving consumer**
14 **electronics and plug loads.**

15 A. Numerous appliances and devices are consuming electricity without the customers'
16 knowledge. This is commonly referred to as "phantom load." Home office equipment,
17 often uses stand-by ("phantom") power load that can range from a few watts to as much
18 as 40 watts for each piece of equipment. One way to mitigate this problem is to use a
19 power strip that provides a means to completely disconnect the power supply from the
20 power source thereby eliminating the wasteful use of electricity. FirstEnergy is to be
21 commended for having recognized this. They have proposed, in their programs, power
22 strips to help customers capture those savings. However, FirstEnergy has not included
23 aggressive customer information and consumer awareness efforts to ensure that their

1 customers are aware of phantom load and the means to reduce this unintentional use. A
2 good example of information being provided to its customers by an electric utility is
3 attached in Exhibit GCC- 4.

4 **Q. What other consumer education tools are available to help reduce electricity**
5 **consumption?**

6 A. Beyond consumer electronics, customers are often unaware of common everyday
7 opportunities such as reducing hot water temperatures, setting the interior temperature
8 levels for both winter and summer and by using programmable thermostats. Customers
9 also need to be aware of using infiltration gaskets on exterior walls, keeping their heating
10 and cooling system well maintained, closing storm windows in the winter, use of flow
11 restrictors in showers and faucets, and using occupancy sensors to reduce unnecessary
12 use of lighting. These are important aspects that should not be overlooked.

13 **Q. Does the EE&PDR plan as submitted fail to address these customer education**
14 **issues?**

15 A. Yes. FirstEnergy's proposed EE & PDR plan is deficient because it does not place
16 sufficient emphasis on consumer education and building public awareness. FirstEnergy
17 needs to initiate an aggressive customer information program including use of speaker
18 bureaus, public service announcements, bill inserts, and website resources to inform its
19 customers of the EE&PDR programs. It also needs to disseminate information to its
20 customers to inform them as to the actions they can take to reduce the wasteful use of
21 energy. Proper safeguards will need to be in effect to ensure the focus is on awareness of
22 energy efficiency opportunities and not image building for the utilities.

1 **Q. What action do you recommend the Public Utilities Commission of Ohio take**
2 **regarding consumer electronic goods that may impact energy efficiency projects?**

3 A. As a condition of approving the plan, the PUCO should require FirstEnergy to include
4 additional strategies to heighten public awareness of energy efficiency and opportunities
5 in its implementation plan, such as those listed above. The PUCO should require that
6 FirstEnergy work with the collaborative group and other interested parties to expand and
7 increase the emphasis of its public awareness, with special emphasis on energy
8 consumption of TVs, home entertainment systems, and phantom power loads over this
9 three-year plan period.

10 **PROPOSED LIGHTING TECHNOLOGY**

11 **Q. Do you have any specific concerns regarding the proposed lighting technologies**
12 **included in the EE&PDR plan?**

13 A. Yes. In reviewing the EE&PDR plan application and related materials, it appears that
14 several lighting measures and technologies were included in formulating the proposed
15 EE&PDR plan. However, solid state lighting (SSL) technologies are becoming more and
16 more promising and FirstEnergy erred by not including additional SSL measures in this
17 proposed three-year plan.

18 **Q. Does FirstEnergy's plan include any SSL technologies?**

19 A. Yes. FirstEnergy's application includes Light Emitting Diode (LED) technology, such as
20 exit lights (retrofit only), pedestrian signals, and traffic signals.

21 **Q. What other SSL technologies are available for use today?**

22 A. There are several new products, such as: parking lights, outdoor wall mounted porch
23 lights, outdoor pathway lights, recessed down lights, desk lamps, under kitchen cabinet

1 lighting, surface mounted down lights, interior lighting, strip lighting, and commercial
2 refrigeration lights. The US EPA has recently published a list of ENERGY STAR
3 approved residential SSL lighting technologies. See Exhibit GCC-5.

4 **Q. How does the EE&PDR plan fail to adequately address SSL technology?**

5 A. In two ways, first an insufficient number of SSL lighting technologies are included in
6 their proposed lighting programs. Other Midwestern utilities include considerably more
7 SSL lighting options in their energy efficiency programs than is being proposed by First
8 Energy. I have provided examples of these other LED incentive programs in Exhibits
9 GCC-6, GCC-7 and GCC-8. In addition, FirstEnergy needs to develop an in-depth
10 understanding of the operational characteristics and application of this new lighting
11 technology. Even though FirstEnergy included some SSL applications, it did not include
12 a concentrated and focused demonstration pilot for new interior and exterior SSL
13 applications in Ohio. Because the plans will not be revisited for another three years, it is
14 important that an SSL pilot program be initiated during this planning cycle and as soon as
15 possible.

16 **Q. Are other SSL pilots now underway in other states?**

17 A. Yes. Such a pilot is being initiated in Iowa. MidAmerican Energy Company and
18 Interstate Power Company are currently developing a SSL/LED pilot project in
19 conjunction with the Iowa Energy Center based in Ames, Iowa. The purpose of that
20 effort will be to gain a better understanding of the operating characteristics and
21 application possibilities of SSL and LED technologies. In addition, an SSL pilot has just
22 been announced in Michigan. The Michigan Department of Energy, Labor and
23 Economic Growth (DLEG) recently granted \$17.4 million for LED Demonstration

1 Grants. These grants will be available to local governments to assist with projects using
2 LED products, to both reduce energy use and increase public awareness of LED
3 technology. The measures in this pilot include LED/Solid State Lighting for various
4 high-demand applications such as exterior parking, street and traffic lighting. Grants will
5 fund much of the lighting hardware costs for equipment. Recipients will cover a portion
6 of the lighting hardware costs plus installation and labor costs. After the LED project has
7 been installed, the recipients will help educate the public on the technology through
8 various means including the media, community functions, and signs.

9 According to comments made by DLEG's Director Pruss indicated, "...These projects
10 will enhance Michigan's ability to achieve its energy efficiency goals and support the
11 energy needs and priorities of local communities, while creating or retaining thousands of
12 jobs across the state."

13 **Q. What is your recommendation regarding SSL programs?**

14 A. I recommend that FirstEnergy initiate a pilot project to gain experience with SSL
15 applications and better understand its operating characteristics, strengths, weaknesses and
16 any unique applications or qualities it may have. Exterior solid state lighting, such as that
17 which is designed to replace parking lot, street and exterior security lighting systems
18 should also be included in this pilot project. The PUCO should require FirstEnergy to
19 implement a SSL pilot in conjunction with this application and not defer this until the
20 next EE&PDR planning cycle. An example of a SSL demonstration pilot is provided in
21 Exhibit GCC-9.

1 **ACCOUNTING TREATMENT AND TRACKING OF EXPENSES**

2 **Q. Do you have concerns regarding the financial controls and accounting system that**
3 **needs to be in place to ensure proper tracking and use of ratepayer funded activities**
4 **by FirstEnergy and its contractors?**

5 A. Yes. FirstEnergy has not explained its plans specifically for internal financial controls
6 and the tracking of funds. These are new activities for FirstEnergy and tens of millions
7 of dollars will be flowing between ratepayers, FirstEnergy, program contractors, vendors,
8 trade allies, and participating consumers. FirstEnergy needs to take the appropriate steps
9 to ensure proper tracking and control of these funds. The appropriate use of personnel,
10 equipment, vehicles, new purchases, marketing and advertising resources, and
11 administrative support must be carefully scrutinized. The PUCO should ensure that
12 FirstEnergy is setting up its accounting systems appropriately so that allocations include
13 only legitimate costs from related incremental activities and that there is a clear audit trail
14 which can be audited by the PUCO staff or their designees.

15 **Q. What recommendations do you have to ensure that FirstEnergy's accounting system**
16 **only allocates legitimate costs from incremental activities?**

17 A. FirstEnergy should work with the PUCO staff to determine the appropriate accounting
18 treatment and tracking of costs and revenues associated with the EE&PDR plan. The
19 PUCO staff should provide guidance through written correspondence that describes the
20 proper accounts and subaccounts for recording and tracking of qualified costs attributable
21 to the EE&PDR programs. This will ensure that should a financial audit be conducted on
22 these activities, the audit team will have a clear disaggregation of the relevant costs and
23 revenues.

EVALUATION, MEASUREMENT AND VERIFICATION

Q. Do you agree with FirstEnergy's proposed approach for evaluation, measurement and verification?

A. No. I believe there are serious problems with the proposed EMV strategy.

Q. Why is a strong EMV program necessary?

A. The evaluation of energy efficiency programs requires close attention. It will be essential that the EMV team be comprised of evaluation professionals who have the expertise and independence to complete a credible analysis. The evaluation team needs to have the expertise and understanding of various standard evaluation approaches including familiarity with engineering derived estimations, data collection for interviews, weather normalization, building simulation modeling, billing analysis, useful life estimates, free rider and free driver assessments and net-to-gross analyses, and unbiased surveys. Sound analytical methods should be applied and the results rendered within a framework of independence that provides trustworthy, objective and unbiased information.

Q. Does the establishment of the statewide Independent Program Evaluator position alone provide the necessary independence and protections that is important to a sound EMV framework?

A. No. However, this is an excellent means of cross checking and should be very helpful in achieving independence with the evaluation function. A proper EMV process provides feedback and performance results within a decision-making framework. This enables program implementers to enhance ongoing operations as well as modify programs in the future. The Ohio EMV framework overall is consistent with this approach, and should provide for timely and meaningful program adjustments, if needed.

1 **Q. What are your main concerns regarding the proposed EMV strategy in**
2 **FirstEnergy's EE&PDR filing?**

3 A. My first concern is the suggested method of selecting and managing the FirstEnergy
4 EMV contractor. My second is the verification of legitimate and discernable savings
5 resulting from activities related to the EE&PDR plan.

6 **Q. Why do you have concerns about the EMV team contractual relationship?**

7 A. On page 7 of its EE& PDR Plan, FirstEnergy proposes that it be authorized to hire an
8 evaluator contractor to analyze activities related to the plan. As proposed, FirstEnergy
9 would have the ability to unilaterally dismiss the ratepayer-funded EMV contractor. This
10 contractual arrangement could result in process and impact evaluation reports that may
11 lack independence and credibility. The contract terms will include the standard
12 requirements for performance, deliverables, time lines, etc. However, because
13 measurement and savings attributable to the plan is an essential task and these costs will
14 be funded by the ratepayers, I recommend that a firewall be established between
15 FirstEnergy and its EMV contractor. The EMV team needs to have independence and
16 autonomy to do its work. Integrity of this process is of paramount importance to the long
17 run viability of these programs. A safeguard needs to be inserted in this process such that
18 the EMV contractor cannot be unduly influenced by FirstEnergy. Dismissal of the EMV
19 contractor should only be allowed with the prior consent of the PUCO, PUCO staff, or
20 the unanimous consent of several designated entities in the collaborative. The PUCO
21 should determine, in this proceeding, that this is an important safeguard that should be
22 established and designate who will have the responsibility to authorize dismissal of
23 FirstEnergy's EMV contractor, should that situation arise.

1 **Q. What is your concern over the verification of savings in the EE&PDR plan?**

2 A. My second concern is to ensure that only verified, bona fide savings resulting directly
3 from FirstEnergy's EE&PDR activities are reflected in the savings towards meeting the
4 legislatively mandated savings targets. This is a very important principle that is central to
5 properly conducted impact evaluations. The EMV function needs to carefully screen
6 which activities are eligible to be counted towards compliance with the targets. This is a
7 very important task for the statewide Independent Program Evaluator as well as the EMV
8 team that is going to be hired directly by FirstEnergy. As an example of a violation of
9 the verification principle, the savings identified in Appendix G, C&I Energy Efficiency
10 Compliance "Historical Transmission and Distribution Programs," of 27,217 MWh are
11 unrelated to the incremental new activities that are identified in the plan because the
12 savings are from historical projects and not eligible for counting towards the
13 requirements. Granting savings credit for these historical activities conducted prior to the
14 legislatively established EE&PDR programs would be the ultimate example of "free-
15 ridership," i.e., claiming savings for actions that were not at all the result of the EE&PDR
16 programs. This would be like being hired for a new job and asking the boss to pay you
17 for two years of earlier work you did for your previous employer. The EMV
18 methodology must be careful to separate out and not allow the inclusion of tangential and
19 unrelated activities that have been completed prior to the initiation of the EE&PDR
20 programs. Similarly, savings attributable to the self-directed mercantile customers must
21 not be allowed unless they are properly verified in a manner that is satisfactory to the
22 statewide Independent Program Evaluator.

1 **Q. What recommendations do you have regarding FirstEnergy's EMV program and**
2 **proposals?**

3 A. First, FirstEnergy needs to hire qualified EMV contractors with the understanding that
4 should FirstEnergy seek to dismiss the contractor, this may be done, but only after it has
5 been expressly permitted by the PUCO or its designee. Second, only legitimate savings
6 resulting directly from the (new) activities included in the EE&PDR are eligible to be
7 counted towards the legislatively mandated savings targets. Third, the statewide
8 Independent Program Evaluator will be responsible to coordinate and oversee EMV
9 functions involving all the participating utilities. To minimize inefficiencies, duplication
10 of efforts, and enhance compatibility of information, FirstEnergy should coordinate its:
11 methodologies, data collection instruments, analyses, reports, status report formats and
12 related work with the statewide Independent Program Evaluator.

13 **PROGRAM CONTINUITY**

14 **Q. What are the impacts associated with starting and stopping energy efficiency or**
15 **peak demand reduction programs during the implementation process?**

16 A. Starting and stopping programs during the course of a program can be very disruptive as
17 well as costly.

18 **Q. Why do you think there is a potential for the programs to stop and start throughout**
19 **the course of the year they are implemented?**

20 A. In my experience with implementing energy efficiency programs, it is very difficult to
21 predict how well new programs and incentives will be received by customers. What I
22 would expect is that some of the programs will be very well received and may cause a
23 surge in customer demand. The demand might be so intense as to deplete the incentives

1 available for the program year. At that point, program administrators will have to decide
2 how to react to this oversubscription. Should they shut the program down? Should they
3 continue to receive and process requests and develop long backlogs or should they
4 redirect incentive funds from other programs that have not been as well received? These
5 circumstances should be anticipated by program implementers.

6 **Q. What are the likely results should FirstEnergy's programs be interrupted?**

7 A. Trade ally coordination, training, and relationship building will be crucial to the delivery
8 and ultimate success of FirstEnergy's programs and must be given high priority. Because
9 FirstEnergy customers, retailers, and trade allies have somewhat limited experience with
10 utility rebate and incentive programs, FirstEnergy has decided to elevate customer
11 incentive levels to help jump-start the programs and attract customer interest over the
12 first six months. It is a good idea to front-load the customer incentive levels to quickly
13 attract customer interest. It will be important to minimize customer hassle, confusion and
14 barriers to their participation.

15
16 In reviewing the proposed plan, I am concerned that no accommodation has been made to
17 avoid starting and stopping incentives and programs. I suggest that this be addressed
18 specifically by FirstEnergy in planning the implementation and within the contracts with
19 third party implementers. Otherwise, customer and trade ally confusion, hassle, and
20 irritation could result which would diminish the effectiveness of the programs.

21 **Q. What recommendations do you have to minimize potential impacts resulting from**
22 **the potential starting and stopping of programs?**

1 A. First Energy will need to keep abreast of its program incentives and budgets as it
2 implements the programs. It will need to closely track and forecast the funds used and
3 still available for customer and trade ally incentives. It will also need to adjust its
4 budgets accordingly to ensure that the programs are well managed.

5 **PROPOSED FAST TRACK CFL PROGRAM**

6 **Q. Are you familiar with the four programs FirstEnergy has designated for “Fast**
7 **Track” implementation?**

8 A. Yes. These are the compact fluorescent light (CFL) bulb, appliance turn-in, commercial
9 and industrial lighting, and commercial and industrial motors programs.

10 **Q. What concerns do you have regarding the CFL program?**

11 A. In reviewing the proposed CFL program, it appears that this program as designed would
12 have a high likelihood of robust customer participation levels using high quality energy
13 efficient lighting technology. A big unknown is customer receptiveness given the
14 customer pushback resulting from the failed launch of FirstEnergy’s earlier CFL
15 program. It is my understanding the program has a limitation of six bulbs per customer
16 purchase, which is a reasonable approach. Disposal of CFL’s is a very important element
17 of this program and was not addressed in the plan filing. Disposal of CFL’s at a
18 convenient location for the consumer needs to be included in this program.

19 **Q. Do you have recommendations regarding the implementation of this program?**

20 A. Yes. FirstEnergy needs to establish an effective plan and work closely with its trade
21 allies to ensure that there is an effective, hassle-free, and convenient way for customers to
22 dispose of inoperative fluorescent and CFL lights. The CFL point of purchase is an ideal
23 location to help customers with the disposal of inoperative CFL and fluorescent lights.

1 **Q. Do you have any suggestions regarding the marketing of this program?**

2 A. Yes. Reference is made to EISA and the efficient lighting technology that will be
3 mandatorily phased in, beginning in 2012. In an effort to enhance implementation of the
4 CFL program as well as encourage efficient lighting technology and coordinate efforts
5 with EISA, I recommend that FirstEnergy offer an incandescent light bulb turn-in
6 initiative. This marketing approach could be used with residential customers, both
7 homeowners and renters, as well as small business customers. Under this incentive, if the
8 customer turns in four functional 100-watt bulbs they would be eligible to receive two
9 compact fluorescent bulbs at no charge, having an equivalent light output to a 100-watt
10 incandescent bulb. This turn-in program would improve customer awareness of new
11 highly efficient and less costly lighting technologies as well as provide for the disposal of
12 the old inefficient lights in an environmentally responsible manner. It would also help to
13 stimulate and increase customer participation in the CFL program. In addition,
14 FirstEnergy would coordinate efforts with EISA and accelerate the early replacement and
15 removal of wasteful and inefficient lighting that is currently in operation in its Ohio
16 service territory. The sooner inefficient lighting in use now, in Ohio, is purged and
17 replaced with high efficiency equipment, the sooner customers will benefit and the
18 sooner FirstEnergy's system will benefit.

19 **PROPOSED FAST TRACK APPLIANCE RECYCLING PROGRAM**

20 **Q. What concerns do you have regarding the appliance recycling program?**

21 A. I see the merit of this program and believe it is well designed overall. However, I
22 believe that the proposed (initial six-month) incentive of \$75 for the refrigerator and
23 freezer is not needed to make this program successful. I believe it is reasonable to offer a

1 customer incentive of \$50 for the first six months and then \$35 after the initial period. It
2 is my understanding that other utilities in Ohio will be offering rebates in the range of
3 \$35. In my experience, I have seen rebate levels for the appliance turn-in of refrigerators
4 to be more in line with the \$35 range. To minimize customer confusion it may be useful
5 in the long run to coordinate these incentives with similar programs in Ohio.
6 FirstEnergy's proposed \$35 incentive level for refrigerators and freezers appears
7 reasonable.

8 **Q. Do you have suggestions regarding the design or implementation of the appliance**
9 **turn in program?**

10 A. Yes. FirstEnergy should conduct random, unannounced inspections of its recycling
11 contractor. This quality control function should be done to ensure that the affected
12 appliances are not finding their way back into operation in Ohio or elsewhere.

13 **Q. Do you have additional suggestions regarding the marketing of this program?**

14 A. Yes, in order to improve program effectiveness, FirstEnergy and its contractors should
15 develop marketing strategies targeted to customers who sign up for an appliance pick up
16 but change their mind and back out. This should be anticipated and special efforts should
17 be directed to customers who get cold feet.

18 **PROPOSED FAST TRACK C&I EQUIPMENT PROGRAM (LIGHTING)**

19 **Q. What concerns do you have regarding the C&I Lighting program?**

20 A. I believe this program has merit and should be approved. However, I believe the
21 modeling and analysis used inaccurate costs of lighting technology for this program.
22 After having reviewed the modeling that was done by FirstEnergy's program design
23 team, I believe that the costs of certain lighting measures and technologies were

1 estimated to be higher that is justifiable. The input values and technology costs were
2 apparently derived from the Ohio TRM, Michigan Demand Energy Measures Database,
3 California DEER and FirstEnergy's program design contractor database. For example,
4 the cost relied upon for T-8 lighting, four-foot, four-unit fixture is nearly \$150. However,
5 a non-decorative T-8, four light, four-foot fixture and bulbs can be obtained in Ohio for
6 slightly more than one-third of the cost analyzed.

7 **Q. Why do you think the costs used were too high?**

8 A. Upon my review of calculations done on the T-8 replacement technology, I noted that the
9 cost of the fixture and tubes appeared compared to be higher than normal. I called a
10 retailer in Ohio to check the cost of this equipment. They indicated that a non-decorative
11 T-8 light fixture with electronic ballast that would accommodate four, 48-inch, T-8
12 premium bulbs costs approximately \$50. To reflect that \$100 cost differential would
13 very likely move that program into a TRC range exceeding 1.0. Commercial lighting
14 programs are typically cost effective programs due to the energy use differential, long
15 hours of use, long useful life of measures, the market potential, applicability and the ease
16 of installation.

17 **Q. Do you have suggestions regarding the design or implementation of the C&I**
18 **Equipment Program (LIGHTING)?**

19 A. Yes. FirstEnergy needs to collect lighting technology data as it implements this program.
20 This will enable it to capture the actual costs of lighting equipment purchased and
21 installed in its service territory and to perform a more accurate analysis of the benefits
22 and costs of C&I lighting programs.

NEED FOR ADDITIONAL COST AND OPERATIONAL DATA IN DEVELOPING PROGRAMS

Q. Have you reviewed the modeling process that FirstEnergy uses to evaluate and predict the impacts of its programs?

A. Yes.

Q. Do you have concerns over the modeling process FirstEnergy uses?

A. Yes. I believe that more accurate cost and operational information needs to be developed for use in the analysis and design of energy efficiency programs by First Energy.

Q. The utility plans are based on technologies using the California Database for Energy Efficiency Resources (DEER database), DEMD, ACEEE information and in-house technology information. Is this adequate?

A. No. I believe that FirstEnergy and the Ohio utilities need to create or gain access to a revised technology database to better understand the costs and operating characteristics of various energy efficiency technology and program elements. This need not be done prior to initiating these programs; however, it should be conducted over the next several years to enhance planning for subsequent years.

FIRSTENERGY COLLABORATIVE PROCESS

Q. Do you believe that a stakeholder input/collaborative process would be useful in developing, implementing, and evaluating these energy efficiency and demand response programs?

A. Yes. A FirstEnergy collaborative working group should be an ongoing activity in Ohio with regularly scheduled meetings and full participation by interested parties. It is not very effective or useful to assemble a collaborative group sporadically and only in

1 response to serious program difficulties. A systematic process for the two-way exchange
2 of ideas needs to be developed to assist FirstEnergy program implementers to develop,
3 modify, and continuously refine programs.

4 **Q. How should an ongoing stakeholder collaborative process operate?**

5 A. Having been involved in a number of collaborative working groups, I have found that
6 ongoing stakeholder involvement is critical to the design, implementation, monitoring,
7 evaluation, modification, or elimination of ineffective programs or those no longer
8 needed. In light of the developments with the American Reinvestment and Recovery Act
9 (ARRA) and other federal developments, a meaningful stakeholder and public input
10 process is needed to enhance coordination. Initiatives such as the Energy Independence
11 Security Act (EISA), the National Energy Conservation Policy Act 2005 (NECPA) need
12 to be coordinated with the EE&PDR programs to improve implementation effectiveness
13 and customer acceptance.

14 **Q. What type of participants should be included and are there minimum standards or**
15 **requirements that should be accepted by a collaborative working group participant?**

16 A. Stakeholder participants should include any interested party who is willing take the time
17 and effort to participate actively in the stakeholder process. In order for the process to be
18 workable and useful, those who are on the collaborative work group need to agree; 1)
19 Demonstrate a commitment to the working group process by reviewing the pre-meeting
20 materials, 2) investing the time and effort and attend the meetings, and 3) participants
21 need to provide input and actively participate at the meetings.

22 **Q. What are your recommendations for the FirstEnergy collaborative going forward?**

1 A. I believe that the stakeholder group should meet at least quarterly. This group's objective
2 would be to make program improvements to existing programs, offer ideas to enhance
3 customer acceptance and marketing strategies, and to act as a sounding board to help sort
4 out implementation and coordination strategies. The collaborative process should not
5 simply be a series of presentations to the group but should allow for discussion and input
6 into the on-going implementation of the plan. The collaborative group could add value
7 by informing FirstEnergy implementers of current market conditions, new developments
8 e.g. new federal, state or local laws, product delivery and manufacturing problems. It
9 may also be useful in shaping marketing strategies, becoming aware of backlog problems
10 with related programs, etc. The collaborative group should be kept informed of budget,
11 cost recovery, and financial activities to assess whether any mid-course corrections are
12 needed. Recommendations resulting from the collaborative group would be advisory in
13 nature and non-binding on FirstEnergy; however, it would serve to assist program
14 implementers as they strive to implement the EE&PDR initiative.

15 SUMMARY

16 **Q. Could you please summarize your conclusions & recommendations regarding**
17 **FirstEnergy's proposed EE&PDR plan?**

18 A. Yes. A summary of my key issues are as follows:

- 19 • Increased emphasis needs to be placed on customer awareness of energy
20 efficiency and consumer education. Special efforts should be made to target
21 phantom load, entertainment systems, and plasma televisions and other household
22 uses of energy.

- Not enough SSL lighting technologies have been included in the proposed EE&PDR plan. Additional SSL technologies should be included in this plan and FirstEnergy should initiate a SSL Pilot to gain additional operational experience with interior and exterior SSL lighting systems in its service territory.
- The impacts resulting from the Energy Independence Security Act of 2007 (EISA), the National Energy Conservation Policy Act of 2005 (NECPA) and American Reinvestment and Recovery Act (ARRA) need to be integrated into the design, implementation and ongoing management of the EE&PDR.
- In addition to the creation and revision of the Ohio Technical Resource Manual (TRM), a detailed database needs to be developed by FirstEnergy. This energy efficiency and demand response technology and practices database will provide improved and more precise information on the costs and savings of energy efficiency measures and demand response technologies. This information is needed to evaluate programs included in the EE&PDR and will be useful in redesigning the existing programs (if appropriate) as well as developing new programs in the future.
- The Commission needs to ensure that appropriate accounting methodology, categorization and tracking of costs is done properly.
- The underlying technology costs and inputs for FirstEnergy's energy efficiency program design modeling are flawed and unacceptable. More accurate cost data needs to be acquired by FirstEnergy.

- 1 • The proposed incentive levels contained in the EE&PDR with respect to the
2 appliance turn in program needs adjustment and should not be authorized as
3 proposed.
- 4 • The proposed approach to evaluation, measurement and verification needs to be
5 modified especially with respect to the autonomy and independence of the EMV
6 team that will be hired by FirstEnergy. The PUCO needs to ensure that ratepayer
7 supported EMV contractors are autonomous and independent.
- 8 • The FirstEnergy EMV contractor needs to closely coordinate with the statewide
9 implementation program evaluator and jointly establish protocols, procedures,
10 data collection, tracking formats and report formats, etc. to minimize
11 inefficiencies and duplication of effort.
- 12 • Mitigation of any potential environmental damages from the disposal of CFL's
13 and fluorescent lighting needs to be explicitly addressed and effectively handled
14 by FirstEnergy as the programs are implemented.
- 15 • An effective, on-going stakeholder process is needed to enhance the
16 implementation of FirstEnergy's EE&PDR. Such a process would assist in
17 coordinating related activities in the State.

18 **Q. Does this complete your testimony?**

19 **A. Yes.**

Geoffrey C. Crandall

Vice President and Principal

EDUCATION

B.S. in Business and Pre-Law, Western Michigan University, 1974.

Mr. Crandall has also completed courses at Michigan State University Graduate School, the University of Wisconsin-Madison and Wayne State University, in areas of federal taxation, accounting, management and the economics of utility regulation. Mr. Crandall also completed the examination for the National Conference of States on Building Codes and Standards Energy Auditor.

EXPERIENCE

Mr. Crandall joined MSB in January 1990. He specializes in residential and low-income issues, the impact of energy efficiency and utility restructuring on customers. Mr. Crandall has addressed issues related to energy efficiency and residential customers and utility restructuring in California, New York, Colorado, Iowa, and Michigan. He has analyzed and/or designed energy efficiency programs for residential customers in Michigan, Georgia, Wisconsin, Arizona, and New Orleans, and has conducted workshops on low-income restructuring and energy efficiency issues in over 20 states, including Washington, Hawaii, Nevada, Kansas, Michigan, Rhode Island, California, Virginia, and New Orleans. In the energy efficiency area, Mr. Crandall has analyzed and proposed modifications to utility demand-side programs in the states of Arizona, Georgia, Hawaii, Illinois, Maine, Michigan, Minnesota, North Carolina, Ohio, Pennsylvania, Utah, Washington State, California, Iowa, Montana, Colorado, Missouri, Virginia, Wisconsin, and Washington D.C.

Prior to joining MSB, Mr. Crandall was employed by the Michigan Public Service Commission from 1974 through 1989, where he served as the Director of the Demand-Side Management Division. He was responsible for the development, implementation and monitoring of government- and utility-sponsored demand-side management, energy-efficiency and conservation policies and programs. These activities involved customers in the residential, commercial, industrial and institutional sectors. He was responsible for both pilot and full-scale programs, and conducted demand-side program design and implementation. Mr. Crandall is familiar with marketing strategies, segmentation and market-penetration analyses, as well as the implementation of successful demand-side programs.

Mr. Crandall has dealt with a wide variety of regulatory issues beyond energy conservation, including utility diversification, non-traditional regulatory concepts, incentive regulation, utility billing practices, utility power plant maintenance and management of plant outages.

Mr. Crandall served as Chair of the NARUC Energy Conservation Staff Subcommittee from 1986-1989. He has lectured and made presentations to many groups on demand-side programs and least-cost planning, including two NARUC-sponsored least-cost planning conferences; the 1990 NARUC Regional Workshops on Least-Cost Utility Planning in Newport, Rhode Island and Little Rock, Arkansas; the Wisconsin Public Service Commission's Integrated Resource Planning Workshop; the 1988, 1989, and 1990 Michigan State University Graduate School of Public Utilities and the U.S. Department of Energy.

Mr. Crandall has testified before the: United States Congress, Michigan Legislature, Michigan Public Service Commission, North Carolina Utilities Commission, Public Service Commission of the District of Columbia, Illinois Commerce Commission, Maine Public Utilities Commission, Massachusetts Department of Public Utilities, Public Service Commission of Hawaii, Minnesota Public Service Commission, Iowa Public Service Commission, Georgia Public Service Commission, Public Utility Commission of Ohio, Virginia Public Service Commission, Wisconsin Public Service Commission, and the City Council of the City of New Orleans, Louisiana.

Mr. Crandall has written several articles published in the Public Utilities Fortnightly and Electricity Journal, Natural Gas Magazine, and a number of proceedings for the Biennial Regulatory Information Conference and the American Council for an Energy-Efficient Economy.

TESTIMONY

Case No. U-5531, (8/77), Consumers' Power Company electric rate increase application. Mr. Crandall served as the Staff Witness and recommended that the Applicant initiate the Residential Electric Customers' Information program.

Case No. U-6743, (3/81), Michigan Consolidated Gas Company. Mr. Crandall served as the Staff policy witness and recommended that the Commission approve a surcharge to cover all reasonable and prudent costs associated with Applicant's implementation of the Michigan Residential Conservation Services Program.

Case No. U-6819, (6/81), Michigan Power Company-Gas. Mr. Crandall served as the Staff policy witness and described the basis for the program and the expected level of activity, recommending that the Commission approve a surcharge to cover all reasonable and prudent costs associated with Applicant's implementation of the Michigan Residential Conservation Service Program.

Case No. U-6787, (6/81), Michigan Gas Utilities Company. Served as the Staff policy witness and described the basis for the program and the expected level of activity, recommending that the Commission approve a surcharge to cover all reasonable and prudent costs associated with the implementation of the Michigan Residential Conservation Service Program.

Case No. U-6820, (6/81), Michigan Power Company-Electric. Served as the Staff policy witness and reviewed the Applicant's request to operate the Michigan Residential Conservation Service Program. Although not mandated by federal law, Applicant chose to operate the program in conjunction with its other services offered to residential gas customers. Recommended the establishment of a surcharge to cover all reasonable and prudent costs associated with the operation of that program.

Case No. U-5451-R (10/82), Michigan Consolidated Gas Company. Served as the Staff policy witness and described the Staff's position regarding Applicant's proposed adjustment of surcharge level. Recommended that the eligibility criteria for customers be adjusted to more accurately reflect proper fuel consumption and to include customers who would be likely to realize a seven-year return on their investment by installing flue-modification devices in conjunction with Applicant's financing program.

Case No. U-6743-R, (10/82), Michigan Consolidated Gas Company. Served as the Staff policy witness regarding the Applicant's proposed expenses and revenues, as well as the reasonableness of activity and expense levels in the company's projected period.

Case No. U-7341 (12/84), Detroit Edison Company, Request for Authority for Certain Non-Utility Business Activities. Represented the Staff's position during settlement discussions and sponsored the settlement agreement.

Case No. U-6787-R, (3/84), Michigan Gas Utilities Company. Served as the Staff witness regarding the Applicant's proposed expenses and revenues. This also included a review of the company's future expenses associated with the Energy Assurance Program, the Specialized Unemployed Energy Analyses, and the Michigan Business Energy Efficiency Program expenses.

Case No. U-8528, (3/87), Commission's Own Motion on the Costs, Benefits, Goals and Objectives of Michigan's Utility Conservation Programs. Represented the Staff on the costs and savings of conservation programs and the other benefits of existing programs, and described alternative actions available to the Commission relative to future energy-conservation programs and services and other conservation policy matters.

Case No. U-8871, et al., (4/88), Midland Cogeneration Venture Limited Partnership. For approval of capacity charges contained in a power-purchase agreement with Consumers' Power Company. Served as the Staff witness on Michigan conservation potential and reasonably achievable programs that could be operated by Consumers' Power Company, and testified to the potential impact of these conservation programs on the Company's request for use of its converted nuclear plant cogeneration project. Also recommended levels of demand-side management potential for the commercial, industrial and institutional sectors in Consumers' Power service territory.

Case No. U-9172, (1/89), Consumers' Power Company, Power-Supply Cost-Recovery Plan and Authorization of Monthly Power-Supply Cost-Recovery Factors for 1989. Served as Staff witness on the conservation potential and reasonably achievable programs that could be operated by Consumers' Power Company. Testified to the potential impact of these conservation programs

on the Company's fuel and purchase practices, its five-year forecast and the fuel factor. Recommended levels of demand-side management potential for the commercial, industrial and institutional sectors in Consumers' Power service territory as an offset to its more-expensive outside and internally generated power. Suggested that CPCO vigorously pursue conservation, demand-side management research, and planning and program implementation.

Case No. U-9263, (4/89), Consumers' Power Company Request to Amend its Gas Rate Schedule to Modify its Rule on Central Metering. Served as a Staff witness on the conservation effect of converting from individual metered apartments to a master meter. Suggested that the Commission continue its moratorium on the master meters, due to the adverse energy-conservation and efficiency impact.

Case No. E-100 (1/90) North Carolina Public Service Commission proceeding on review of the Duke Power Company's least-cost utility plan. Testified on behalf of the North Carolina Consumers' Council regarding utility energy-efficiency and demand-side management programs and the concept of profitability and implementation of demand-side management programs.

Case No. 889 (1/90) Public Service Commission of the District of Columbia. Testified on behalf of the Government of the District of Columbia in the Potomac Electric Power Company's application for an increase in its retail rates (general rate case). Sponsored testimony regarding the design and implementation and overall appropriateness of PEPCO's existing and proposed energy-efficiency and conservation programs.

Case No. 889 (4/90) Public Service Commission of the District of Columbia. Provided supplemental direct testimony and testified on behalf of the Government of the District of Columbia in the Potomac Electric Power Company's application for an increase in its retail rates (general rate case). Offered supplemental testimony regarding a more detailed review of PEPCO's existing pilot and full-scale energy-efficiency and conservation programs. Offered suggestions and recommendations for a future direction for PEPCO to pursue in order to implement more cost-effective and higher-impact energy-efficiency and conservation programs.

Case No. ICC Docket 90-004 and 90-0041 (6/90) Illinois Commerce Commission proceeding to adopt an electric-energy plan for Central Illinois Light Company (CILCO). Testified on behalf of the State of Illinois, Office of Public Counsel and the Small-Business Utility Advocate. Reviewed the CILCO electric least-cost plan filing and the conservation and load-management programs proposed in its filing. Sponsored testimony regarding my analysis of the proposed programs, and offered alternative programs for the Company's and the Commission's consideration.

Case No. D.P.U. 90-55 (6/90) Commonwealth of Massachusetts Department of Public Utilities. Testified on behalf of the Commonwealth of Massachusetts, Division of Energy Resources. Reviewed and analyzed Boston Gas' proposed energy-conservation programs that were submitted for pre-approval in its main rate case. In addition, suggested that it might consider implementation of other natural-gas energy-efficiency programs, and not award an economic incentive for energy-efficiency and conservation programs until minimum program-implementation standards are satisfied.

Case No. U-9346 (6/90) Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency Association. Reviewed and analyzed the Consumers' Power Company rate-case filing related to energy-efficiency and demand-side management programs. Proposed alternative energy-efficiency programs and recommended program budgets and a cost-recovery mechanism.

Case No. 89-193; 89-194; 89-195; and 90-001 (6/90) Maine Public Utilities Commission. Testified on behalf of the Maine Public Advocate's Office. Reviewed the appropriateness of Bangor Hydro-Electric Company's existing energy-efficiency and demand-side management programs in the context of BHE's main rate case and request for approval to construct the Basin Mills Hydro-Electric dam. Reviewed the overall resource plan and suggested alternative programs to strengthen the energy-efficiency and demand-side management resource efforts.

Case No. 6617 (4/91) Hawaii Public Utility Commission. Testified on behalf of the Hawaii Division of Consumer Advocacy. Described what demand-side management resources are, why they should be included in the integrated resource planning process, and proposed the implementation of several pilot projects in Hawaii along with guidelines for the pilot programs.

Case No. E002/GR-91-001 (5/91) Minnesota Public Utilities Commission. Testified on behalf of Minnesotans for an Energy Efficient Economy. Assessed the DSM programs being operated or proposed by Northern States Power Company and made recommendations as to ways in which NSP could improve its DSM efforts.

Case No. 905 (6/91) Public Service Commission of the District of Columbia. Testified on behalf of the District of Columbia Energy Office. Responded to the energy-efficiency and load management aspects of Potomac Electric Company's filing and made several recommendations for DC-PSC action.

Case No. 6690-UR-106 (9/91) Public Service Commission of Wisconsin. Testified on behalf of The Citizens' Utility Board of Wisconsin. Assessed the DSM programs being operated or proposed by the Wisconsin Public Service Corporation, made recommendations as to the WPSCO energy efficiency programs, and suggested ways the company could improve its DSM efforts.

Case No. E002/CN-91-19 (12/91) Minnesota Public Utilities Commission. Testified on behalf of Minnesota Department of Public Service. Assessed the DSM potential and programs being operated or proposed by Northern States Power Company and made recommendations as to the potential for energy efficiency in the NSP service territory and ways in which NSP could improve its DSM efforts.

Case No. 912 (4/92) Public Service Commission of the District of Columbia. Testified on behalf of the Government of the District of Columbia in the Potomac Electric Power Company's application for an increase in its retail rates for the sale of electric energy. Testified regarding the reasonableness of DSM and EUM policy changes, the cost allocation of the DSM and EUM expenses, an examination of the prudence of management regarding the energy-efficiency

programs, and an examination of the appropriateness of the costs associated with energy-efficiency programs.

Case No. PUE 910050 (5/92) Virginia State Corporation Commission. Testified on behalf of the Citizens for the Preservation of Craig County regarding the need for the Wyoming-Cloverdale 765 kV transmission line. Specifically, addressed the adequacy of the DSM planning of Appalachian Power Company and Virginia Power/North Carolina Power. Made recommendations as to APCO and VEPCO's energy efficiency programs, and suggested ways the company could improve its DSM efforts.

Case EEP-91-8 (5/92). Iowa Utilities Board. Testified on behalf of the Izaak Walton League concerning the adequacy of Iowa Public Service Company's Energy Efficiency Plan. Reviewed the plan and suggested modifications to it.

Case No. 4131-U and 4134-U (5/92). Georgia Public Service Commission. Testified on behalf of the Georgia Public Service Commission staff regarding the demand-side management portions of Georgia Power Company's and Savannah Electric and Power Company's Integrated Resource Plans. Testimony demonstrated that it is reasonable for the Commission to expect that the utilities can successfully secure substantial amounts of demand-side management resources by working effectively with customers.

Case 917 (8/92). Public Service Commission of the District of Columbia. Testified on behalf of the District of Columbia Energy Office in hearings on Potomac Electric Power Company's Integrated Resource Planning process. Addressed a number of program-specific issues related to PEPCO's demand-side management efforts.

Case No. 4132-U, 4133-U, 4135-U, 4136-U (10/92). Georgia Public Service Commission. Testified on behalf of the Staff Adversary IRP Team of the Georgia PSC. Provided a critique of Georgia Power Company's and Savannah Electric and Power Company's proposed residential and small commercial DSM programs.

Case No. 4135-U (3/93). Georgia Public Service Commission. Testified on behalf of the Staff Adversary IRP Team of the Georgia PSC. Provided a critique of Savannah Electric and Power Company's proposed Commercial and Industrial DSM programs.

Case No. R-0000-93-052 (12/93). Arizona Corporation Commission. Testified on behalf of the Arizona Community Action Association. Critiqued and made recommendations regarding the integrated resource plans and demand-side management programs of Arizona Public Service Company and Tucson Electric Power Company.

Case No. 934 (4/94). Public Service Commission of the District of Columbia. Filed testimony on behalf of the District of Columbia Energy Office in hearings concerning the Washington Gas Light Company (WGL) general rate case application to increase existing rates and charges for gas service. Testimony involved critiquing and reviewing WGL's least cost planning efforts and integration of DSM, marketing and gas supply efforts.

Case No. U-10640 (10/94). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency Association concerning the need to integrate DSM and load promotion analysis into MichCon's GCR planning process.

Case No. 05-EP-7 (3/95). Wisconsin Public Service Commission. Testified on behalf of the Citizens' Utility Board on level of utility DSM and program designs and strategies.

Case No. 05-EP-7 (3/95). Wisconsin Public Service Commission. Testified on behalf of the Wisconsin Community Action Program Association on low-income customers and utility DSM programs.

Case No. TVA 2020-IRP (9/95). Tennessee Valley Authority. Testified on behalf of the Tennessee Valley Energy Reform Coalition. Assessed, critiqued and made recommendations regarding the integrated resource plans and demand-side management programs proposed by the Tennessee Valley Authority.

Case No. R-96-1 (10/95). Alaska Public Utilities Commission. Testified on behalf of the Alaska Weatherization Directors Association regarding the proposed standards and guidelines for integrated resource planning and energy efficiency initiatives under consideration in Alaska.

Case No. D95.9.128 (2/96). Montana Public Service Commission. Testified on behalf of the District XI Human Resources Council concerning the low-income energy efficiency programs offered by the Montana Power Company.

Case No. DPSC Docket No. 95-172 (5/96). Delaware Public Service Commission. Prepared draft testimony on behalf of the Low-Income Energy Consumer Interest Group regarding Delmarva Power & Light Company's application to revise its demand-side programs. The case was settled, with LIECIG obtaining funding for low-income energy efficiency programs, prior to testimony.

Case No. U-11076 (8/96). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Michigan Jobs Commission's recommendations regarding electric and gas reform. Discussed the implications of utility restructuring and the needs of residential and low-income households, and proposed regulatory and industry solutions.

Case No. 96-E-0897 (3/97). New York Public Service Commission. Prepared draft testimony for New York's Association for Energy Affordability regarding the impact of proposed utility restructuring plans on low-income customers. The case was settled in Spring 1997.

Case No. R-00973954 (7/97). Pennsylvania Public Utilities Commission. Testified on behalf of the Commission on Economic Opportunity regarding the economics of demand-side measures and programs proposed for implementation by Pennsylvania Power & Light Company.

Case No. 98-07-037 (7/98) California Public Utilities Commission. Testified on the California Alternative Rates for Energy and the Low Income Energy Efficiency programs regarding the

implementation and adoption of revisions to these programs necessitated by the AB 1890 and the Low Income Governing Board.

Case No. U-12613 (3/01). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Wisconsin Public Service Corporation application to implement PA 141 the electricity deregulation law. I reviewed the portions of the filing related to their provision of electric energy efficiency and load management.

Case No. U-12649 (3/01). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Wisconsin Electric Power Company and the Edison Sault Electric Company application to implement PA 141 Michigan's electricity deregulation law. I reviewed the portions of the filing related to their provision of electric energy efficiency and load management.

Case No. U-12651 (3/01). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Northern States Power Company – Wisconsin application to implement PA 141 the electricity deregulation law. I reviewed the portions of the filing related to their provision of electric energy efficiency and load management.

Case No. U-12652 (3/01). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Indiana Michigan Power Company d/b/a American Electric Power application to implement PA 141 the electricity deregulation law. I reviewed the portions of the filing related to their provision of electric energy efficiency and load management.

Case No. U-12725 (4/01). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Wisconsin Electric Power Company and the Edison Sault Electric Company application to increase its residential rates. I reviewed the portions of the filing related to their provision of electric energy efficiency and load management and recommended a significant increase in these activities.

Case No. U-13060 (12/01). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Michigan Consolidated Gas Company application for Approval of their Gas Cost Recovery Plan and Five-Year gas Forecast. I reviewed the filing and recommended the Commission reject the proposed GCR factor and suggested continuation of the existing GCR factor or adopt an adjusted MCAAA sponsored GCR factor. I also suggested a set-aside allocation be designated for low-income customers to ensure access to alternative gas providers under the applicant's customer choice program.

Case No. 6690-UR-114 (9/02). Wisconsin Public Service Commission. Testified on behalf of the Citizens Utility Board regarding the Wisconsin Public Service Corporation application to increase its electric and natural gas rates. I reviewed the portions of the filing related to their low-income assistance/weatherization and the proposed executive compensation incentive plan.

Case No. U-14401 (04/05). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Michigan Consolidated Gas Company application for Approval of their Gas Cost Recovery Plan and Five-Year gas Forecast. I reviewed the filing and recommended the Commission reject the proposed plan and suggested initiation of strategies that would lower the need to acquire expensive and unnecessary gas supplies.

Case No. U-14401-R (10/05). Michigan Public Service Commission. Testified on behalf of the Michigan Community Action Agency regarding the Michigan Consolidated Gas Company application re-opener Approval of their Gas Cost Recovery Plan and Five-Year gas Forecast. I reviewed the filing and recommended the Commission reject the proposed plan and suggested initiation of strategies that would lower the need to acquire expensive and unnecessary gas supplies.

Case No. U-14701 (02/06) Michigan Public Service Commission. Testified on behalf of the Michigan Environmental Council and The Public Interest Group In Michigan regarding the Consumers Energy Company application for Approval of a Power Supply Cost Recovery Plan and for Authorization of Monthly Power Supply Cost Recovery Factors for Calendar Year 2006. I reviewed the filing including the application, testimony, exhibits, discovery responses and submitted testimony recommending that the Commission not approve the five-year PSCR plan as filed due to the impacts related to the Palisades sale and the absence of alternative resources in the projected five-year resource portfolio.

Case No. U-14702 (02/06) Michigan Public Service Commission. Testified on behalf of the Michigan Environmental Council and The Public Interest Group In Michigan regarding The Detroit Edison Company application for authority to implement a Power Supply Cost Recovery Plan in its rate schedules for 2006 metered jurisdictional sales of electricity. I reviewed the application, testimony, exhibits and submitted testimony that recommended that the Commission not approve the proposed five-year PSCR plan as filed due because it was deficient in its selection of alternative resources in the projected five-year resource portfolio.

Case No. U-14992 (12/06) Michigan Public Service Commission. Testified on behalf of the Michigan Environmental Council and The Public Interest Group In Michigan regarding The Consumers Energy Company application for approval of the proposed Power Purchase Agreement in connection with the sale of the Palisades Nuclear Power Plant and other assets. The purpose of my testimony was to address the overall soundness of this application and proposal. I reviewed the application, testimony, exhibits and submitted testimony that recommended that the Commission not approve the proposed purchase power agreement and transfer the ownership of the nuclear plant and other assets.

Case No. 06-0800 Illinois Commerce Commission (3/07). Provided testimony on behalf of the Illinois Citizens Utility Board regarding the Illinois electricity resource auction process. I assessed the existing resource/power supply auction based bidding process and recommended modifications and improvements to the Illinois resource acquisition mechanism.

Case No. 24505-U (5/07). Georgia Public Service Commission. Testified on behalf of the Georgia Public Service Commission Advocacy staff regarding the demand-side management portions of Georgia Power Company's Integrated Resource Plans. Testimony demonstrated that it is reasonable for the Commission to approve the five proposed DSM programs and expect that Georgia Power can successfully secure considerably more demand-side management resources by working effectively with its customers.

Case No. U-14992 (11/07) Michigan Public Service Commission. Testified on behalf of the Michigan Environmental Council and The Public Interest Group In Michigan regarding The Consumers Energy Company rate application for approval a rate increase and the recovery of energy efficiency programs and certain costs in connection with the sale of the Palisades Nuclear Power Plant and other assets. I reviewed the application, testimony, exhibits and submitted testimony that recommended that the Commission not approve the recovery of transaction costs involving the transfer the ownership of the nuclear plant and other assets and on various aspects of its proposed energy efficiency programs and proposed incentives.

Case No. 07-0540 (12/07) Illinois Commerce Commission. Provided testimony on behalf of the Environmental Law and Policy Center regarding the Commonwealth Edison Company application for approval of its proposed Energy Efficiency and Demand Response Plan. I assessed the proposed energy efficiency and demand response plan and recommended modifications and improvements to the proposed plan filing.

Case No. 07-0539 (12/07) Illinois Commerce Commission. Provided testimony on behalf of the Environmental Law and Policy Center regarding the Central Illinois Light Company d/b/a and Ameren CIPS CENTRAL ILLINOIS PUBLIC SERVICE COMPANY and Ameren CIPS ILLINOIS POWER COMPANY d/b/a Ameren IP application for approval of its proposed Energy Efficiency and Demand Response Plan. I assessed the proposed energy efficiency and demand response plan and recommended modifications and improvements to the proposed plan filing.

Case No. U-15415 (2/08) Michigan Public Service Commission. Testified on behalf of the American Association of Retired People regarding The Consumers Power Company application for approval for authority to implement a Purchase Power recovery plan, 5-year forecast, and monthly PSCR factors for the 12-month period calendar year 2008. I reviewed the application, testimony, exhibits and submitted testimony that recommended that the Commission adopt a more effective and less expensive resource acquisition procedure to help keep the cost of energy down in Michigan.

Case No. U-15417 (4/08) Michigan Public Service Commission. Provided testimony on behalf of the American Association of Retired People regarding The Detroit Edison Company for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedule for 2008 Metered Jurisdictional Sales of Electricity. I reviewed the application, testimony, exhibits and submitted testimony that recommended that the Commission adopt a more effective and less expensive resource acquisition procedure to help keep the cost of energy down in Michigan.

Case No. U-15244 (7/08) Michigan Public Service Commission. Provided testimony on behalf of the Michigan Environmental Council and The Public Interest Group In Michigan regarding The Detroit Edison Company request for Authority to increase rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority. I reviewed the application, testimony, exhibits and submitted testimony that recommended that the Commission direct DECO to make modifications to its Integrate Resource Planning analysis.

Case No. EEP-08-2 (7-08) Iowa Public Utilities Board. Provided testimony on behalf of the environmental interveners regarding the request of the Mid American Energy Company for approval of an Energy Efficiency Plan. I made an assessment of the proposed energy efficiency and demand response plan and recommended modifications and improvements to the implementation strategy and proposed programs.

Case No. EEP-08-1 (8-08) Iowa Public Utilities Board. Provided testimony on behalf of the environmental interveners regarding the Interstate Power and Light Company request for approval of an Energy Efficiency Plan. I made an assessment of the proposed energy efficiency and demand response plan and recommended modifications and improvements to the proposed programs and implementation strategy.

Case No. 137-CE-147 (2-09) Public Service Commission of Wisconsin. Provided testimony on behalf of PRESERVE OUR RURAL LANDS regarding the Application of American Transmission Company, as an Electric Public Utility, to Construct a new 345 kV Line from the Rockdale Substation to the West Middleton Substation, Dane County, Wisconsin. I suggested modifications of the proposal and rejection of the approval of the line.

Case No. M2009-2093218 (8-09) Pennsylvania Public Utility Commission. Provided testimony on behalf of The Office Of Consumer Advocate regarding the West Penn Power Company d/b/a Allegheny Power Energy Efficiency and Conservation Plan request for plan approval. I analyzed the proposed plan and made an assessment of the proposed energy efficiency and demand response and cost recovery plan. I suggested modifications and improvements to the proposed programs as well as the proposed implementation strategy.

In addition, I have served the following public sector clients since 1990.

Client	Nature of Service
Alaska Housing Finance Corporation	Analysis of energy efficiency, system planning and applicability of EPA standards to Alaska resource selection process.
California Low Income	In conjunction with AB 1890 the state's restructuring statute

Governing Board	provided analyses of options to deliver energy efficiency and assistance programs to low-income households in a restructured utility environment. Assisted the CPUC and Low Income Governing Board in developing low-income energy assistance and energy efficiency programs, implementation methods and procedures under interim utility administration.
Conservation Law Foundation of New England	Provided technical support to the collaborative working groups with Boston Edison, United Illuminating, Eastern Utilities Association, and Nantucket Electric regarding system planning approaches, energy efficiency programs and resource screening.
District of Columbia Energy Office	Analysis of DC Natural Gas' and PEPCo's integrated resource planning and demand side management programs.
District of Columbia Public Service Commission	Testimony regarding demand-side management, least cost planning principles.
Germantown Settlement, Philadelphia	Analysis and technical support regarding business structure and market to aggregate load and/or provide energy efficiency and energy assistance services to low-income households.
Hawaii Division of Consumer Advocacy	Developed demand-side management programs and integrated resource planning rules.
Iowa Department of Natural Resources	Developed and implemented workshops to train building operators and architects in energy efficiency and renewable energy resource opportunities.
Public Interest Research Group In Michigan	Principal investigator and project manager for the "Lessons Learned: Michigan Electricity Restructuring Report"
Maryland Public Service Commission	Reviewed demand-side management programs and impact and process evaluation methods and suggested improvements.

Massachusetts Division of Energy Resources	Analysis of Boston Gas Co. integrated resource plans and residential energy efficiency programs. Analysis of Boston Gas's commercial and industrial energy efficiency programs
City of New Orleans	Developed least cost planning rules, guided a public working group to develop demand-side programs, and developed a low income, senior citizens energy efficiency program.
Oak Ridge National Laboratory	Prepared an economic analysis of the customer impact from various electricity restructuring configurations for the State of Ohio
Ohio Office of Consumer Council	Analyzed two utilities' long-range plans and energy efficiency resource options. Analyzed the Dominion East Gas Company application to be relieved of the merchant function.
Ontario Energy Board	Developed demand-side management programs and evaluated need for natural gas integrated resource planning rules.
Pennsylvania Office of Consumer Advocate	Evaluated demand-side management programs for several electric utilities.
Upper Peninsula Power Company	Provided technical training, technical and achievable energy efficiency potential analysis and developed a specific and geographically tailored low income, senior citizens energy efficiency program.
U.S. Environmental Protection Agency	Developed handbook, "Energy Efficiency and Renewable Energy: Opportunities from Title IV of the Clean Air Act", which focuses on how energy efficiency and renewables relate to acid rain compliance strategies.
U.S. Environmental Protection Agency and U.S. Department of Energy	Analyzed and compared utility supply- and demand-side resource selection for Clean Air Act compliance on the Pennsylvania-New Jersey-Maryland (PJM) interconnection.
Utah Department of Commerce	Analysis of the PacifiCorp proposed Demand-Side Management Tariff Schedule.

Vermont Public Service Board	Analysis of the prudence of Green Mountain Power's planning and management of the Hydro-Quebec power purchase.
Washington State Weatherization Directors	Natural Gas energy conservation program design involving Cascade Natural Gas Company



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

September 3, 2009

Dear ENERGY STAR® TV Partner or Other Interested Stakeholder:

The U.S. Environmental Protection Agency (EPA) is pleased to provide you with the final ENERGY STAR Version 4.0 and 5.0 Television (TV) specifications. This letter lays out the Agency's final decisions regarding these new requirements and outlines the general process for qualifying products using these new requirements.

Versions 4.0 and 5.0 requirements will become effective on May 1, 2010 and May 1, 2012 respectively. TVs qualifying for ENERGY STAR under the Version 4.0 specification will offer consumers a savings of more than 40 percent. When the Version 5.0 specification goes into effect, ENERGY STAR qualified TVs will be as much as 65 percent more efficient than models currently on the market. These requirements establish challenging On Mode power consumption levels, take steps to ensure a TV is viewed in the mode in which it qualified for ENERGY STAR so consumer savings are realized, and curb power associated with downloading program guide data.

These specifications were developed through a process that included release of three draft specifications, along with supporting documents such as proposals specific to DAM, luminance, and hospitality TVs, six stakeholder meetings, and input from stakeholders. The enclosed Comment Response document contains a summary of comments received in response to the draft final specification and an explanation of EPA's response in each case. Stakeholder comments, previous drafts of the specification, and related materials are available on EPA's ENERGY STAR Web site at www.energystar.gov/RevisedSpecs. Click on the "Televisions" link.

The Versions 4.0 and 5.0 On Mode requirements remain unchanged from the proposed levels in the final draft specification. EPA received little additional input on the proposed 4.0 requirements. After weighing carefully all input specific to the proposed 5.0 requirement, EPA has decided to proceed with a requirement that TVs greater than 50 inches in size meet the same On Mode requirements as a screen of 50 inches – 108 watts.

EPA's decision is largely due to an issue that is present in several ENERGY STAR program areas and needs to be addressed to maintain the integrity of the ENERGY STAR label and program. The issue in this case is what TV sizes can the federal government credibly designate as preferable from an energy and environmental perspective. This has become an important issue as the sizes of TVs and energy use continue to grow. To address this issue, EPA considered limiting the TV-size eligible for the ENERGY STAR label to 50 inch TVs or smaller. The proposed energy consumption level for TVs larger than 50 inches arose out of the recognition that if these larger TVs could meet limits associated with a 50 inch TV, excluding them would be unwarranted.

Consistent with this rationale, EPA accepts the potential that there may be more limited selection of ENERGY STAR products in the largest of screen sizes under Version 5.0. Further, EPA knows that there will be some availability of products with these screen sizes; there is already qualifying product in TV sizes greater than 50 inches, and we expect that the number of products that will meet the 5.0 requirements will only grow between now and 2012.

EPA is committed to tracking this market carefully and revisiting the Version 5.0 requirements before they go into effect if the selection of qualifying models raises questions regarding the impact of the label. As appropriate, EPA will reconsider manufacturers' proposals or any new input at that time.

Key changes to the Versions 4.0 and 5.0 specifications since the final draft are summarized below:

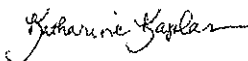
- **Luminance Testing:** Based on input from stakeholders, EPA is accepting industry's proposal for measuring luminance to provide greater clarity and precision. The final test procedure includes use of the three bar video signal provided in IEC 62087 Ed. 2, Section 11.5.5. The test method includes additional guidance on conducting the measurements immediately following On Mode power testing and includes a 10-minute stabilization period before each luminance measurement (e.g., home and retail).
- **Download Acquisition Mode (DAM):** Based on input EPA has received from TV manufacturers and content providers, EPA has removed the language in the Final specification that DAM must be disabled upon shipping and can only be enabled by a user activating the feature. EPA will continue to require that any TV with DAM must meet the energy requirement when in DAM, regardless of whether the feature is enabled upon shipping. All other aspects DAM requirements remain unchanged from those in the draft final specifications. EPA will continue to track the DAM trends closely.
 - **DAM Testing:** To allow additional time for creating a test procedure for measuring DAM, EPA will facilitate development of the test procedure through the coming few months. This effort will continue building on the concepts and requirements discussed on the July 30 stakeholder conference call and outlined in previous drafts of the specification. EPA will seek comment on a next draft of the DAM test method with set-up requirements and a test stream after receipt of additional information from interested stakeholders, ideally in late September. Once final, EPA will amend the Version 4.0 and 5.0 specifications to include this refined testing language.
- **CEA-2037:** EPA has incorporated draft CEA-2037 in the specification to provide additional clarification on using IEC 62087, Ed. 2.0, Section 11 for measuring TV On Mode power, pending its finalization. EPA believes that doing so helps to further domestic harmonization of TV testing (i.e., by regulators and voluntary programs). EPA recognizes that CEA-2037 became available later in the specification development process, and thus ENERGY STAR stakeholders had more limited ability to comment on this testing standard. Therefore, EPA will share comments the Agency receives on this standard with CEA and request that they be considered. EPA will make every effort to keep stakeholders informed of changes to this document as it moves to finalization.

In the coming months, EPA will provide stakeholders with instructions that explain how to become, or continue, as an ENERGY STAR Television partner as the new specifications go into effect. Once the Version 4.0 specification is in effect on May 1, 2010, the process to qualify televisions will be generally consistent with what was in place for Version 3.0, with an active manufacturer partnership being required and data collected through the Online Product Submittal (OPS) tool at www.energystar.gov/ops. In early 2010, EPA will work to revise the OPS system to accept data for the product categories in the specification.

EPA thanks stakeholders who provided feedback during the specification revision process and looks forward to working with you as you qualify and market your energy-efficient televisions. If you have any questions or concerns about the specification or partnership process, please feel free to contact me at (202) 343-9120 or kaplan.katharine@epa.gov.

Thank you for your continued support of ENERGY STAR.

Best Regards,



Katharine Kaplan, U.S. EPA
ENERGY STAR for Consumer Electronics

For Immediate Release: November 18, 2009
Media Contact: Adam Gottlieb - 916-654-4989

California Approves New Energy Efficient TV Regulations

First in the Nation Standard Will Save Consumers \$8.1 Billion Over 10 Years

Sacramento – In an historic and unanimous 5-0 vote, the California Energy Commission today approved the nation's first energy efficiency standards for televisions. When these standards are implemented in 2011, new TVs sold in California will be the most energy efficient in the nation. After ten years, the commission estimates the regulations will save \$8.1 billion in energy costs and save enough energy to power 864,000 single-family homes.

"The real winners of these new TV energy efficiencies are California consumers who will be saving billions of dollars and conserving energy while preserving their choice to buy any size or type of TV. Californians buy four million televisions each year and they deserve the most energy efficient models available," said Energy Commission Chairman Karen Douglas.

The technology neutral standards mandate that new televisions sold in California should consume 33 percent less electricity by 2011 and 49 percent less electricity by 2013. The standards affect only those TVs with a screen size 58 inches or smaller. For example, a 42-inch screen would consume 183 watts or less by 2011 and 115 watts or less by 2013. Pacific Gas & Electric estimates that over a decade the standards will reduce CO2 emissions by three million metric tons.

More than 1,000 TV models on the market today already meet the 2011 standards and cost no more than less-efficient sets. The regulations will not affect existing televisions that consumers already own or the TVs currently on retail store shelves. Stores will not be prohibited from selling existing stock of older televisions after the standards go into effect.

The Energy Commission began working on TV energy efficiency standards in January 2007. Since then, the Commission's staff collaborated with a variety of stakeholders including major statewide utility companies, the environmental community, TV industry groups and retailers, and consumer groups in an open public process to develop these regulations. Supporters include: Pacific Gas & Electric, San Diego Gas & Electric, Southern California Edison, Sacramento Municipal Utility District, the Natural Resources Defense Council, Union of Concerned Scientists, Environment California, California League of Conservation Voters, Sierra Club of California, Environmental Defense Fund, Center for Energy Efficiency and Renewable Technologies, Vizio, 3M, Agoura Technologies, and the LCD TV Association.

California's per capita electricity use has remained flat for the past 30 years compared to the rest of the nation which has increased its energy consumption by 40 percent. Recently named the nation's most energy efficient state by the American Council for an Energy-Efficient Economy (ACEEE), California has a distinguished 30-year track record of protecting consumers through cost-effective energy efficiency standards and has saved California households and businesses \$56 billion during that time.

Created by the Legislature in 1974, the California Energy Commission is the state's primary energy policy and planning agency. The Energy Commission has five major responsibilities: forecasting future energy needs and keeping historical energy data; licensing thermal power plants 50 megawatts or larger; promoting energy efficiency through appliance and building standards; developing energy technologies and supporting renewable energy; and planning for and directing state response to energy emergency. Members of the Energy Commission are Chairman Karen Douglas; Vice Chair James D. Boyd; and Commissioners Jeffrey Byron; Julia Levin, Dr. Arthur H. Rosenfeld.

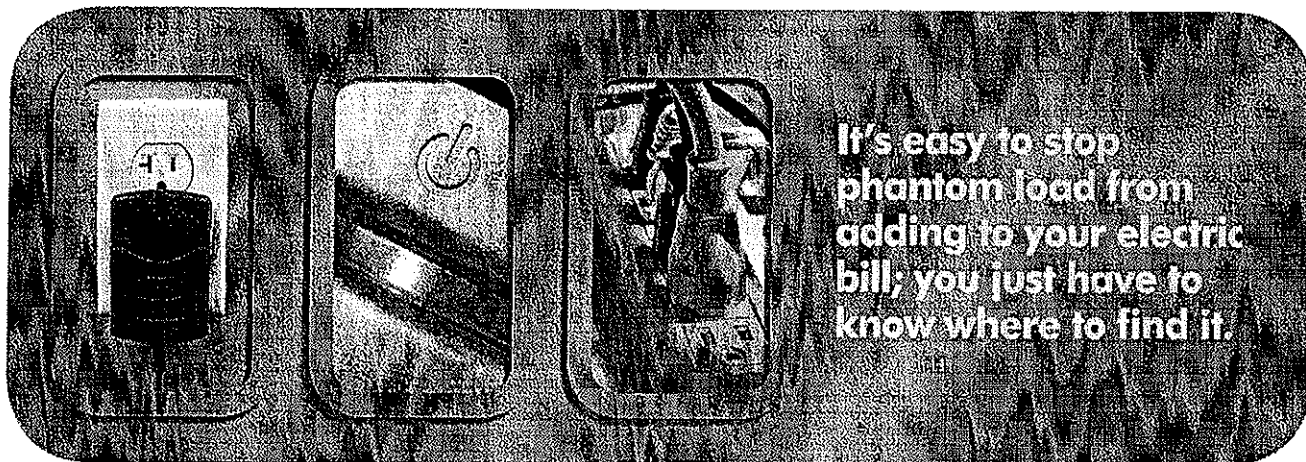
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State of California, Arnold Schwarzenegger, Governor

Last Modified: 11/18/09

Pull the Plug on Phantom Load



It's easy to stop phantom load from adding to your electric bill; you just have to know where to find it.

When plugged in, appliances and chargers use electricity whether they're on or not. This wasted power is called phantom load. Phantom load costs American consumers more than \$3 billion a year and adds up to the output of several power plants.

More than 50 percent of the electricity used to power most electronics is used while they're off. This accounts for 4 to 7 percent of every home's electricity usage.

Save some green by turning off and unplugging what you can, possibly reducing your home's phantom load by as much as one third. If we all work to eliminate unnecessary phantom load, we can save more of Earth's natural resources and reduce greenhouse gas emissions.

If an appliance isn't used regularly, unplug it. For the tangle of cords and power converters behind your stereo system and computer, get a power strip. By turning off the power strip, you'll power off all components at once.

Items most likely to have phantom load are those that:

Use remote controls – Stereos, VCRs, DVD players, window air conditioners and TVs fall into this category.

Have digital displays or clocks – A clock on some appliances makes sense; a clock on others doesn't. Plugging these types of appliances into on/off switches makes better sense. And if you haven't used your VCR in a while, unplug it.

Require external power supply – Look for appliances using power cords with boxes and lights, like laptop computers, printers, video game units and modems. These power supplies usually stay on after the appliance is off.

Use battery chargers – Some rechargers stay on regardless of whether they've finished or not. Unplug your cell phone, MP3 player, laptop computer, power tools and other small rechargeable appliances when not in use.



Look for ENERGY STAR® qualified products and others with no or low standby power consumption when replacing or buying new appliances.

High-Energy Television



If you've noticed your electricity usage is a little higher than usual lately, there's a good chance you've purchased a new high definition television.

Most LCD and plasma televisions use energy wisely; however, these sets, reaching 42", 50", 65" up to 103" in size, are giants compared to tube TVs, and it takes more energy to light up their screens. In fact, some large HDTVs consume more electricity than a standard kitchen refrigerator.

To get more energy efficiency from your HDTV:

Buy an ENERGY STAR® qualified television, which uses about 30 percent less energy than other sets. The EPA now has tougher ENERGY STAR 3.0 specifications for televisions, forcing them to have "home" (less bright) and "retail" (bright demo) settings to make it easier to reduce power consumption. ENERGY STAR compliant 32" HDTVs now must operate on less than 121 watts, and 50" models less than 391 watts.

Lower the brightness and contrast levels of your plasma or LCD television, which will lower the amount of energy it uses.

Similarly, most LCD TV sets have adjustable backlights that consume less power when turned down. Many newer LCD models offer backlights that automatically adjust to use less power projecting darker shots.

If you're not actively watching the television, turn it off. And if you have a tendency to fall asleep with the TV on, set the TV's timer function to turn off the set whenever you request.

Watching TV at high volumes takes more energy, so turn it down and save. And if you run the audio through a separate amplifier, use it only for DVDs and programs that showcase the technology.

Turn off television accessories, such as VCRs, DVD players and amplifiers, after using them.

Cut the room light to make your screen look brighter and reduce light bulb use.

If you're choosing a new TV based solely on energy consumption, there are two rules of thumb: first, the smaller the HDTV the less energy it will use; and second, LCD televisions generally are more energy efficient than plasma televisions.

Following these suggestions could help reduce your HDTV's energy consumption. Visit www.midamericanenergy.com for more energy-saving tips.



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600-5

Best viewed and printed on legal size paper

ENERGY STAR Qualified Residential LED Lighting

Last Modified: 02/12/2010

The product specifications listed below are based on tested values according to the ENERGY STAR Solid-State Lighting Luminaire Program Requirements. Values displayed on product packaging and marketing materials may differ.

Manufacturer Name	Brand	Model	Product Type	Luminaire Efficacy (lumens/Watt)	Wattage	Light Output (lumens)	Rated Lifetime (hours)	Power Factor	Color Temperature (kelvin)	Date Qualified	De-listed Date	Notes
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	11451	Outdoor wall-mounted porch lights	36.8	7.7	283.5	35000	0.87	2700	9/16/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	12441	Outdoor wall-mounted porch lights	37.9	10.33	391	35000	0.9	2700	9/16/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	136	Outdoor wall-mounted porch lights	37.9	10.33	391	35000	0.9	2700	9/16/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	153	Outdoor wall-mounted porch lights	36.8	7.7	283.5	35000	0.87	2700	9/16/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	25867	Ceiling-mounted with diffusers	39.6	10.5	416	25000	0.9	2700	9/16/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	25918	Ceiling-mounted with diffusers	40.6	6.7	301.5	25000	0.9	2700	9/16/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	284539	Outdoor pathway	25.3	5.5	140	35000	1	3000	9/3/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	3161	Ceiling-mounted with diffusers	40.6	6.7	301.5	25000	0.9	2700	9/16/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	8406	Outdoor wall-mounted porch lights	26	10	262	35000	0.9	2700	9/16/2009		
Bel Air Lighting, Trans Globe Lighting	PORTFOLIO	9471	Outdoor wall-mounted porch lights	35.5	11	372	35000	0.9	2700	9/16/2009		
Cooper Lighting	HALO	EL405530	Recessed downlights	43	14	604	35000	0.97	3000	1/8/2010		Must be used with one of the following trims to maintain ENERGY STAR qualification: TL400SC, TL400H, TL400WH, TL401WB, TL402SCS, TL402HS, TL402W1S, TL403WBS
Cooper Lighting	HALO	EL405535	Recessed downlights	43	14	604	35000	0.97	3000	1/8/2010		Must be used with one of the following trims to maintain ENERGY STAR qualification: TL400SC, TL400H, TL400WH, TL401WB, TL402SCS, TL402HS, TL402W1S, TL403WBS
Cooper Lighting	HALO	ML706830	Recessed downlights	45.8	15	633	25000	0.9672	3000	2/3/2009		Must be used with one of the following trims to maintain ENERGY STAR qualification: 494WB06, 494H06, 494SC06, 494P06
Cooper Lighting	HALO	ML706830-4 93	Recessed downlights	45.8	15	597	25000	0.9672	3000	2/25/2009		Must be used with one of the following trims to maintain ENERGY STAR qualification: 494WB06, 494H06, 494SC06, 494P06
Cooper Lighting	HALO	ML706835	Recessed downlights	45.8	15	633	25000	0.9672	3500	10/16/2009		Must be used with one of the following trims to maintain ENERGY STAR qualification: 494WB06, 494H06, 494SC06, 494P06
Cooper Lighting	HALO	ML706835-4 93	Recessed downlights	45.8	15	597	25000	0.9672	3500	10/16/2009		Must be used with one of the following trims to maintain ENERGY STAR qualification: 494WB06, 494H06, 494SC06, 494P06

Manufacturer Name	Brand	Model	Product Type	Luminaire Efficacy (lumens/Watt)	Wattage	Light Output (lumens)	Rated Lifetime (hours)	Power Factor	Color Temperature (kelvin)	Date Qualified	De-listed Date	Notes
Cooper Lighting	HALO	ML709830	Recessed downlights	58	14	805	35000	0.95	3000	10/30/2009		For use with the following trims: 494WB06 # 494H06 # 494SC06 # 494P06 # 493TB2S06
Cooper Lighting	HALO	ML709834-95	Recessed downlights	58	14	805	35000	0.95	3000	10/30/2009		For use with the following trims: 494WB06 # 494H06 # 494SC06 # 494P06 # 493TB2S06
Cooper Lighting	HALO	ML709835	Recessed downlights	58	14	805	35000	0.95	3500	10/30/2009		For use with the following trims: 494WB06 # 494H06 # 494SC06 # 494P06 # 493TB2S06
Cooper Lighting	HALO	ML709834-95	Recessed downlights	43	14	603	35000	0.96	3500	10/30/2009		For use with the following trims: 494WB06 # 494H06 # 494SC06 # 494P06 # 493TB2S06
Cooper Lighting	HALO	ML712830	Recessed downlights	51.4	25	1363	35000	0.92	3000	1/28/2010		Must be used with one of the following trims to maintain ENERGY STAR qualification: 494P06, 494WB06, 494SC06, 494H06, 493SC06, 493HS06, 493WB06, 493BS06, 493SNS06, 493TB2S06, 493P06
Cooper Lighting	HALO	ML712831	Recessed downlights	46.4	11	515	35000	0.96	2700	3/25/2009		Must be used with one of the following trims to maintain ENERGY STAR qualification: 494P06, 494WB06, 494SC06, 494H06, 493SC06, 493HS06, 493WB06, 493BS06, 493SNS06, 493TB2S06, 493P06
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR4E-15	Recessed downlights	46.4	11	515	35000	0.96	2700	3/25/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR4E-15C	Recessed downlights	46.4	11	515	35000	0.96	3500	3/25/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR4E-30	Recessed downlights	46.4	11	515	35000	0.96	2700	3/25/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR4E-30C	Recessed downlights	46.4	11	515	35000	0.96	3500	3/25/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR5E	Recessed downlights	46.4	11	515	35000	0.96	2700	3/25/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR5E-15C	Recessed downlights	46.4	11	515	35000	0.96	3500	3/25/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR6	Recessed downlights	58.8	12	673	35000	0.97	2700	2/9/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR6-CLDA	Recessed downlights	58.8	12	673	35000	0.97	2700	2/9/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR6C	Recessed downlights	61.3	12	663	35000	0.97	3500	3/16/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Cree LED Lighting Solutions	Cree LED Lighting Solutions	LR6C-CLDA	Recessed downlights	61.3	12	663	35000	0.97	3500	3/16/2009		Must be used with L744 trim to maintain ENERGY STAR qualification
Digital Lighting, Inc	Q-RAY	QMP40-INW-TWRSYN	Desk Lamps	35.1	7	229	35000	0.96	3000	1/27/2010		
EDMA Lighting Group	Liton	LEPDL3L17	Pendant-mounted downlights	33.9		10.2	346	0.966	3000	12/11/2009		Product meets the efficacy requirement when testing tolerances are applied.
EDMA Lighting Group	Liton	LEPDL3L17	Recessed downlights	33.9	10.2	346	35000	0.966	3000	12/11/2009		Product meets the efficacy requirement when testing tolerances are applied.

ELIMA Lighting Group	Liton	LULLED 1608V 12-ES	Under-cabinet kitchen	26	10.8	281	25000	0.979	3500	9/30/2009		
ELIMA Lighting Group	Liton	LULLED 3216V 12-ES	Under-cabinet kitchen	26	21.6	567	25000	0.979	3500	9/30/2009		
Elite Lighting, Inc.	Elite LED	B3IC-LED-1	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	B3RIC-LED-1	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	B4IC-LED-1	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	B4RIC-LED-1	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	H6IC-LED-1 4W	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	LD6IC-AT	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	LD6RIC-AT	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	RUGO-LED-1	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	BL630-14W	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	ES3000-LED-1 6 ES3000-316	Recessed downlights	39.4	14	545	35000	0.96	3000	1/20/2010		
Good Earth Lighting, Inc.	UTILITECH	G0518LD-BX SS-1	Under-cabinet kitchen	45.24	7.5	338	25000	0.83	3000	12/30/2009		
Good Earth Lighting, Inc.	UTILITECH	G0518LD-BX SS-1	Under-cabinet kitchen	45.24	7.5	338	25000	0.83	3000	12/30/2009		
Juno Lighting, Inc.	Juno	IC20LED-35 K	Recessed downlights	38.4	14	514	35000	0.9	3500	3/16/2009		Alt mount: IC20LED-35K For use with these trim: 205W-WH, 205B-WH, 205B-SC, 205B-ABZ, 204C-WH, 204G-WH, 204B-WH, 204PT-SC, 204W-WH, 204HZ-WH, 204WHZ-WH, 204WHZ-ABZ
Juno Lighting, Inc.	Juno	IC20LED-35 K-120	Recessed downlights	38.4	14	514	35000	0.9	3500	12/17/2009		Alt mount: IC20LED-35K For use with these trim: 205W-WH, 205B-WH, 205B-SC, 205B-ABZ, 204C-WH, 204G-WH, 204B-WH, 204PT-SC, 204W-WH, 204HZ-WH, 204WHZ-WH, 204WHZ-ABZ
Juno Lighting, Inc.	Juno	IC20LED-35 K	Recessed downlights	35.6	14	477	35000	0.9	3000	3/16/2009		Alt mount: IC20LED-35K For use with these trim: 205W-WH, 205B-WH, 205B-SC, 205B-ABZ, 204C-WH, 204G-WH, 204B-WH, 204PT-SC, 204W-WH, 204HZ-WH, 204WHZ-WH, 204WHZ-ABZ
Juno Lighting, Inc.	Juno	IC20LED-35 K-120	Recessed downlights	35.6	14	477	35000	0.9	3000	12/17/2009		Alt mount: IC20LED-35K For use with these trim: 205W-WH, 205B-WH, 205B-SC, 205B-ABZ, 204C-WH, 204G-WH, 204B-WH, 204PT-SC, 204W-WH, 204HZ-WH, 204WHZ-WH, 204WHZ-ABZ
Juno Lighting, Inc.	Juno	IC20LED-35 K	Recessed downlights	38.4	14	514	35000	0.9	3500	3/16/2009		Alt mount: IC20LED-35K For use with these trim: 205W-WH, 205B-WH, 205B-SC, 205B-ABZ, 204C-WH, 204G-WH, 204B-WH, 204PT-SC, 204W-WH, 204HZ-WH, 204WHZ-WH, 204WHZ-ABZ
Juno Lighting, Inc.	Juno	IC20LED-35 K	Recessed downlights	35.6	14	477	35000	0.9	3000	12/17/2009		Alt mount: IC20LED-35K For use with these trim: 205W-WH, 205B-WH, 205B-SC, 205B-ABZ, 204C-WH, 204G-WH, 204B-WH, 204PT-SC, 204W-WH, 204HZ-WH, 204WHZ-WH, 204WHZ-ABZ

Juno Lighting, Inc.	Juno	IC22LED-35 K	Recessed downlights	41	14	554	35000	0.9	3500	3/16/2009		All mount IC22LED-35K For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Juno Lighting, Inc.	Juno	IC22LED-55 K120	Recessed downlights	41	14	554	35000	0.9	3500	12/17/2009		For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Juno Lighting, Inc.	Juno	IC22LED-3K	Recessed downlights	38.5	14	518	35000	0.9	3000	3/16/2009		All mount IC22LED-3K For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Juno Lighting, Inc.	Juno	IC22LED-3K-120	Recessed downlights	38.5	14	518	35000	0.9	3000	12/17/2009		For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Juno Lighting, Inc.	Juno	IC22LED-3 K	Recessed downlights	41	14	554	35000	0.9	3500	3/16/2009		For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Juno Lighting, Inc.	Juno	IC22LED-3 K	Recessed downlights	38.5	14	518	35000	0.9	3000	3/16/2009		For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Kichler Lighting	Kichler Lighting	10325NI	Surface-mounted with directional heads	45.98	23	1076	35000	0.964	2700	12/3/2009		For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Kichler Lighting	Kichler Lighting	10325OZ	Surface-mounted with directional heads	45.98	23	1076	35000	0.964	2700	12/3/2009		For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Kichler Lighting	Kichler Lighting	10326NI	Surface-mounted with directional heads	41.3	23	961	35000	0.968	2700	12/3/2009		For use with these trims: 24W-WH, 24B-WH, 24C-SC, 24B-ABZ, 24B-BL, 27C-WH, 27G-WH, 27B-WH, 27PT-SC, 27W-WH, 27HZ-WH, 27WHZ-WH, 27WHZ-ABZ
Kichler Lighting	Pro Series Direct Wire	12051	Under-cabinet kitchen	30	4	220	35000	0.91	3000	10/30/2009		This product is a 6 inch luminaire.
Kichler Lighting	Pro Series Direct Wire	12052	Under-cabinet kitchen	38.1	6	228.6	35000	0.952	3000	10/30/2009		This product is a 12 inch luminaire.

Manufacturer Name	Brand	Model	Product Type	Luminaire Efficacy (lumens/Watt)	Wattage	Light Output (lumens)	Rated Lifetime (hours)	Power Factor	Color Temperature (kelvin)	Date Qualified	De-listed Date	Notes
Kichler Lighting	Pro Series Direct Wire	12053	Under-cabinet kitchen	38.5	9	346.5	35000	0.97	3000	10/30/2009		This product is a 22 inch luminaire.
Kichler Lighting	Pro Series Direct Wire	12054	Under-cabinet kitchen	39.6	11.75	365	35000	0.985	3000	10/30/2009		This product is a 30 inch luminaire.
Kichler Lighting	Kichler Lighting	12301	Under-cabinet kitchen	34	4	135.6	25000	0.73	3000	11/30/2008		Must be used as part of a system of three luminaires and powered by one of the following power supplies: 17330BK or 12322BK
Kichler Lighting	Kichler Lighting	12302	Under-cabinet kitchen	33	4	135.6	25000	0.73	3000	11/30/2008		Must be used as part of a system of three luminaires and powered by one of the following power supplies: 17330BK or 12322BK

Manufacturer Name	Brand	Model	Product Type	Luminaire Efficacy (lumens/Watt)	Wattage	Light Output (lumens)	Rated Lifetime (hours)	Power Factor	Color Temperature (kelvin)	Date Qualified	De-listed Date	Notes
Renaissance Lighting, Inc.	Solia	4DR4-35K-S -MD-DIF-CL	Recessed downlights	43.8	10.8	494	35000	0.976	3000	11/22/2009		
Renaissance Lighting, Inc.	Solia	4DR4-35K-S -MD-SFC-CL	Recessed downlights	43.8	10.8	494	35000	0.974	3500	11/22/2009		
Renaissance Lighting, Inc.	Solia	4DS4-27K-M -D-SFC-CL	Recessed downlights	35.1	11.7	412	25000	0.97	2700	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-27K-M -D-SFC-CL	Recessed downlights	35.1	11.7	412	25000	0.97	2700	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-27K-S -MD-DIF-CL	Recessed downlights	35.1	11.7	412	25000	0.97	2700	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-27K-S -MD-DIF-CL	Recessed downlights	35.1	11.7	412	25000	0.97	2700	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-30K-M -D-SFC-CL	Recessed downlights	39.2	11.7	499	35000	0.97	3000	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-30K-M -D-SFC-CL	Recessed downlights	39.2	11.7	499	35000	0.97	3000	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-30K-S -MD-DIF-CL	Recessed downlights	39.2	11.7	499	35000	0.97	3000	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-30K-S -MD-DIF-CL	Recessed downlights	39.2	11.7	499	35000	0.97	3000	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-35K-M -D-SFC-CL	Recessed downlights	40.7	11.97	535	35000	0.97	3500	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-35K-M -D-SFC-CL	Recessed downlights	40.7	11.97	535	35000	0.97	3500	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-35K-S -MD-DIF-CL	Recessed downlights	39.7	11.97	475	35000	0.97	3500	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-35K-S -MD-DIF-CL	Recessed downlights	39.7	11.97	475	35000	0.97	3500	12/10/2009		
Renaissance Lighting, Inc.	Solia	4DS4-30K-S -MD-DIF-CL	Recessed downlights	37.7	23	883	35000	0.97	3000	1/11/2010		
Renaissance Lighting, Inc.	Solia	4DS4-30K-S -MD-DIF-CL	Recessed downlights	37.7	23	883	35000	0.97	3000	1/11/2010		
Renaissance Lighting, Inc.	Solia	4DS4-30K-S -MD-DIF-CL	Recessed downlights	44.1	123	1035	35000	0.97	3000	1/11/2010		
Renaissance Lighting, Inc.	Solia	4DS4-30K-S -MD-DIF-CL	Recessed downlights	44.1	123	1035	35000	0.97	3000	1/11/2010		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	35.3	28.5	1021	35000	0.979	3000	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	35.3	28.5	1021	35000	0.979	3000	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	35.3	28.5	1021	35000	0.979	3000	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	35.3	28.5	1021	35000	0.979	3000	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	40	28.4	1132	35000	0.98	3500	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	40	28.4	1132	35000	0.98	3500	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	40	28.4	1132	35000	0.98	3500	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	40	28.4	1132	35000	0.98	3500	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	38.3	28.3	1085	35000	0.97	3500	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	38.3	28.3	1085	35000	0.97	3500	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	38.3	28.3	1085	35000	0.97	3500	9/17/2009		
Renaissance Lighting, Inc.	REVIA	7DR3-30K-D -L-DIF-CL	Recessed downlights	38.3	28.3	1085	35000	0.97	3500	9/17/2009		
Sea Gull Lighting Products LLC	Sea Gull	14100S-05	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009		Qualified with the following items: 14100S-14, 14100S-62, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-62, 14200S-05, 14200S-12, 14200S-71
Sea Gull Lighting Products LLC	Sea Gull	14100S-12	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009		Qualified with the following items: 14100S-14, 14100S-62, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-62, 14200S-05, 14200S-12, 14200S-71

Sea Gull Lighting Products LLC	Sea Gull	14100S-14	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009	Qualified with the following times: 14100S-14, 14100S-962, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-962, 14200S-05, 14200S-12, 14200S-71
Sea Gull Lighting Products LLC	Sea Gull	14100S-71	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009	Qualified with the following times: 14100S-14, 14100S-962, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-962, 14200S-05, 14200S-12, 14200S-71
Sea Gull Lighting Products LLC	Sea Gull	14100S-962	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009	Qualified with the following times: 14100S-14, 14100S-962, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-962, 14200S-05, 14200S-12, 14200S-71
Sea Gull Lighting Products LLC	Sea Gull	14200S-12	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009	Qualified with the following times: 14100S-14, 14100S-962, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-962, 14200S-05, 14200S-12, 14200S-71
Sea Gull Lighting Products LLC	Sea Gull	14200S-71	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009	Qualified with the following times: 14100S-14, 14100S-962, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-962, 14200S-05, 14200S-12, 14200S-71
Sea Gull Lighting Products LLC	Sea Gull	14200S-05	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009	Qualified with the following times: 14100S-14, 14100S-962, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-962, 14200S-05, 14200S-12, 14200S-71
Sea Gull Lighting Products LLC	Sea Gull	14200S-05	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009	Qualified with the following times: 14100S-14, 14100S-962, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-962, 14200S-05, 14200S-12, 14200S-71
Sea Gull Lighting Products LLC	Sea Gull	14200S-05	Surface-mounted downlights	43.4	14	610	25000	0.998	3000	12/15/2009	Qualified with the following times: 14100S-14, 14100S-962, 14100S-05, 14100S-12, 14100S-71, 14200S-14, 14200S-962, 14200S-05, 14200S-12, 14200S-71



Your Energy Savings Program



DTE Energy

DTE Energy's Your Energy SavingsSM Program

2010 Program Application

Follow This Easy Process:

- 1 Eligibility**
Qualified measures installed at facilities served by DTE Energy. Equipment must meet the specifications as explained in the application. Additional details are available in the Policy and Procedures Manual.
- 2 Incentive Reservations (Reservation Applications)**
Email, mail or fax a signed and completed copy of the application. Reservation Applications are strongly encouraged for all projects and are required for custom projects.
- 3 Installation**
Install eligible project and collect all required documentation for submittal.
- 4 Project Completion (Final Applications)**
Email, mail or fax a signed and completed copy of the completed application and all required documentation including dated, itemized invoices and manufacturer specifications.

Send completed applications to:

Email

YourEnergySavings@kema.com

Mail

DTE Energy's Your Energy Savings Program
P.O. Box 11289
Detroit, MI 48211

Fax

877.607.0744

If you need assistance, please contact our program hotline

866.796.0512

Please visit our website

www.YourEnergySavings.com

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LIGHTING SPECIFICATIONS

All lighting projects are expected to comply with the Illuminating Engineering Society of North America (IESNA) recommended lighting levels or the local code. All final applications must include manufacturers' specification sheets for lamps and ballasts. All incentives are for one-for-one replacements except as noted.

Compact Fluorescent Lamps, Screw-In (≤ 31 Watts)

Incentives are available for the replacement of incandescent lamps with CFLs that are ENERGY STAR® rated or that meet ENERGY STAR® criteria. The lamps must have a luminous efficacy of ≥ 50 lumens per watt (LPW). Incentive is per lamp. *Note: This incentive is not available for CFLs purchased at retail stores participating in the DTE Energy CFL discount program. Incentives for CFLs purchased from those retailers is included in the discounted price.*

Compact Fluorescent Lamps, Screw-In (> 31 Watts)

Incentives are available for the replacement of incandescent lamps with high wattage CFLs. The new lamp must have a luminous efficacy of ≥ 65 lumens per watt (LPW). Incentive is per lamp. *Note: This incentive is not available for CFLs purchased at retail stores participating in the DTE Energy CFL discount program. Incentives for CFLs purchased from those retailers is included in the discounted price.*

Compact Fluorescent Fixtures

Incentives are available for upgrades to interior hardwired compact fluorescent fixtures. Replacement fixtures must be new fixtures or modular hardwired retrofits with hardwired electronic ballasts. The compact fluorescent ballast must be programmed start or programmed rapid start with a power factor (PF) ≥ 0.90 and a total harmonic distortion (THD) $\leq 20\%$. Incentive is per fixture.

Compact Fluorescent Reflector Flood Lamps

Incentives are available to install CFL reflector flood lamps to replace incandescent reflector flood lamps. The CFL reflector flood lamps must have a luminous efficacy of ≥ 33 lumens per watt (LPW). Incentive is per lamp. *Note: This incentive is not available for CFLs purchased at retail stores participating in the DTE Energy CFL discount program. Incentives for CFLs purchased from those retailers is included in the discounted price.*

42W 8-Lamp Compact Fluorescent High Bay Fixture

Incentives are available in high-bay applications (ceiling heights over 15 feet) for replacing any lighting fixtures greater than or equal to 350W with 42 Watt, 8 lamp compact fluorescent fixtures. Replacement fixtures must contain specular reflectors and electronic ballasts with a power factor (PF) ≥ 0.90 . Incentive is per fixture.

ENERGY STAR® Qualified LED Recessed Down Light

Incentives are available to replace incandescent recessed lights with ENERGY STAR® qualified LED recessed down lights. Replacement lights must have a minimum efficacy of 35 lumens per watt. Incentive is per lamp. *Note: This incentive is not available for lamps purchased at retail stores participating in the DTE Energy lamp discount program. Incentive for lamps purchased from those retailers is included in the discounted price.*

Standard Linear Fluorescent Retrofit

Incentives are available for replacing existing T12 lamps and magnetic ballasts with T8 or T5 lamps and electronic ballasts. The new fixture lamps must have a color rendering index (CRI) ≥ 80 . The electronic ballast must be high frequency (≥ 20 kHz), UL listed, and warranted against defects for a minimum of 5 years. Ballasts must have a power factor (PF) ≥ 0.90 . Ballasts for 4-foot lamps must have total harmonic distortion (THD) $\leq 20\%$ at full power output. For 2 and 3-foot lamps, ballasts must have THD $\leq 32\%$ at full light output. Incentive is per fixture.

High Output T8/T5 Lamp and Ballast replacing T12 Fluorescent Lamp

Incentives are available for replacing existing T12 lamps and magnetic ballasts with T5HO or T8HO lamps and electronic ballasts. The replacement lamps must have a CRI ≥ 80 . Incentive is per fixture.

Low Wattage 4-foot T8 Lamps (Lamps Only)

Incentives are available for replacing 32 Watt T8 lamps with reduced (low) wattage T8 lamps when an electronic ballast is already present. The lamps must be reduced wattage in accordance with the Consortium for Energy Efficiency® (CEE®) specifications (www.cee1.org) and as summarized in Table 2 below. Low wattage lamps must be either 25W or 28W and CEE® Listed. Qualified products can be found at <http://www.cee1.org/com/com-ll/com-ll-main.php3>. Incentive is per lamp.

High Performance 4-foot T8 Lamp and Ballast

Incentives are available for replacing existing T12 or T12HO lamps and magnetic ballasts or standard T8 lamps and electronic ballasts with high performance T8 lamps and electronic ballasts. Replacement fixtures must high performance in accordance with the Consortium for Energy Efficiency® (CEE®) high performance T8 specification, available at www.cee1.org, which and is summarized in Table 1 below. A list of qualified lamps and ballasts can be found at: <http://www.cee1.org/com/com-ll/com-ll-main.php3>. Both the lamp and ballast must meet the specification in order to be eligible for an incentive. Incentive is per fixture.



Your Energy Savings Program



DTE Energy

LIGHTING INCENTIVES WORKSHEET

Note: If your lighting project is not included as one of the measures below, you may submit it as a custom measure.

Equipment Type	Incentive	Unit	# of Units	Incentive Calculated
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Interior High-Intensity Discharge (HID) to Fluorescent Fixtures

48	3 Lamp T5 HO, replacing 250W HID	\$35.00	Fixture		
49	4 Lamp T5 HO, replacing 400W HID	\$70.00	Fixture		
50	6 Lamp T5 HO, replacing 400W HID	\$30.00	Fixture		
51	Two 6 Lamp T5 HO, replacing 1000W HID	\$120.00	Fixture		
52	4 Lamp 32W T8, replacing 250W HID	\$50.00	Fixture		
53	6 Lamp 32W T8, replacing 400W HID	\$75.00	Fixture		
54	8 Lamp 32W T8, replacing 400W HID	\$50.00	Fixture		
55	Two 8 lamp 32W T8, replacing 1000W HID	\$160.00	Fixture		
56	Pulse Start Metal Halide (retrofit only)	\$30.00	Fixture		

Exterior High-Intensity Discharge (HID) Conversion

57	LED or Induction replacing <175W HID	\$45.00	Fixture		
58	LED or Induction replacing 176W to 250W HID	\$65.00	Fixture		
59	LED or Induction replacing 251W to 400W HID	\$120.00	Fixture		

Garage High-Intensity Discharge (HID) Conversion

60	LED or Induction replacing <175W HID	\$100.00	Fixture		
61	LED or Induction replacing 176W to 250W HID	\$150.00	Fixture		
62	LED or Induction replacing 251W to 400W HID	\$180.00	Fixture		

Exit Sign Conversion

63	LED Exit Signs Electronic Fixtures Retrofit or Replacement	\$12.50	Fixture		
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Traffic Signal Conversion

64	LED Auto Traffic Signals	\$20.00	Signal		
65	LED Pedestrian Signals	\$15.00	Signal		

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ComEd's Smart Ideas for Your Business™

FACT SHEET

ComEd®

An Exelon Company

LED LIGHTING

LED (Light Emitting Diode) lighting is rapidly changing. Everything you previously knew about LEDs is probably outdated. The great potential of LEDs' efficiency and long life has caused manufacturers to devote considerable resources to enhance manufacturing processes and quality and applications continue to appear in the marketplace.

HOW ARE LEDs DIFFERENT FROM INCANDESCENTS OR FLUORESCENTS?

LED lighting has the potential to be more efficient, durable, versatile and longer lasting than incandescent and fluorescent lighting. LEDs emit light in a specific direction, whereas an incandescent or fluorescent bulb emits light — and heat — in all directions. LED lighting uses both light and energy more efficiently.

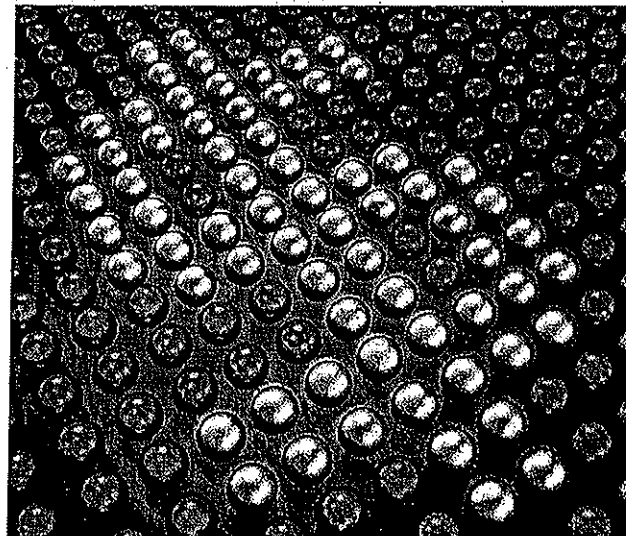
An incandescent light bulb produces light by passing electricity through a metal filament until it becomes so hot that it glows. In a CFL (Compact Fluorescent Light), an electric current is driven through a tube containing gases, producing ultraviolet light that is transformed into visible light by the fluorescent coating (phosphor) on the inside of the tube.

LEDs are made of very thin layers of semiconductor material. One layer will have an excess of electrons, while the next will have a deficit of electrons. This difference causes electrons to move from one layer to another, which generates light. The more electrons that pass across the boundary between layers, known as a junction, the brighter the light. Impurities within the semiconductor, which are introduced during the manufacturing process, are used to create the required electron density. Different semiconductor materials and different impurities result in different colors of light emitted by the LED.

One or more LED chips (about one square millimeter each) are mounted on a heat-conducting material called a heat sink and enclosed in a lens. The resulting device, typically around 7 to 9 millimeters per side, can be used separately or in arrays. A small amount of heat is released into the heat sink, but a well-designed LED is cool to the touch.

LEDs have several advantages over conventional light sources:

- **Directional light emission:** Because LEDs are mounted on a flat surface, they emit light hemispherically, rather than spherically, reducing wasted light and enabling light to be "aimed."
- **Near-monochromatic light:** An individual LED chip emits light in a specific wavelength (color), which makes them efficient for colored light applications.
- **Size:** LED lights can be very compact and low profile — an advantage where space is at a premium.
- **Breakage resistance:** LEDs use no breakable glass or filaments, so they are resistant to vibration and well suited to locations where breakage is an issue.
- **Cold temperature operation:** LED performance actually increases as operating temperatures drop.



- **Rapid cycling capability:** Traditional light sources will burn out sooner if switched on and off frequently, but LED life and lumen maintenance is unaffected by rapid cycling.
- **Controllability:** Some LEDs are compatible with electronic controls to change light levels and color characteristics.
- **No infrared (IR) or ultraviolet (UV) emissions:** Unlike other forms of lighting, LEDs intended for lighting do not emit IR or UV radiation.

LED USAGE

LEDs' near-monochromatic nature makes them particularly efficient for colored light applications. In traffic lights, for example, LEDs have largely replaced the old incandescent + colored filter systems. While a red filter on an incandescent lamp can block 90 percent of the visible light from the lamp, red LEDs provide the same amount of light for about one-tenth the power (12 watts compared to 120+ watts) and last many times longer.

LED (Light Emitting Diode) lighting is rapidly changing. Everything you previously knew about LEDs is probably outdated.

With their other unique characteristics — low profile, lower energy consumption, good performance in cold environments, and breakage resistance — LEDs are well suited to a variety of indoor and outdoor signage.

smart  ideasSM
for your business

PUTTING LEDs TO WORK

One way businesses can take advantage of LEDs' efficiency is by replacing incandescent exit signs, which operate continuously, with LED exit signs. A relatively fast and inexpensive project, even smaller buildings can realize solid energy savings. A typical exit sign's electricity consumption drops from about 40 watts (incandescent) to about 5 watts, saving 300 kWh per year, per sign.

Design Performance Incentive				
Exit Sign Lighting Technology	Exit Sign Lighting Technology	Exit Sign Lighting Technology	Exit Sign Lighting Technology	Annual Carbon Dioxide (CO ₂) Pollution
LED	44 kWh	\$44	10+ years	72 pounds
Fluorescent/CFL	140 kWh	\$11	10.8 months	230 pounds
Incandescent	350 kWh	\$28	2.8 months	574 pounds

Assumes 24-hour, 365-day-per-year operation at an average electricity cost of \$0.08 per kWh. Exit sign electricity consumption is assumed to be 40 watts for incandescent signs, 16 watts for fluorescent signs, and 5 watts for LED signs. Actual sign wattages may vary. Pounds of pollution are based on the national average emissions factor for electricity generation in the United States, 1.64 pounds CO₂ per kWh. Source: ENERGY STAR®.

LED exit signs also require less maintenance and are typically brighter than comparable incandescent or fluorescent lights, a benefit in an emergency. ComEd's *Smart Ideas for Your Business*™ program offers incentives of \$20 per exit sign to help offset the retrofit cost.

LEDs are also being used in outdoor channel signs to reduce energy and maintenance costs. Strings of LEDs can take the place of neon as well, and lighting manufacturers continue to create new ways to use LEDs in signage. ComEd's *Smart Ideas for Your Business* program offers incentives for replacing incandescent, neon and other low-efficiency signs with LED signs, ranging from \$6 to \$25 per sign.

PARKING LOTS AND OTHER OUTDOOR AREAS

Recent advances in LED technology have resulted in a new option for lighting outdoor areas, including streets, roadways, parking lots and pedestrian areas. LEDs offer several potential advantages over metal halide and high-pressure sodium lighting:

- Without glass or filaments, LED lights are less prone to breakage from vandalism or accidents.
- LEDs turn on instantly without run-up time or restrike delay.
- Their compact and low profile size means that even "large" LED fixtures producing thousands of lumens can be lower-profile than their HID counterparts.
- Their directional light emission reduces light trespass and "sky glow."
- Cold environments do not affect them.
- They contain no mercury, lead, or other known disposal hazards.

Outdoor LED installations may qualify for custom incentives of \$.07 per kWh saved from ComEd's *Smart Ideas for Your Business*.

LED REFRIGERATION CASE LIGHTING

Refrigerated display cases in grocery stores and convenience stores are typically lit by fluorescent systems. As temperatures drop, however, light output for fluorescent lamps can decrease by as much as 60 percent. LED lighting actually performs better in colder temperatures and LED lighting uses half the energy of fluorescent systems while emitting less heat.

The low profile of LEDs again is an advantage in the close quarters of a refrigerated display case, and because the light from LEDs can be "aimed," they help make displays effective as well as efficient. Replacing fluorescent refrigerated case lighting with LED illumination can qualify for prescriptive incentives of \$20 per door.

SPECIFICATIONS FOR LED LIGHTS

ComEd's *Smart Ideas for Your Business* program has defined specifications that LED lights must meet to be eligible for incentives. These specifications are detailed on the application form.

- All new exit signs or retrofit exit signs must be UL924 listed, have a minimum lifetime of 10 years and have an input wattage ≤ 5 watts per face.
- LED recessed downlight luminaires up to 18 watts or screw-in base lamps must have a minimum efficacy of 35 lumens per watt and must meet ENERGY STAR® version 1.1 criteria.
- Other LED lamps and downlight luminaires over 18 watts must:
 - Be tested to IESNA LM-79-08 — an industry standardized test procedure that measures the performance qualities of LED luminaires and integral lamps — by a third-party DOE-accredited lab.
 - Carry a warranty on the light source and power supplies of three years or more.
 - Have a minimum efficacy of 35 lumens per watt.
 - Have a CRI of 75 or above.

FOR MORE INFORMATION

Contact the *Smart Ideas* team at 888-806-2273, visit www.ComEd.com/BizIncentives or send an e-mail to ComEdSmartIdeas@KEMA.com.



An Exelon Company

LIGHTING INCENTIVES

Equipment Type	Incentive	Unit
Hardwired Compact Fluorescent Fixtures		
29W or Less	\$25.00	Fixture
30W or Greater	\$50.00	Fixture
Permanent Lamp Removal (Pre-Approval Application Is Required)		
Remove 4-foot Lamp	\$6.00	Lamp
Remove 8-foot Lamp	\$8.00	Lamp
Remove 4-foot Lamp with Reflector	\$12.00	Lamp
Remove 8-foot Lamp with Reflector	\$16.00	Lamp
High Performance or Reduced Wattage 4-foot T8		
4-foot Lamp and Ballast	\$5.00	Lamp
4-foot Reduced Watt Lamp Only	\$1.00	Lamp
Reduced Wattage 8-foot T8		
8-foot Lamp and Ballast	\$6.00	Lamp
8-foot Lamp Only	\$1.00	Lamp
Specialty T8 Lamps and Ballasts		
4-foot U Tube and Ballast	\$3.00	Lamp
2-foot Lamp and Ballast	\$3.00	Lamp
3-foot Lamp and Ballast	\$5.00	Lamp
LED Lighting		
LED T-1 or Electroluminescent Exit Signs	\$20.00	Signs
LED Lamp/Fixture	\$10.00	Lamp
LED Open Sign	\$40.00	Fixture
LED Channel Sign ≤ 2 feet Interior	\$10.00	Letter
LED Channel Sign > 2 feet Interior	\$25.00	Letter
LED Channel Sign ≤ 2 feet Outdoor	\$6.00	Letter
LED Channel Sign > 2 feet Outdoor	\$20.00	Letter
Metal Halide		
Integrated Ballast Ceramic Metal Halide Lamps	\$5.00	Fixture
Pulse Start or Ceramic, 100W or Less	\$20.00	Fixture
Pulse Start or Ceramic, 101W – 200W	\$35.00	Fixture
Pulse Start or Ceramic, 201W – 350W	\$40.00	Fixture
Induction Lighting		
Interior Induction Fixture	\$30.00	Fixture
Cold Cathode		
Cold Cathode	\$3.00	Lamp
Controls		
Occupancy Sensors	\$0.09	Connected Watts Controlled
Plug Load Occupancy Sensor	\$20.00	Sensor
Bi-Level Stairwell / Hall / Garage Fixtures w/ integrated sensors	\$25.00	Fixture
T8/T5 New Fluorescent Fixtures with Electronic Ballast (Pre-Approval Application Is Required)		
Brief Project Description (include quantity and fixture wattages) or attach an itemized project plan	\$0.30 or maximum \$100 / fixture	Watts Reduced



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Organizational Structure

Act 141 provides that the investor-owned electric and gas utilities must collectively establish and fund the statewide energy efficiency and renewable energy programs. To fulfill their obligations under Act 141, the energy utilities have formed the Statewide Energy Efficiency and Renewable Administration or "SEERA." The primary organizations that make up the Focus on Energy Program and their responsibilities are as follows:

Public Service Commission of Wisconsin

The Public Service Commission (PSC) has oversight of the statewide energy efficiency and renewable energy programs. This includes: review and approval of the program administrator(s) selected by the utilities and of the contracts between the utilities and the program administrator for administration of the statewide programs; contracting with one or more independent parties for an annual performance evaluation and financial audits of the statewide programs; requiring each energy utility to spend the amount required to fund statewide energy efficiency and renewable resource programs; and managing day-to-day program activities.

SEERA

SEERA creates and funds statewide energy efficiency and renewable energy programs. SEERA also contracts, on the basis of competitive bids, with one or more persons to administer the programs. SEERA has no obligations regarding the statewide programs other than creating and funding the programs and contracting for their administration.

Program Administrators

Wisconsin Energy Conservation Corporation (WECC) is the program administrator for the Focus on Energy Business, Residential and Renewable Energy Programs. The Energy Center of Wisconsin is the program administrator for the Environmental and Economic Research and Development Program.

Fiscal Agent

Wipfli LLP, in a fiduciary capacity, receives, distributes and accounts for statewide energy efficiency and renewable energy funds under Act 141.

Evaluation

PA Consulting Group, Inc. leads a team of evaluation experts to quantify the energy saving impacts of the Focus on Energy Program on Wisconsin's citizens and economy. The evaluators are charged with independently verifying program administrator reports of energy savings.

Compliance Agent

Virchow, Krause & Company, LLC performs audits to ensure that Program Administrators, contractors and subcontractors comply with the Policy and Procedures Manual created for the Focus on Energy Program as well as all contractual requirements.

Focus on Energy Organizational Chart



**Financial Incentives and
Cash-Back Rewards
Overview**

Residential Incentives

Business Incentives

**Renewable Energy
Incentives**

Tax Incentives

Printable Version

Home > Incentives > Residential > Cash-Back Rewards > Lighting

Lighting Rewards

Lighting Rewards are listed by product type. ENERGY STAR® qualified bulbs, fixtures, and torchieres are available in dozens of styles and sizes to compliment any room. For more information on lighting products, visit our [Lighting](#) page.

If you have any questions, please contact Wisconsin's Focus on Energy Information Center at 800.762.7077 or e-mail us at ESinfo@focusonenergy.com.

Compact Fluorescent Light Bulbs (CFLs)

Dates: now until December 31, 2010

Reward Amount: \$2 per light bulb

Reward valid on ENERGY STAR qualified bulbs in single or multi-packs only. Limit 12 bulbs per customer. (Minimum purchase price \$0.97 per bulb after mail in reward (not including tax) even when in a multi-pack).

\$2 Mail-in Coupon for CFLs

Fluorescent Torchieres, Fixtures and Ceiling Fans

Dates: now until December 31, 2010

Reward valid on ENERGY STAR qualified fluorescent fixtures, torchieres and/or ceiling fans with qualified light fixtures.

Limit 12 per customer.

\$15 Mail-in Coupon on fixtures

ENERGY STAR qualified LED fixtures

Dates: now until December 31, 2010

Reward valid on ENERGY STAR qualified LED Fixtures.

Limit 12 per customer.

\$30 Cash-Back Reward per fixture

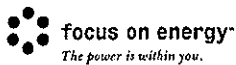
Mail Reward forms to:

Focus ENERGY STAR Lighting
c/o EFI Fulfillment Center
40 Washington Street, Suite 2000
Westborough, MA 01581-1013

Important Information

Focus on Energy offers are available to customers of participating Wisconsin electric providers only, for a limited time, are good while supplies last, and may not be combined with any other utility offer.





LIGHTING INCENTIVE APPLICATION FOR EXISTING BUILDINGS

OFFICE USE ONLY
PROJECT ID:

THIS INCENTIVE APPLICATION FORM IS VALID FROM JANUARY 1, 2010 TO JUNE 30, 2010. INCOMPLETE APPLICATIONS WILL BE RETURNED.
YOU MAY ALSO COMPLETE AND SUBMIT THIS APPLICATION ONLINE AT WEBFORMS.FOCUSONENERGY.COM/BUSINESSLIGHTING.
Focus incentives are subject to change. Please visit focusonenergy.com/incentives/business to ensure you are using the most current form.

INSTRUCTIONS FOR COMPLETING THIS FORM - PLEASE READ

- The specifications for eligible equipment are listed within each lighting technology on this form. **If the technology you are installing is specified differently than how it is listed on this form, please call to verify eligibility.** Custom incentives are available for many technologies not listed. Some technologies require additional information that must be filled in under "Specifications and Required Information" column. **Replacements are one for one unless specified.**
- This form must accompany an **Itemized** invoice with quantity, manufacturer, model number, date and cost for each piece of equipment for which an incentive is expected. High Performance T8 and Low Watt T8 systems require manufacturer and model number for ballast and lamps to appear on invoice. Incomplete applications or invoices will significantly delay processing of incentive. Replaced equipment must be removed from service.
- Outdoor lighting projects are **NOT** eligible for prescriptive incentives, but may be eligible for custom incentives. **ALL CUSTOM INCENTIVES MUST BE APPROVED BY Focus on Energy PRIOR TO EQUIPMENT PURCHASE.**
- Post installation light levels are expected to meet current IESNA recommendations and comply with all applicable electrical, safety and energy codes. Fixtures must be UL listed.
- Dairy and Livestock Lighting Incentive Requirements: All fixtures installed in animal housing or milk house area must conform to National Electric Code 547 (i.e. wet location, sealed and gasketed fixtures).

LIGHTING TECHNOLOGIES - THIS FORM IS USED FOR EXISTING BUILDINGS ONLY. Please fill in blanks for all items you are requesting an incentive for.

INCANDESCENT REPLACEMENTS

Equipment Type	Specifications and Required Information	Incentive	Quantity	Total
Compact Fluorescent Lamp (CFL) or Cold Cathode				
■ Replace incandescent lamps with CFL or cold cathode screw-in lamps and/or permanently wired fixtures with pin based CFL lamps. ■ One for one replacement of incandescent only. Rebated bulbs may not be used for resale or giveaway type promotions				
CFL Lamps	Replace 100W or less incandescent with CFL up to 32 Watts. Screw base only.	\$2/Bulb Limited to 50% of product cost up to \$2/bulb		
CFL Reflector Flood Lamps	Replace 100W or less incandescent with CFL flood lamps with integrated reflector up to 30 Watts. Screw base CFLs only.	\$4/Bulb		
High Wattage CFL Lamps	Replace a greater than 100W incandescent lamp with CFL from 33-115 Watts. Medium Edison screw base CFLs only.	\$5/Bulb		
CFL Fixtures	Replace incandescent fixtures with permanently-wired new fixtures containing pin-based CFL lamps.	\$20/Fixture		

Low Wattage Ceramic Metal Halide (CMH)

- Replace incandescent fixtures or lamps with ceramic metal halide (CMH) fixtures or self ballasted screw in lamps as listed below.
- Total CMH wattage must be lower than existing total incandescent wattage to qualify.

CMH Fixtures 20-100 Watts	Incentive is for complete hardwired fixtures containing qualified CMH lamp and ballast. Incandescent Wattage Removed _____	\$50/Fixture		
CMH Integral Ballast Lamps	Retrofit existing 70-100W incandescent flood or spot lamps with ≤25W Ceramic Metal Halide reflector lamp with integrated ballast.	\$15/Lamp		

ENERGY STAR® Qualified LED Downlights



- Replace Incandescent fixtures with complete replacement luminaire unit including housing, trim, reflector, lens, heat sink, driver and light source.
- Product must appear on ENERGY STAR SSL qualified products list. Please see focusonenergy.com/incentives/business/lighting.aspx for more information.

ENERGY STAR LED Recessed Downlights	Replace 60-100W incandescent with ENERGY STAR qualified LED recessed downlight ≤18 Watts.	\$30/unit		
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LINEAR FLUORESCENT-HIGH EFFICIENCY LOW GLARE FIXTURES

High Efficiency, Low Glare 2'x4' Recessed fixtures as described below

- Replace 2X4 recessed troffer fixture containing 3 or 4 lamp F32T8 or F40T12 with a new High Efficiency/Low Glare 2' x 4' recessed fixture
- Please verify approved product list at focusonenergy.com/businesslighting or call for preapproval. Fixture efficiency must be 80% or greater.
- T8 lamps and ballast must be listed on CEE High Performance T8 list to qualify. T5 fixtures must contain 2 F28T5 lamps (T5HO are not eligible).
- Must be a new fixture incorporating advanced lighting distribution and glare control optics. Specular reflector kits are not eligible for this incentive

2 lamp F28T5 Recessed Indirect Fixture	Fixture Model # _____	\$10/Fixture		
2 lamp HPT8 High Efficiency Recessed Fixture	Fixture Model # _____ Ballast Model# _____ Lamp Model # _____	\$10/Fixture		

FORM SUBMITTAL: Return signed, completed form and ITEMIZED invoice within 30 calendar days of installation to:

Mail: Focus on Energy, Business Programs Incentives, 431 Charming Drive, Madison, WI 53719

Email: Applications and invoices can be scanned and emailed to BPforms@weccusa.org **Fax:** 608.237.2147

Questions: Call 800.762.7077 then #2 for Business Programs

3413

ENERGY STAR Qualified Commercial LED Lighting

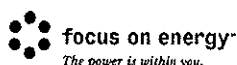
The product specifications listed below are based on tested values according to the ENERGY STAR Solid-State Lighting Luminaire Program Requirements. Values displayed on product packaging and marketing materials may differ.

4/2/13

EEMA Lighting Group	Lion	DRL17	Recessed downlights	39.9		10.2	346	35000	0.966	3000	12/1/2009		Product meets the efficacy requirement when testing tolerances are applied.
Elite Lighting, Inc.	Elite LED	B3RC-LED-AU120V-DIM-FL-30K-AT	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	B3RC-LED-AU120V-DIM-FL-30K-AT	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Manufacturer Name	Brand	Model	Product Type	Luminaire Efficacy (lumens/Watt)	Wattage	Light Output (lumens)	Rated Lifetime (hours)	Power Factor	Color Temperature (kelvin)	Date Qualified	De-listed Date	Notes	
Elite Lighting, Inc.	Elite LED	B6IC-LED-1	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	4W120V-DIM-FL-30K-AT	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	3W20V-DIM-FL-30K-AT	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	B6IC-LED-1 4W	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	LD6IC-AT	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	LD6IC-AT	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	120V-DIM-FL-30K	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	RL607-14W	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	120V-DIM-FL-30K	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Elite Lighting, Inc.	Elite LED	RL630-14W	Recessed downlights	39.4		14	545	35000	0.96	3000	1/20/2010		
Juno Lighting, Inc.	Juno	IC20L ED-35 K	Recessed downlights	38.4		14	514	35000	0.9	3500			All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K	Recessed downlights	38.4		14	514	35000	0.9	3500			All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
Juno Lighting, Inc.	Juno	IC20L ED-35 K-120	Recessed downlights	38.4		14	514	35000	0.9	3500	12/17/2009		All mount IC20S LED-35K For use with these trim: 20SW-WH, 20SB-WH, 20SC-ABZ, 20SEB-ABZ, 20C-WH, 20CW-WH, 20CHZ-WH, 20AHZ-WH, 20AW-HZ, 20AWHZ-ABZ
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Manufacturer Name	Brand	Model	Product Type	Luminaire Efficacy (lumens/Watt)	Wattage	Light Output (lumens)	Rated Lifetime (hours)	Power Factor	Color Temperature (kelvin)	Date Qualified	De-listed Date	Notes
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-SSP-CL	Recessed downlights	42.6	17	722	35000	0.97	4000	1/15/2010		
Renaissance Lighting, Inc.	Solia	DRS-41K-S D-SPC-CL	Recessed downlights	35.1	11.7	412	35000	0.97	3000	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S D-SSP-CL	Recessed downlights	35.1	11.7	412	35000	0.97	2700	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-DIF-CL	Recessed downlights	35.1	11.7	412	35000	0.97	2700	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S D-SPC-CL	Recessed downlights	39.2	11.7	459	35000	0.97	3000	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S D-SSP-CL	Recessed downlights	39.2	11.7	459	35000	0.97	3000	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-DIF-CL	Recessed downlights	39.2	11.7	459	35000	0.97	3000	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S D-SPC-CL	Recessed downlights	39.7	11.97	475	35000	0.97	3500	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S D-SSP-CL	Recessed downlights	39.7	11.97	475	35000	0.97	3500	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-DIF-CL	Recessed downlights	44.3	12.03	553	35000	0.97	4000	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S D-SPC-CL	Recessed downlights	44.3	12.03	553	35000	0.97	4000	12/10/2009		
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-DIF-CL	Recessed downlights	38.5	17	651	35000	0.97	4000	1/14/2010		
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-SSP-CL	Recessed downlights	38.5	17	651	35000	0.97	4000	1/14/2010		
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-DIF-CL	Recessed downlights	37.7	23	883	35000	0.97	3000	1/11/2010		
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-SSP-CL	Recessed downlights	44.3	23	1062	35000	0.97	3000	1/11/2010		
Renaissance Lighting, Inc.	Solia	DRS-41K-S MD-SSP-CL	Recessed downlights	44.1	23	1035	35000	0.97	3000	1/11/2010		
Renaissance Lighting, Inc.	REVIA	DRS-41K-D L-DIF-CL	Recessed downlights	35.8	28.5	1021	35000	0.979	3000	9/17/2009		
Renaissance Lighting, Inc.	REVIA	DRS-41K-D L-SPC-CL	Recessed downlights	35.8	28.5	1021	35000	0.979	3000	9/17/2009		
Renaissance Lighting, Inc.	REVIA	DRS-41K-D L-SSP-CL	Recessed downlights	35.8	28.5	1021	35000	0.979	3000	9/17/2009		
Renaissance Lighting, Inc.	REVIA	DRS-41K-D L-DIF-CL	Recessed downlights	40	28.4	1132	35000	0.98	3500	9/17/2009		

Renaissance Lighting, Inc.	REVA	7DS3-35K-D L-SPC-CL	Recessed downlights	38.3	28.3	1085	35000	0.97	3500	9/14/2009		
Renaissance Lighting, Inc.	REVA	7DS3-35K-D L-SPC-CL	Recessed downlights	38.3	28.3	1085	35000	0.97	3500	9/14/2009		
Renaissance Lighting, Inc.	REVA	7DS3-41R-D L-DIF-CL	Recessed downlights	42.3	28.1	1191	35000	0.98	4000	9/14/2009		
Renaissance Lighting, Inc.	REVA	7DS3-41R-D L-SPC-CL	Recessed downlights	42.3	28.1	1191	35000	0.98	4000	9/14/2009		
Renaissance Lighting, Inc.	REVA	7DS3-41R-D L-SSP-CL	Recessed downlights	42.3	28.1	1191	35000	0.98	4000	9/14/2009		



COMMERCIAL REFRIGERATION INCENTIVE APPLICATION

OFFICE USE ONLY
PROJECT ID:

THIS INCENTIVE APPLICATION FORM IS VALID FROM JANUARY 1, 2010 TO JUNE 30, 2010. INCOMPLETE APPLICATIONS WILL BE RETURNED.
Focus incentives are subject to change. Please visit focusonenergy.com/Incentives/business to ensure you are using the most current form.

COMMERCIAL REFRIGERATION REQUIREMENTS:

GENERAL REQUIREMENTS

1. Grocery, convenience and other retail stores served by qualifying utilities with refrigerated or frozen food display cases are eligible for these incentives. Check the Focus on Energy website (www.focusonenergy.com) to verify eligibility.
2. Include brand name and model number of equipment / control system that is installed on invoice.
3. For multiple locations, a spreadsheet can be submitted as a substitute for multiple applications. Spreadsheets for a variety of technologies can be found at focusonenergy.com/spreadsheet.

A. Anti-Sweat Heater Controls

1. Install equipment that senses the relative humidity in the air outside of the display case and reduces or turns off the glass door (if applicable) and frame anti-sweat heaters at low humidity conditions.
2. Equipment must control heaters on frame and mullion in all instances, and door, if equipped with heater.

B. Efficient Reach-In Cooler Case Doors

1. For refrigerated cooler case applications, only no-heat doors qualify; low-heat doors are not eligible.
2. Both no-heat and low-heat doors qualify if used on freezer cases.

C. LED Lighting in Reach-In Freezer or Cooler Case

1. Incentives are available for retrofits in existing refrigerated display cases and for new installations. Retrofit projects must completely remove the existing fluorescent fixture end connectors and ballasts to qualify (wiring may be reused).
2. Please enter the quantity of doors converted to LED lighting, not the number of fixtures.
3. Product must include a five-year manufacturer warranty.

D. Occupancy Sensors for LED Lighting In Reach-In Cases

1. Sensors for both end-of-aisle and individual cases qualify.
2. Please enter the quantity of doors controlled by sensors, not the number of sensors.

E. Efficient Fan Motors in Reach-In Case

1. Incentives are available for ECM (electronically commutated motor) and PSC (permanent split capacitor) fan motor retrofits in existing refrigerated display cases and for new installations. New PSC motors must replace shaded pole (S-P) motors. New ECM motors may replace either S-P motors or PSC motors.

F. Efficient Fan Motors in Walk-In Freezer or Cooler

1. Incentives are available for ECMs replacing shaded pole motors or PSC motors on existing walk-in freezer and walk-in cooler evaporator fans (does not include condenser fan motors). Incentive not available for equipment in new walk-in freezers or coolers.

G. Night Curtains for Open Coolers

1. Applies to professionally-installed, "permanent", low emissivity (reflective) night curtain products only.
2. Linear foot measurement is the side-to-side (not top to bottom) measured width of all installed night curtains.

H. Beverage Cooler Controls

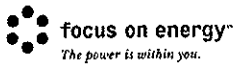
1. Controls must be applied to self-contained commercial merchandising beverage coolers only. Coolers must have see-through doors, may or may not have interior lighting, and must have net capacity ≥ 8 cubic feet.
2. Controls must include a passive infrared occupancy sensor to turn off lights and compressor when surrounding area is unoccupied for preset length of time. Control should periodically power up machine at intervals to maintain product temperature and provide compressor protection. For coolers containing non-perishable beverages only.

FORM SUBMITTAL: Return signed, completed form and ITEMIZED invoice within 30 calendar days of installation to:

Mail: Focus on Energy, Business Programs Incentives, 431 Charmany Drive, Madison, WI 53719

Email: Applications and invoices can be scanned and emailed to BPforms@weccusa.org **Fax:** 608.237.2147

Questions: Call 800.762.7077 then #2 for Business Programs



COMMERCIAL REFRIGERATION INCENTIVE APPLICATION

OFFICE USE ONLY
PROJECT ID: _____

THIS INCENTIVE APPLICATION FORM IS VALID FROM JANUARY 1, 2010 TO JUNE 30, 2010. INCOMPLETE APPLICATIONS WILL BE RETURNED.
Focus incentives are subject to change. Please visit focusonenergy.com/Incentives/business to ensure you are using the most current form.

COMMERCIAL REFRIGERATION INCENTIVE APPLICATION

Measure	Quantity Installed	Incentive	SUBTOTAL
Anti-Sweat Heater Controls	_____ # of Standard Doors	\$40 per Door	
	_____ # of Low-Heat Doors	\$40 per Door	
	_____ # of No-Heat Doors	\$40 per Door	
	_____ # of Standard Doors	\$40 per Door	
	_____ # of Low-Heat or No-Heat Doors	\$40 per Door	
	_____ # of No-Heat Doors	\$40 per Door	
Efficient Reach-In Case Doors	_____ # of Low-Heat Doors	\$50 per Door	
	_____ # of No-Heat Doors	\$100 per Door	
	_____ # of No-Heat Doors	\$10 per Door	
LED Lighting in Reach-in Freezer or Cooler Case	_____ # of Doors Converted to LED	\$25 per Door	
Occupancy Sensors for LED Lighting in Reach-in Cases	_____ # of Doors Controlled	\$10 per Door	
In Reach-in Freezer or Cooler Case: Efficient Fan Motors Replacing Shaded Pole Motors	_____ # of ECM Motors	\$30 per Motor	
	_____ # of PSC Motors	\$15 per Motor	
In Walk-in Freezer or Cooler: ECM Evaporator Fan Motors Replacing Shaded Pole or PSC Motors	_____ # of ECM Motors Replacing Shaded Pole Motors <1/20th hp Installed in: Freezer <input type="checkbox"/> Cooler <input type="checkbox"/>	\$30 per Motor	
	_____ # of ECM Motors Replacing Shaded Pole Motors ≥1/20th hp Installed in: Freezer <input type="checkbox"/> Cooler <input type="checkbox"/>	\$60 per Motor	
	_____ # of ECM Motors Replacing PSC Pole Motors >1/10th hp Installed in: Freezer <input type="checkbox"/> Cooler <input type="checkbox"/>	\$40 per Motor	
Night Curtains for Open Coolers	_____ # of Linear Feet Covered	\$9 per Linear Foot	
Beverage Cooler Controls	_____ # of Beverage Coolers Controlled	\$60 per Cooler	
TOTAL INCENTIVE REQUESTED Incentives not to exceed cost of the product.			\$

FORM SUBMITTAL: Return signed, completed form and ITEMIZED invoice within 30 calendar days of installation to:

Mail: Focus on Energy, Business Programs Incentives, 431 Charmany Drive, Madison, WI 53719

Email: Applications and invoices can be scanned and emailed to BPforms@weccusa.org **Fax:** 608.237.2147

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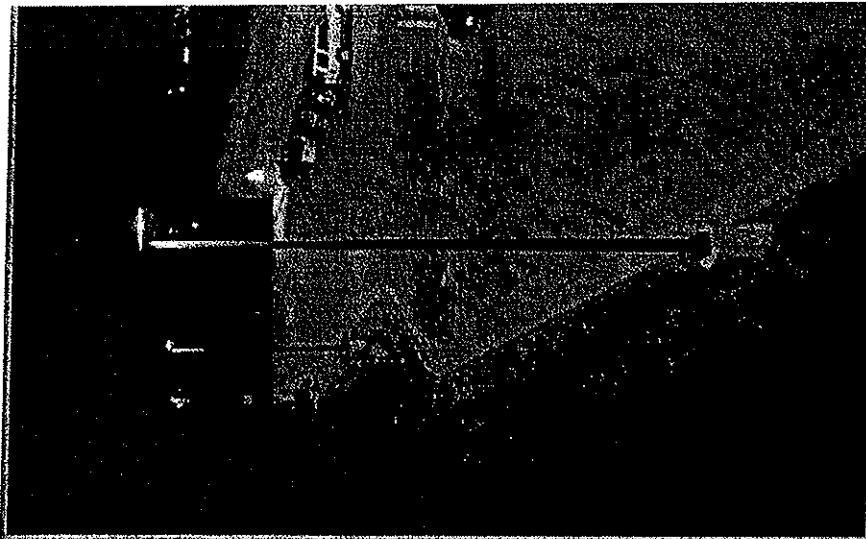
13713



July 14, 2009

EVERYDAY SUSTAINABILITY

SSL Market Introduction Workshop
Walmart LED Site Lighting
Demonstrations



6000-9

Why LEDs for parking lots?

Reduce maintenance

- Fewer lamps to replace & dispose

Save energy

- Less site wattage
- Instant re-strike and dimming
- Lower LPD (better utilization of less light)

Reduce wasted light

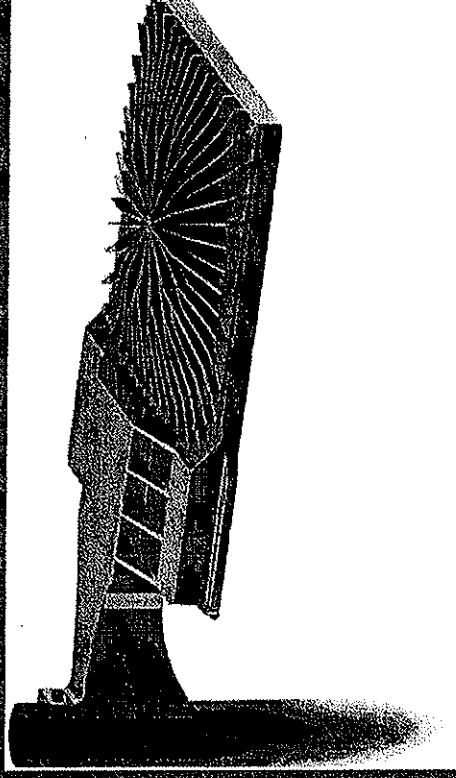
- Less light trespass with reduced shielding
- No uplight

Improve Visibility

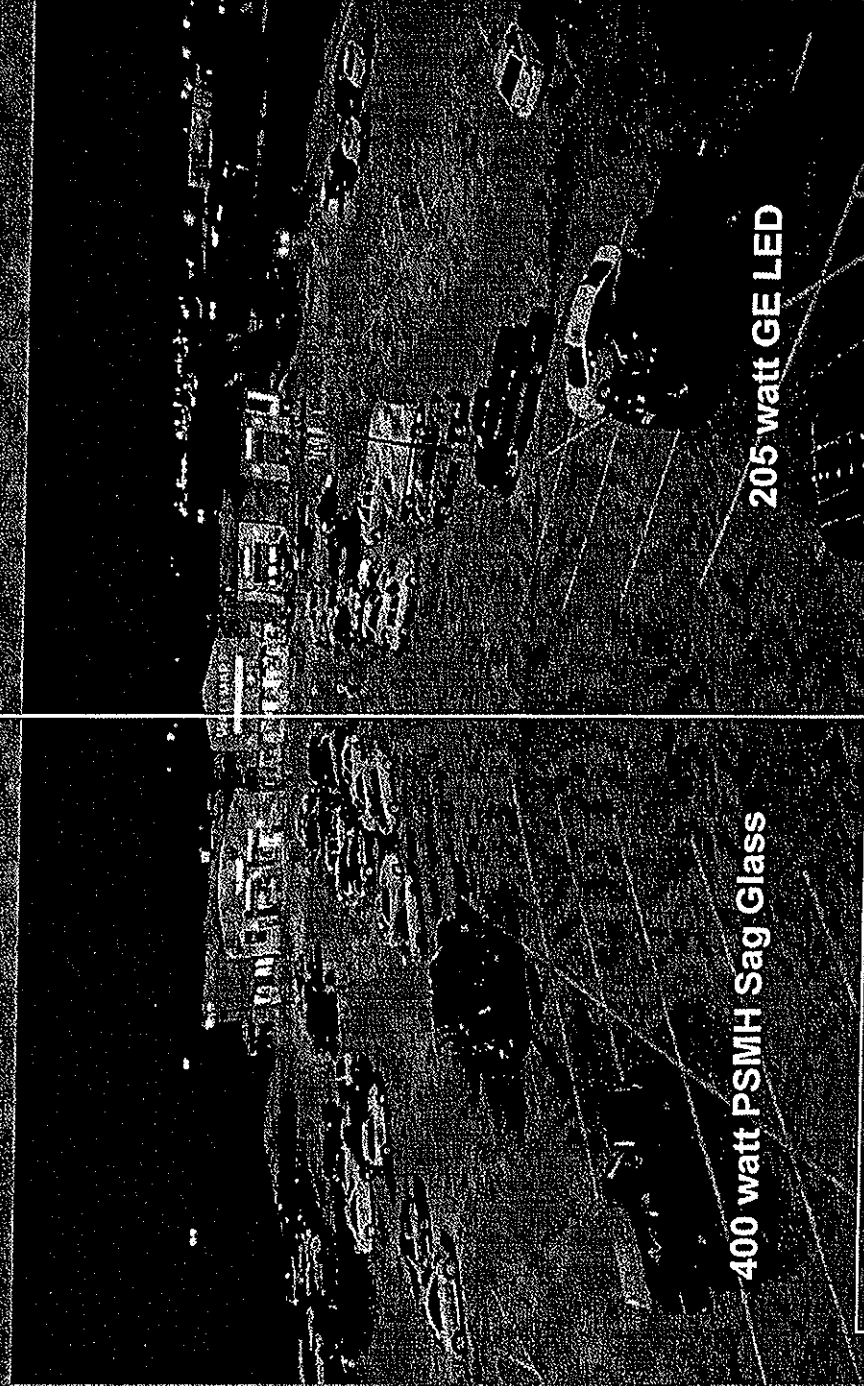
- Smoother visual transition due to uniformity
- Better vertical illuminance

Environmentally conscientious

- Reduce hazardous waste
- Reduce energy consumption



Wal-Mart's first LED parking lot test has 14 months of runtime to date

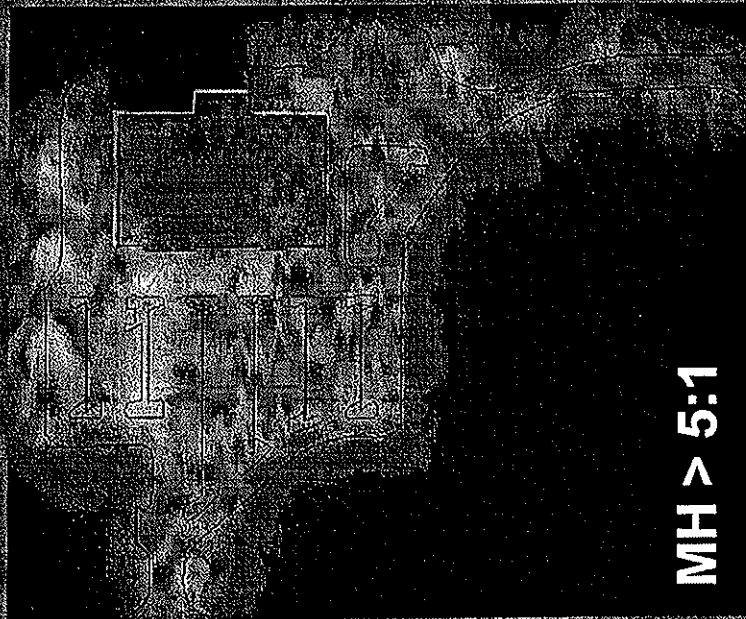


400 watt PSMH Sag Glass

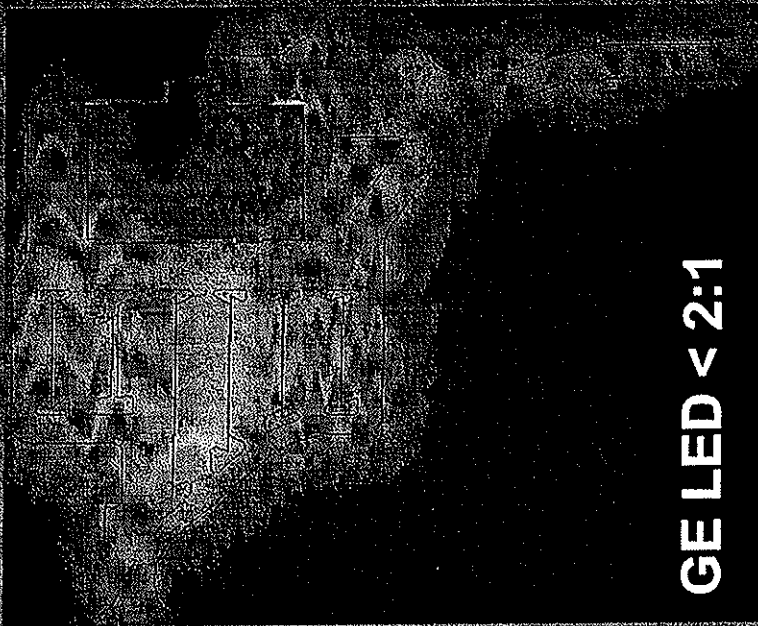
205 watt GE LED

Case Study: Wal-Mart NHM in Rogers, Arkansas
400W with 28ft mounting height

Confirmation #1: LED Lighting is more Uniform



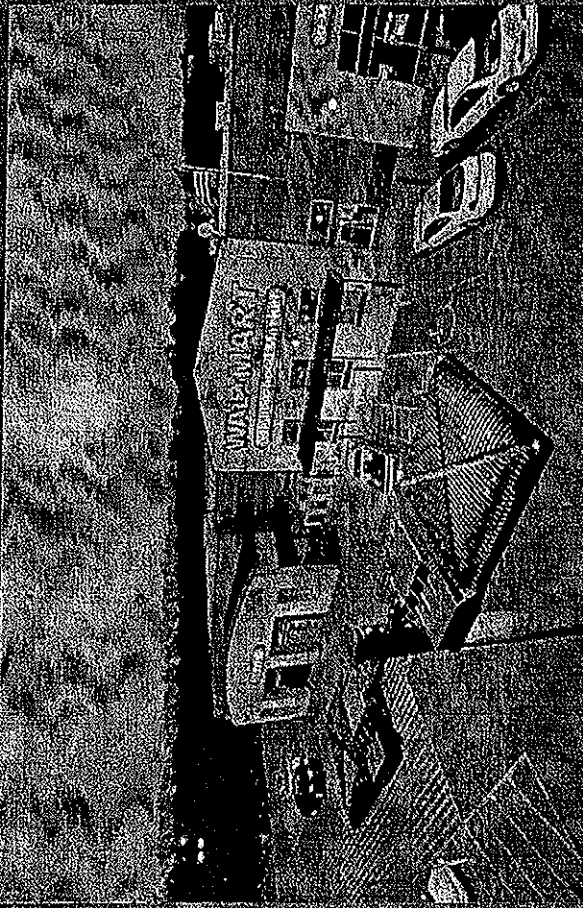
MH > 5:1



GE LED < 2:1

Uniformity improvement was noticeable, enabling
lower average light level on site

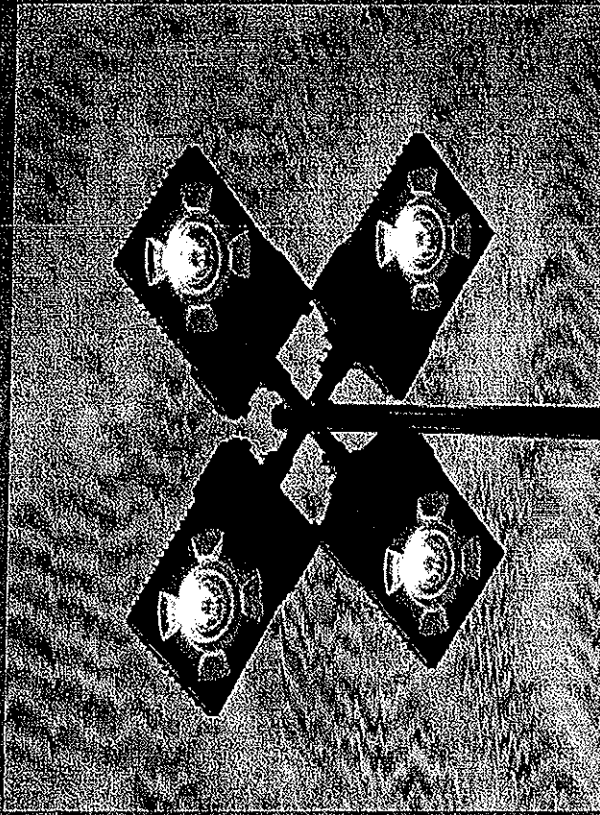
Confirmation #2: Effective LED Lighting Design will Reduce Site Energy



MH 400W

Site Wattage 16.8 kW

LPD (lighting power density) 0.086 W/sq ft



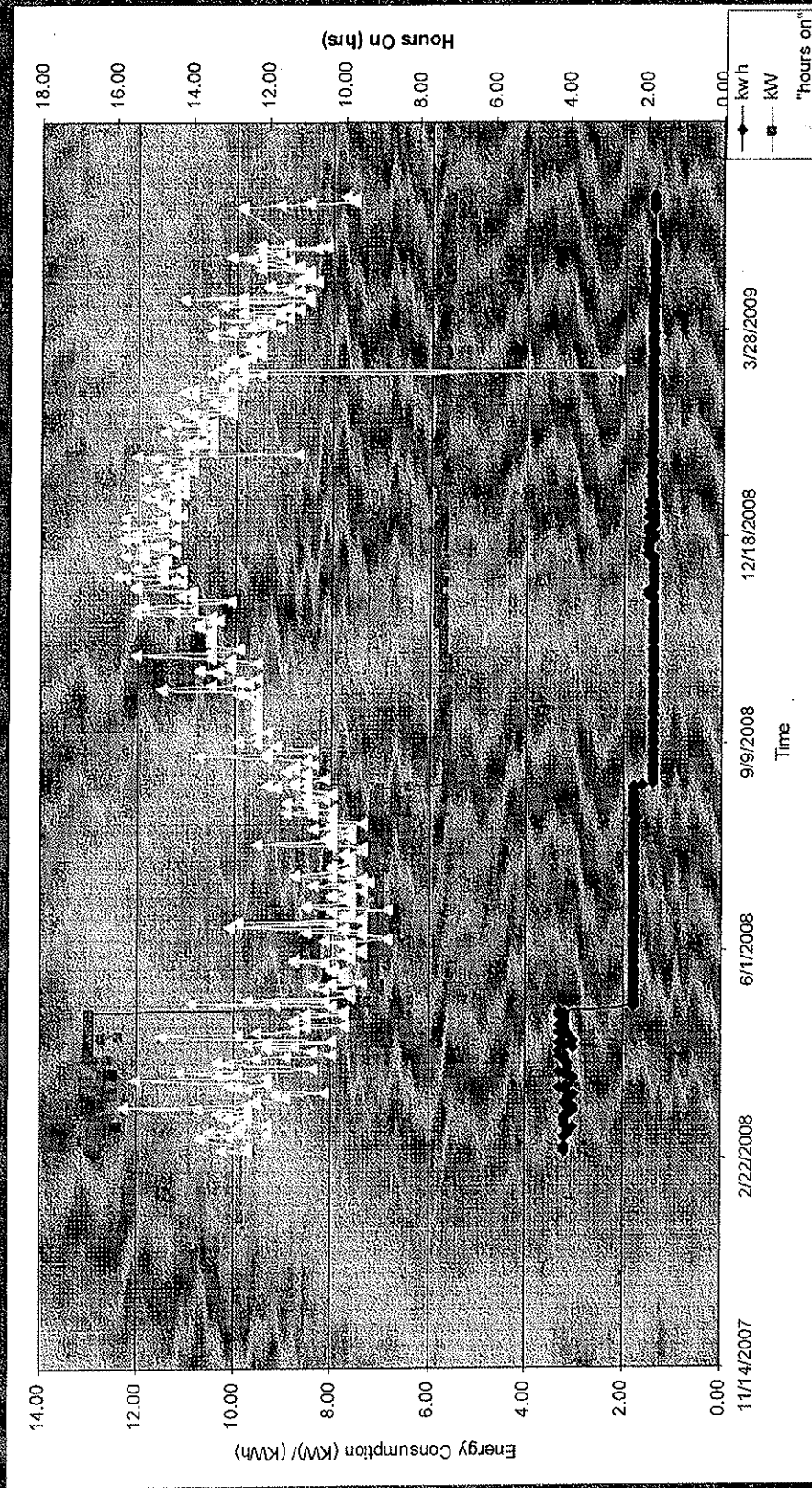
GE LED

5.6 kW

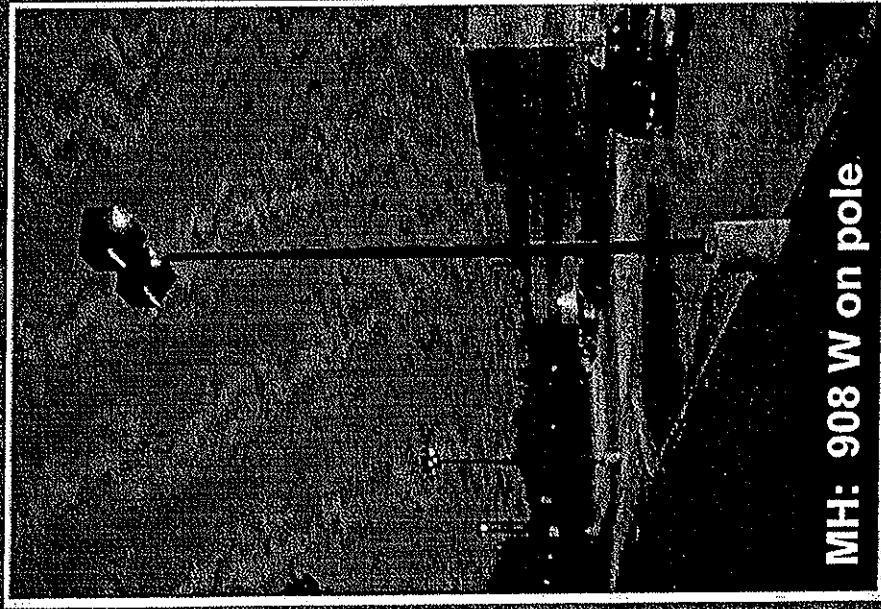
0.029 W/sq ft

>65% reduction in site energy saving \$4,900/yr*

Metered Energy Profile



Confirmation #3: LEDs more Efficiently Address Perimeter Lighting Requirements



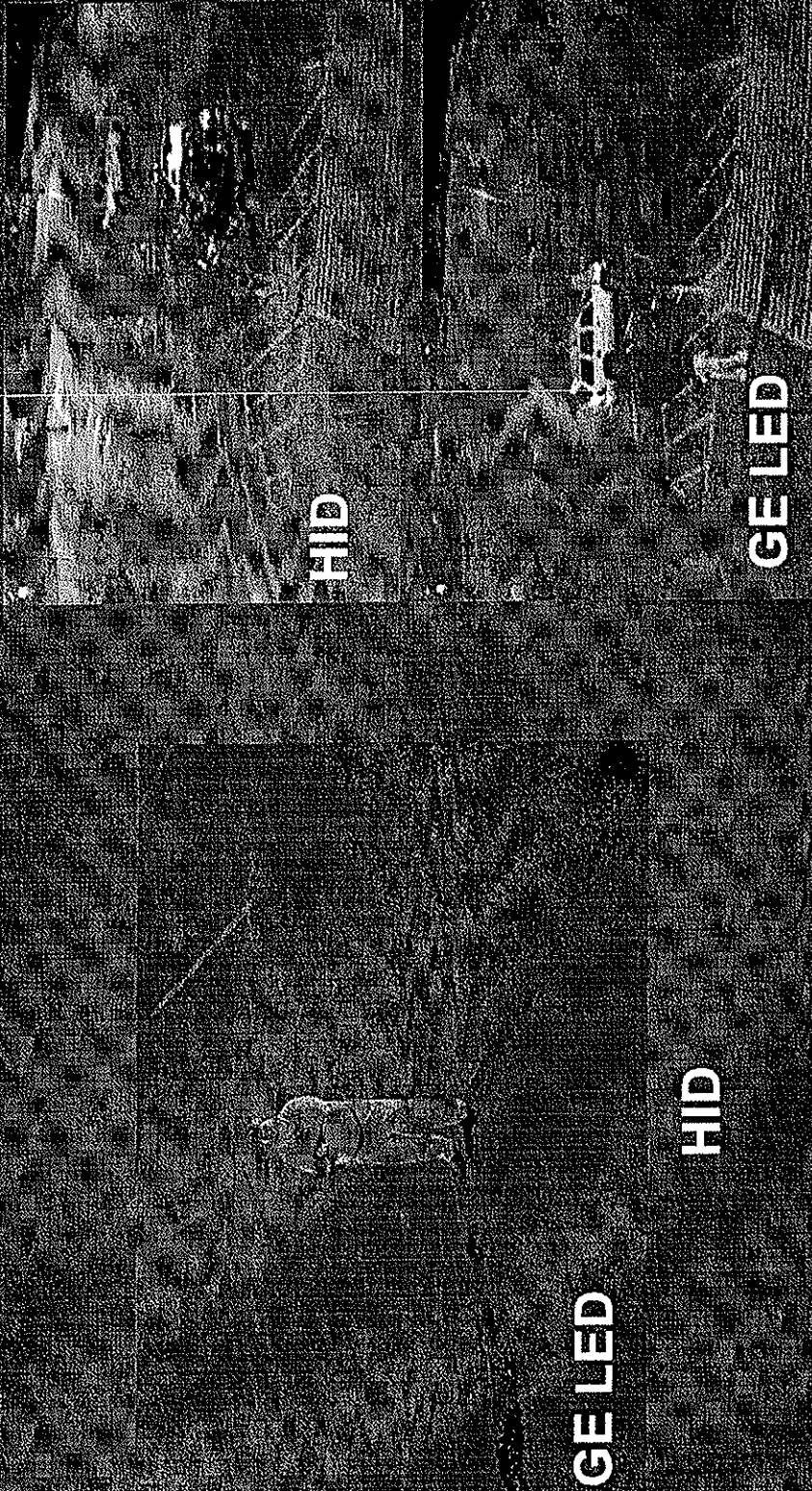
MH: 908 W on pole



GE LED: 200W on pole

LED is a great solution for tight local ordinances

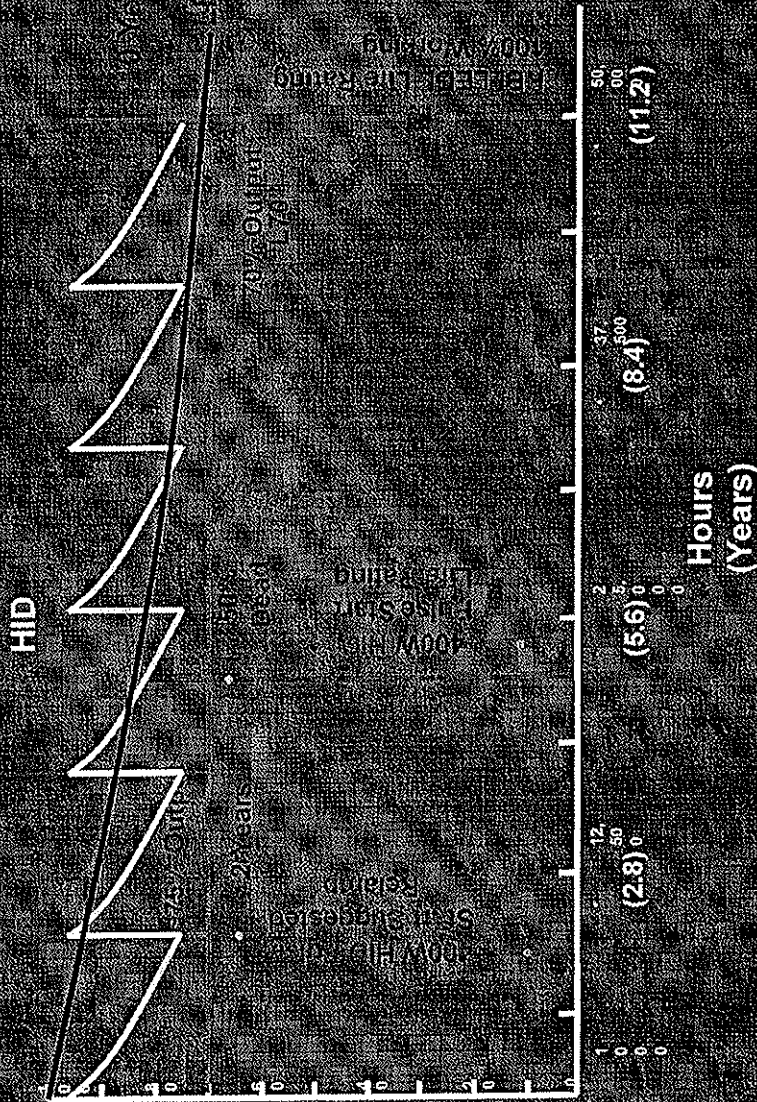
Confirmation #4: Vertical Illuminance Improves with LEDs



Wal-Mart Security evaluated performance via security cameras; acceptable

Confirmation #5: Less Maintenance

LED vs HID Life and Lumen Maintenance



•HID failure is lamp not functioning

•LED failure is 70% lumen maintenance but still functions

•Est. maintenance costs are high

-Relamp ~ \$25-\$100/fixture

-Spot ~\$200-\$500/ fixture

-LED maintenance is minimal \$

•LED systems require surge protection

•5 year warranty

LEDs increases Wal-Mart's relamp cycle and reduce spot replacement

CERTIFICATE OF SERVICE

It is hereby certified that a true copy of the foregoing Direct Testimony of Geoffrey C. Crandall, was served upon the persons listed below via electronic mail on this 17th day of February, 2010.

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Michael E. Heintz

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Summary: Testimony of Geoffrey C. Crandall, plus exhibits, electronically filed by Mr. Michael E Heintz on behalf of Environmental Law and Policy Center