

APPENDIX A

Proposal for Statewide

MARYLAND UTILITY ENERGY STAR® PARTNERSHIP PROGRAM

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Section I: Introduction

Pursuant to Section 7-211 (a) and (b), the Staff of the Public Service Commission mm, submits the MARYLAND UTILITY-ENERGY STAR® PARTNERSHIP PROGRAM design for Commission approval¹. This program seeks to engage Maryland electric and gas companies in a partnership with the ENERGY STAR® Program to promote energy efficiency and conservation among Maryland residential ratepayers.

This program will target HVAC, appliances, and new home construction. In addition, electric utilities will become partners in the DOE/EPA ENERGY STAR® Utility Transformers Program, which seeks to improve energy efficiency electric distribution system.

¹ ENERGY STAR® is a voluntary partnership between the U.S. Department of Energy, the U.S. Environmental Protection Agency, product manufacturers, local utilities, and retailers. Partners help promote efficient products by labeling with the ENERGY STAR® logo and educating consumers about the benefits of energy efficiency products.

Section II: Target Markets

This program will target Maryland's 2 million residential electric customers in Maryland in 1998 who consumed approximately 22,500 GWh of electricity. Additionally, this program will target Maryland's 900,000 residential customers, who consumed approximately 85 trillion BTU of natural gas during 1998.

The MD Utility ENERGY STAR® Partnership Program will develop and implement to educate and inform residential customers about energy efficiency and conservation opportunities. It will adopt strategies that have been utilized by electric and gas companies to transform markets to ENERGY STAR® specified levels of efficiency for HVAC equipment, appliances, and new home construction. It will further educate customers on the necessity of maintenance and servicing of equipment and appliances to maximize efficiency and reduce operating costs.

Section III Targeted End-Uses

The Maryland Utility ENERGY STAR® Partnership Program will address the following energy efficiency categories:

- New Home Construction;
- HVAC Replacement and Installation;
- Appliance & Consumer Products Program; and
- Electric Utility distribution systems.

Residential lighting is not addressed in this proposal. Electric have in Maryland have invested considerable resources in promoting compact florescent bulbs during the 1990's. Staff believes that, while significant opportunities shall exist in residential markets, that priority should be first given to the end-uses identified above. Residential lighting may be addressed in the future. Also, high-efficiency windows and insulation are not addressed in this proposal. Staff recommends that windows and insulation be addressed in the future. In addition, to the end-uses identified above, this program will also encourage electric companies increase energy efficiency in their distribution system.

Section IV: Program Administration

The Commission shall appoint an oversight board to oversee program implementation. The Consumer Education Advisory Board will serve as a model for the structure and composition of the board.

Section V: Program Designs

The Maryland Utility ENERGY STAR® Partnership Program will develop and implement energy efficiency programs for new home construction, appliances, and HVAC equipment. In addition, Maryland electric utilities will become partners in the Utility ENERGY STAR® Transformers programs.

A. Residential HVAC Replacement and Installation Program

1. Overview

This program aims to improve the efficiency of new central air conditioners and heat pumps. It promotes both the sale of high efficiency equipment and improvements in sizing and installation practices that affect operating efficiency. The long-term goal is to transform the market to one in which quality installations of high efficiency equipment are commonplace.

To achieve this goal, the program must overcome a number of important market barriers. Key among these are: (1) split incentives (between builders and homebuyers and between owners and renters); (2) consumers lack of information on the benefits (both energy and non-energy) of efficient equipment and quality installations; (3) lack of training for HVAC contractors on key installation issues and approaches to “selling” efficiency; and (4) consumers inability to differentiate between good work and poor work or between quality contractors/technicians and those less skilled. The program employs several key strategies to overcome these barriers:

- Aggressive consumer marketing campaign on key elements & benefits of efficiency;
- Direct marketing to HVAC distributors and contractors through “circuit riders”;
- Training of HVAC contractors on key elements of quality installations;

- ENERGY STAR® sales training for contractors (i.e. on how to sell efficiency);
- Promotion of HVAC technician certification (including mechanism for consumer referrals); and,
- Promotion of significant increases in minimum federal efficiency standards.

More specific long-term program objectives and activities to achieve market transformation are referenced in the NEEP regional initiative description for the High Efficiency Residential HVAC Equipment and Installation Initiative. The Maryland program will be directly coordinated with the regional program and other related national efforts. This program will be closely coordinated with Maryland's sales tax credit for ENERGY STAR® program.

2. Target Market/Eligibility

The program targets all residential dwellings (whether existing or new) into which a new central air conditioner or heat pump and natural gas furnace is being installed.

3. Joint/Coordinated Delivery

The Board will develop a consistent program design and ensure that it is implemented in a consistent fashion across the state including identical program eligibility requirements, efficiency standards and incentive levels – all promoted through a single, statewide rebate form. Likewise, statewide inspection procedures (for quality control) and promotion of contractor certification will be used. In addition, the Board will sponsor consistent, statewide contractor training, program marketing and evaluation.

4. Timeline/Transition Plan

Milestones for the development, refinement and implementation of the program relative to the date of regulatory approval of this program plan include:

- Conduct and complete initial baseline study to assess key market characteristics and current practices regarding the installation of new and replacement HVAC systems for completion within eight months of program approval;
- Prepare program requirements and procedures including identical efficiency standards (including proper installation) and inspection procedures, and a single, statewide rebate form within two months of program approval;
- Select and hire a qualified contractor to enlist and support HVAC contractor participation in the statewide program within four months of program approval;
- Develop and begin offering HVAC technician training program for proper equipment sizing and installation within four months of program approval;
- Develop and begin implementation of a comprehensive consumer information and marketing campaign in coordination with the HVAC Tune-Up/Repair Program within four months of program approval;
- Develop and begin implementation of a plan to promote quality technicians/ contractors trained and certified by a 3rd party (e.g. ACCA, NATE, or other local or national entity) within eight months of program approval; and,
- Develop a multi-year evaluation plan and jointly hire a contractor to begin implementation within ten months of program implementation.

5. *Performance Indicators*

In the first year, the ability to meet the milestones identified above will be the primary measure of the program administrator(s)' performance. In subsequent years, the following criteria will be used to judge performance:

- Market share for properly installed, high efficiency central A/Cs and heat pumps;
- Customer awareness of the benefits and key elements of efficient equipment and quality installations;
- Number of HVAC technicians/contractors with training in key elements of quality installations (e.g. sizing, charging, airflow, duct design); and
- Number of certified HVAC technicians/contractors.

6. Program Goals

Goals for this program will be developed and filed with detailed program filings.

B. Residential ENERGY STAR® Appliance & Consumer Products Program

1. Overview

The program will promote the sale and purchase of ENERGY STAR® appliances and consumer products primarily through marketing, consumer education and related activities. The long-term goal will be to transform the appliance and consumer products market to one in which efficient products become the market standard. Experience in other parts of the country suggests that the program will have to overcome several market barriers to achieve this goal. Key among these are: (1) lack of consumer awareness on the benefits of efficient models; (2) inability of consumers to differentiate efficient from inefficient products; (3) limited availability of efficient models in key retail outlets; (4) lack of retailer understanding of the efficiency, its benefits and how to “sell” it; and (5) higher first costs. The program will employ several strategies to address these barriers:

- Consumer education on the benefits of ENERGY STAR® appliances and consumer products;
- Marketing to raise the market visibility of these products, focusing particularly on promotion of the ENERGY STAR® brand – integrated with ENERGY STAR® marketing in other product areas (e.g. Lighting, Windows and New Homes) to the extent appropriate;
- Retail sales training and point of sale materials to help sales people more easily and effectively identify and market the benefits of efficient products; and
- Support (as appropriate) for up grading minimum federal appliance efficiency standards.

More specific long-term program objectives and activities to achieve market transformation are referenced in the Northeast Energy Efficiency Partnership's (NEEP) regional

initiative description for ENERGY STAR® appliances. The Maryland program will be directly coordinated with the regional program and other related national efforts. The program will be coordinated with the other residential energy efficiency programs and designed to work with Maryland's sales tax credit for ENERGY STAR® products.

2. Target Market/Eligibility

The program promotes ENERGY STAR® appliances and consumer products purchased by residential customers and commercial customers who purchase new household appliances at retail outlets.

3. Efficiency Measures/Standards

The program promotes ENERGY STAR® appliances, home electronic products and office equipment producers. In the appliance area, the program will focus on four major household ENERGY STAR® appliances--refrigerators, clothes washers, dishwashers, and room air conditioners. The program will also promote ENERGY STAR® home electronics products (DVD, home audio, televisions, television/VCR combinations, and VCRs) and office equipment products (computers and monitors, copiers, fax machines, multifunction devices, printers, and scanners). Because many major retail outlets now carry appliances, electronics, *and* home office equipment, the opportunities to simultaneously promote products across all three categories will be pursued whenever possible.

As the program develops over a four-year planning period, it will be updated to include additional appliances and products that are added to the ENERGY STAR® products list (e.g., candidates include dehumidifiers and water heaters). The ENERGY STAR® specifications for each product are also likely to evolve as federal standards change and new products enter the market. The program will adapt to these types of changes as appropriate. The program will take

maximum advantage of opportunities to coordinate with the Maryland ENERGY STAR® tax credit as well as regional and national campaigns.

4. *Joint/Coordinated Delivery*

The Board will develop a consistent program design and implement it as a seamless statewide program across the state, including development and implementation of a statewide marketing, brand awareness campaigns, and evaluation plan. Through a statewide effort, the Board will also provide consistent retail marketing support activities statewide. Evaluation activities will include regular brief market progress reports based on analyses of program data and, less frequently, comprehensive field evaluations to assess changes in key market indicators.

The appliance program will take maximum advantage of opportunities to coordinate with national and regional activities. Examples include EPA's/DOE's national ENERGY STAR® program and the (NEEP's) regional program. The program's marketing message will be delivered through multiple channels including point of sale materials, special promotions, the Internet, and mass media. Program marketing efforts will also be integrated with the other Maryland ENERGY STAR® programs targeting residential retail channels (e.g. lighting, homes and windows). For example, some portion of the program marketing efforts may be allocated to broader, umbrella marketing campaign for all residential ENERGY STAR® products.

5. *Timeline/Transition Plan*

Milestones for the development, refinement and implementation of the program relative to the date of regulatory approval of this program plan include:

- Within seven months, complete a baseline study regarding key market characteristics and consumer awareness and interests regarding appliances, home electronics and office equipment of the types included in the ENERGY STAR® program;

- Within ten months, through a hired contractor, begin to deliver retail marketing support across the entire state;
- Within ten months, hire a contractor to begin implementing an evaluation plan; and
- Within ten months, develop and begin implementing a joint and coordinated marketing and brand awareness strategy.

6. *Performance Indicators*

In the first year, the ability to meet the milestones identified above will be the primary measure of the program administrator(s)' performance. In subsequent years, the program will also generate critical measurable results and momentum towards the more general transformation of the targeted appliance markets. The market indicators that may be used to measure this progress include:

- Decrease in the incremental first costs for each type of high efficiency product;
- Market share for each product;
- Number of qualified ENERGY STAR® products available and on display;
- Consumer recognition and use of the ENERGY STAR® brand when making purchases; and,
- Customer and Salesperson familiarity with energy efficient products.

7. *Program Goals*

Numeric goals, such as improvements in market shares, will be established after the baseline study has been completed.

C. Maryland ENERGY STAR® New Home Construction Program

1. Overview

This program is designed to increase the efficiency of residential new construction, with the long term goal of transforming the market to one in which all new homes in Maryland are built at least as efficiently as the current ENERGY STAR® homes standard.

There are a number of market barriers to efficiency investments in new construction. Key among these are: (1) split incentives (i.e. builders who make design decisions will not pay the energy bills associated with those decisions); (2) lack of information on the benefits of efficiency (on the part of consumers, builders, lenders, appraisers, realtors and others); (3) limited technical skills to address key elements of efficiency; and, (4) inability of consumers, lenders, appraisers and others to differentiate between efficient and standard homes. The program will employ several key strategies to overcome these barriers:

- Marketing assistance to builders of efficient homes (promoting ENERGY STAR® label);
- Technical assistance and training to builders and their subcontractors;
- Home energy ratings and ENERGY STAR® certification to qualified homes;
- Incentives to builders to construct homes to program standards;
- Outreach to other key market actors – e.g., lenders, realtors, inspectors, appraisers – to educate them on the benefits of efficiency and encourage them to support the program;
- Support to foster the development of market-based mechanisms to facilitate market transformation, including a uniform statewide energy rating system, accreditation of independent (e.g. private market) raters, development of preferential mortgage products for efficient homes; and
- Technical support/training on residential energy code updates and implementation.

The Maryland program will be directly coordinated with related regional and national programs (e.g., U.S. EPA's ENERGY STAR® Home and consumer products programs, the regional ENERGY STAR® Lighting and Appliance programs). The program will be coordinated with the other residential energy efficiency programs and designed to work with Maryland's sales tax credit for ENERGY STAR® products.

2. Target Market/Eligibility

Any new home or existing home undergoing substantial renovation or remodeling is eligible to participate. Both single family and multi-family buildings are eligible as long as they are individually metered (i.e., non-commercial accounts).

3. Efficiency Measures/Standards

To participate in the program a home must: (1) meet a *performance standard* of at least 30% less energy consumption (same as EPA's ENERGY STAR® standard) than if it had been built to the current Maryland statewide energy code²; and (2) document proper HVAC equipment sizing and installation. The performance standard can be met through any combination of insulation up-grades, efficient windows, air sealing, efficient HVAC equipment, and/or duct sealing. A home energy rating (a score of 86 points is required to achieve the current ENERGY STAR® home standard) will be required to demonstrate a combination of such measures has resulted in attainment of the ENERGY STAR® home standard.

4. Incentives

This program will provide no direct incentives to customers. The cost of providing inspections and other service-related materials (estimated to be approximately \$300), will be partially subsidized by this program.

² Legislation adopted in 2000 requires the Maryland Department of Housing and Community Development to upgrade the statewide building code to the 2000 International Building Code, including the 2000

5. *Joint/Coordinated Delivery*

The Working Group will develop a consistent program design and ensure that it is implemented in a consistent fashion across the state including identical program eligibility requirements, efficiency standards (including verification with home energy ratings) and incentive levels, and a statewide sales and marketing strategy and evaluation plan. Finally, the administrator(s) will work with appropriate state agencies, including the Department of Housing and Community Development and the Maryland Energy Administration, to develop a statewide rating system, rater accreditation infrastructure, energy efficient mortgage products and mechanisms for promoting market transformation. This includes support for the development and delivery of state-sponsored trade ally and builder training and technical support to improve implementation of the Maryland residential building energy code (e.g., co-sponsor training sessions and materials).

6. *Timeline/Transition Plan*

Milestones for the development, refinement and implementation of the program relative to the date of regulatory approval of this program plan include:

- Within four months, finalize program design details such as incentive amounts, incentive structures, and inspection procedures;
- Within six months, select and hire a qualified contractor to enlist and support builder participation in the statewide program;
- Within six months, offer technical assistance, inspections, energy ratings and incentives to builders across the entire state;
- Within six months, offer technical assistance to up-grade the Maryland statewide residential energy code to the 2000 International Energy Conservation Code and/or assist training and technical support for the newly-adopted statewide energy code;

International Energy Conservation Code, in 2001.

- Within eight months, complete a baseline study to collect data on key market characteristics and current practices;
- Within nine months of approval, develop and hire a single contractor to begin implementing a program evaluation plan; and
- Within twelve months of approval, develop and begin implementing a statewide marketing strategy to raise consumer awareness and builder participation.

7. *Performance Indicators*

In the first year, the ability to meet the milestones identified above will be the sole measure of the administrator's performance. In subsequent years, the following criteria will be used to judge performance:

- Market share for ENERGY STAR® Homes;
- Attitudes/awareness among consumers, builders and other key market actors;
- Leveraging of marketing assistance from trade allies; and increasing availability/use of home energy ratings and energy efficient mortgages.

8. *Program Goals*

Goals will be determined as part of the program design process. Goals will be set to equal programs around the country.

D. Utility ENERGY STAR® Transformers

Distribution transformers are one of the most widely used elements in the U.S. electric distribution system. They convert electricity from the high voltage levels in utility transmission systems to voltages that can safely be used in businesses and homes. Many transformers operate at efficiency levels exceeding 98 percent. However, these losses of about 2 percent of total U.S. electricity generation, amount to about 61 billion kilowatt-hours of wasted electricity each year. In 1995, EPA introduced the ENERGY STAR® Utility Distribution Transformers to encourage

manufacturers and utilities to produce and purchase high-efficiency distribution transformers, increasing profitability and reducing lost or wasted electricity. The DOE reports that the potential savings and emission reductions that could result from a 1/10th of 1 percent in transformer efficiency to be the following

- 2.9 billion kWh;
- 1,780,000 MT of CO₂;
- 13,200 MT of SO₂; and
- 5,300 MT of NO_x.

The DOE asserts that this the equivalent of more than a full day's electric power to all U.S. households.

Investment in generation is no longer considered part of the core mission for electric utilities and has lost much of its relative importance for utilities and regulatory planners. This trend is further compounded by two factors: (1) reluctance of utilities to invest significant capital before the framework of a deregulated industry is clearly defined, and (2) the desire of many utilities to reduce short-term expenditures in order to provide lower customer rates. The trend towards increased investment in products and services rather than system capacity presents a dilemma to both utilities and regulators.

Cost-effective high-efficiency transformers provide numerous short- and long-term benefits to utilities and their customers. The benefits identified by the DOE include:

- **Reliable long-term energy and capacity savings.**
The cost of energy saved using high-efficiency transformers is often less than two cents per kilowatt-hour, which compares favorably to the average cost of new generation (approximately \$0.03/kWh). This low cost helps reduce long-term electric consumer rates.

- Reduced investment in expensive transmission and distribution (T&D) capacity. Strategic use of high-efficiency distribution transformers reduces the need for high-cost transmission upgrades.
- Reliable air emissions reductions, often at no cost to utilities and their customers. Most utilities do not include air emission compliance costs in their economic evaluations of transformer designs. In cases where the overall cost of high-efficiency transformers is no higher than the cost of a less efficient design, high-efficiency transformers provide emission reductions at no cost to the utility.
- Improved utility competitiveness through more efficient and reliable distribution systems. Deregulation and the accompanying regulatory reforms (such as performance-based ratemaking) will make efficient operation of T&D systems more important to a utility's competitiveness and profitability. Utilities investing in high-efficiency transformers will be ensuring continued profitability.

The DOE reports that the average maximum efficiencies for utility transformers exceeds 97 percent. However, significant cost-effective energy savings can be achieved using currently available transformer technologies. The long service lives of the approximately one million new transformers sold each year means that small efficiency gains can yield large lifetime energy savings and emission reductions. On average, utility transformers remain in service for more than 30 years. The cost of installing a new transformer precludes replacing these transformers with more efficient designs unless the original transformer has been damaged or is malfunctioning. As a result, transformer purchase decisions made by a utility today have important and irreversible long-term economic and environmental impacts.

EPA's ENERGY STAR® Transformer Program is a voluntary program encouraging investment in cost-effective high-efficiency transformers. This Program provides a variety of technical tools to help utilities optimize their transformer sizing and selection decisions. Electric Utilities commit to perform rigorous economic evaluation of the total owning costs of distribution transformers and purchase cost-effective transformers that meet the ENERGY STAR® criteria.

EPA has developed DTCEM to assist utilities in considering both the economic and environmental benefits of energy- efficient distribution transformers. Using industry accepted methodologies based on the total owning cost (TOC) analytical method, DTCEM offers utilities an easy yet comprehensive tool that assists in the evaluation of multiple transformer bids. DTCEM prompts the user to enter utility specific information (load characteristics and cost factors) and manufacturer bid data in order to develop two summary reports. These reports present an analysis of total owning cost, cost of saved energy, simple payback, emission reduction potential, and other factors that should be considered in transformer purchasing decisions.

ENERGY STAR® Transformer Utility Partners sign a voluntary Memorandum of Understanding (MOU) in which they agree to purchase high-efficiency transformers for their distribution systems where cost-effective. In return, EPA will provide Partners with a variety of technical support tools and services designed to assist efforts to analyze high-efficiency distribution purchase decisions. In addition, EPA will provide Partners with communications support and public recognition of their environmental leadership.

EPA provides:

- Analytical tools to assist Partners' evaluations of transformer purchases and transformer sizing decisions.
- Communications materials, including sample advertisements, bill inserts, and fact sheets to help Partners inform their employees, customers, and stakeholders about their commitment to cost-effective pollution prevention.
- Public recognition including public service advertisements and press announcements to highlight Partners' program participation and successes
- Technical support including a toll-free technical hotline and reports on key transformer topics.

- Electronic version of EPA's ENERGY STAR® Transformer Program logo to help Partners publicize their program participation to customers system, under which participants receive credit for CO₂ reductions.

Partners agrees to:

- Analyze the economics of transformer purchases using standard total owning costs methodologies;
- Purchase transformers that meet or exceed the ENERGY STAR® target efficiencies only when cost-effective;
- Consider working with EPA to publicize the benefits of high-efficiency transformers key customer groups;
- Allow EPA to use its company logo and pollution results to promote its participation in EPA's voluntary programs; and
- Provide annual documentation of energy savings and pollution prevention calculations to the U.S. Department of Energy (DOE) 1605(b) reporting system, under which participants receive credit for CO₂ reductions.

This program will encourage electric utilities in Maryland to become partners in the EPA's ENERGY STAR® Transformer Program. Maryland who elect not to become partners in this program must show just cause why the program is not cost-effective or that current planning practices meet or exceed those prescribed by the ENERGY STAR® Program.

Section VI: Proposed Budgets

Table A-1 below summarizes the budgets for each of the proposed programs. These budgets are based on a philosophy of limited incentives for customers. The budgets for the ENERGY STAR® Appliance program is based on NEEP's budgets. The budgets for New Home Construction and Residential HVAC replacement were provided by NEEP and adjusted by Staff, by eliminating the customer incentives. The total spending under this scenario is approximately \$21.5 over a three-year period.

The budgets proposed by Staff are only preliminary estimates. The final program proposals filed by electric and gas companies will reflect more detailed spending estimates. All proposed programs will conform to a spending for all residential programs in Maryland of \$30 million over a three-year period, or approximately \$10 million per year for program expenditures for the four investor-owned utilities. The MD Utility-ENERGY STAR® Partnership Working Group will have the flexibility to propose final designs for each program which include budgets in excess of those proposed so long as total spending does not exceed the cap. The cap will be adjusted as gas and other electric companies enter the working group. The Cap will be adjusted after three years to reflect cost changes and program offerings. Program costs associated with the ENERGY STAR® Transformers Program do not count toward the cap.

The Board will be responsible for preparing budgets for individual programs. Individual budget items may differ according to the FERC accounting procedures. The working group would have the flexibility to propose spending levels for those categories as long as the total costs do not exceed the cap.

**Table A-1
ENERGY-EFFICIENCY PROGRAMS BY PROGRAM IN MARYLAND
ESTIMATED 3 YEAR BUDGETS FOR**

ENERGY-EFFICIENCY PROGRAMS	Year 1	Year 2	Year 3	Total
ENERGY STAR® Appliances	\$2,286,108	\$1,942,084	\$1,760,552	\$5,988,744
Residential New Construction	\$1,606,344	\$2,428,988	\$3,062,280	\$7,097,612
Residential HVAC	\$2,829,120	2,752,244	\$2,850,686	\$8,432,050
Total	\$6,721,572	\$7,123,316	\$7,673,518	\$21,518,406

**Table A-2
ENERGY STAR® APPLIANCES PROGRAM
3 YEAR BUDGETS**

Cost Categories	Year 1	Year 2	Year 3	Total
Customer Incentives	\$561,468	\$449,174	\$262,018	\$1,272,660
Contractors	\$1,422,640	\$1,220,450	\$1,220,450	\$3,863,540
Customer Marketing	\$50,000	\$50,000	\$50,000	\$150,000
Program Staffing	\$182,000	\$187,460	\$193,084	\$562,544
Program Evaluation	\$70,000	\$35,000	\$35,000	\$140,000
Program Total	\$2,286,108	\$1,942,084	\$1,760,552	\$5,988,744

**Table A-3
RESIDENTIAL NEW CONSTRUCTION PROGRAM
3 YEAR BUDGETS**

Cost Categories	Year 1	Year 2	Year 3	Total
Customer Incentives	\$0	\$0	\$0	\$0
Contractors	\$1,162,824	\$2,131,162	\$2,610,020	\$5,904,006
Customer Marketing	\$50,000	\$50,000	\$50,000	\$150,000
Program Staffing	\$143,520	\$147,826	\$152,260	\$443,606
Evaluation	\$250,000	\$100,000	\$250,000	\$600,000
Program Total	\$1,606,344	\$2,428,988	\$3,062,280	\$7,097,612

Table A-4
RESIDENTIAL HVAC PROGRAM
3 YEAR BUDGETS

Cost Categories	Year 1	Year 2	Year 3	Total
Customer Incentives	\$	\$0	\$0	\$0
Contractors	\$725,000	\$787,500	\$725,000	\$2,237,500
Customer Marketing	\$1,500,000	\$1,500,000	\$1,500,000	\$4,500,000
Program Staffing	\$354,120	\$364,744	\$375,686	\$1,094,550
Evaluation	\$250,000	\$100,000	\$250,000	\$600,000
Program Total	\$2,829,120	2,752,244	\$2,850,686	\$8,432,050

Section VI!: Program Selection Criteria

A. Cost-Effectiveness

In the past the Commission has not required cost-effectiveness screenings for education and information programs. Education and information programs have provided information to customers about the cost-effectiveness of a measure or practice from the perspective of the customer. This was the case for both public information programs and demand-side management programs even though the programs were justified by other criteria. Further, it appears that the General Assembly, when considering the Clean Energy Act, viewed the impacts from the customer perspective.

Table A-5 below shows the results of a simple payback analysis for Maryland prepared for Staff by the DOE for current ENERGY STAR® appliance specifications, and for new specifications now under consideration by the DOE. As both tables indicate that the expected payback for appliances (both existing and new standards) is between two and six years, far less than the expected useful life of the appliance.

<p align="center">Table A-5 Projected Kwh Savings For Maryland & Cost-Effectiveness Criteria Current ENERGY STAR® Specifications (As Of 9/30/00)</p>						
Appliance Type	Average Price Difference from non-ENERGY STAR® to ENERGY STAR®	kWh/year Savings ¹	\$ Savings	Additional CW Water Savings ²	TOTAL \$Savings	Payback (years)
Clothes Washer	300	617	\$45.66	\$7.53	\$53.19	5.6
Dishwasher	27	158	\$11.69		\$11.69	2.3
Refrigerator	30	121	\$8.95		\$8.95	3.4
Room Air Conditioner	51	147	\$10.88		\$10.88	4.7
<p>Notes: 1 The electricity rate used was the Maryland State Energy Rate = \$ 0.074 2 The water rate used was the Baltimore water rate of \$7.98 (Residential rate for 1000 CF or 7480 gallons). 3 Currently, there are not enough ENERGY STAR® qualified refrigerators and room air conditioners on the market to have any price data.</p>						

Table A-6
Projected kWh savings for Maryland & Cost-effectiveness Criteria
New ENERGY STAR® Specifications

Appliance Type	Average Price Difference from non-ENERGY STAR® to ENERGY STAR®	kWh/year Savings ¹	\$ Savings	Additional CW Water Savings ²	TOTAL \$Savings	Payback (years)
Clothes Washer	300	617	\$45.66	\$7.53	\$53.19	5.6
Dishwasher	27	172	\$12.73		\$12.73	2.1
Refrigerator	NA ³	50	\$3.70		\$3.70	NA
Room Air Conditioner	NA ³	70	\$5.18		\$5.18	NA

Notes:

1 The electricity rate used was the Maryland State Energy Rate = \$ 0.074

2 The water rate used was the Baltimore water rate of \$7.98 (Residential rate for 1000 CF or 7480 gallons).

3 Currently, there are not enough ENERGY STAR® qualified refrigerators and room air conditioners on the market to have any price data.

Table A-7 presents the results of a simple payback analysis for energy efficient upgrades suggested by the HES program for equipment and measures not included in Tables A-7 and 8 above. The information is based on national data, therefore, the actual economics for Maryland customers will be somewhat longer given that Maryland rates are approximately 16 percent low than the assumed electric rate used for this analysis.³

³ The electric rate used for his analysis is 8.8 cent per kWh, while the HES programs assumes a residential rate of 7.4 cents per kWh.

Table A-7
Simple Payback and Return Analysis
(National Average)
For Energy Efficiency Improvements and Measures

Energy Efficiency Upgrade	Purchase Price¹	Annual Bill Savings²	Simple Payback (yrs)	Rate of Return
Fluorescent Lamps & Fixtures	\$200	\$80	2.5	41%
Duct sealing	\$250	\$95	2.6	41%
ENERGY STAR® Programmable Thermostat	\$107	\$29	3.7	30%
Water Heater Tank Wrap (R-12)	\$85	\$23	3.7	28%
ENERGY STAR® Heat Pump	\$692	\$126	5.5	19%
Air sealing to 0.5 air changes per hour	\$522	\$38	13.7	9%
Increase wall and attic insulation	\$1,784	\$111	16.1	8%

NOTES:

Assumes typical house with air-source heat pump, electric water heating, clotheswasher, clothes dryer, dishwasher. Purchase prices and annual bill savings for efficiency measures are in nominal 1997 dollars. The rate of return assumes 3% annual inflation in residential electricity prices. After-tax rates of return assume a 28% marginal income tax rate.

¹ Purchase price of clotheswasher, dishwasher, thermostat, and heat pump measures is incremental to the price of existing "NAECA" appliance standards. All other prices reflect the full cost of the measure, including installation.

² Bill savings assume average electricity cost of 8.8¢ per kilowatt-hour. Bill savings of equipment measures are relative to a NAECA standard unit.

³ Heating and cooling consumption values are from LBNL energy modeling using DOE-2; other enduse consumptions are from the U.S. Department of Energy's Residential Energy Consumption Survey (RECS).

It appears that many of if, not all of the energy efficiency measures described above are cost-effective for Maryland residential customers on the basis of a simple payback. Based on the analysis provided by DOE, Energy room air-conditioners, dishwashers, refrigerators, and clothes washers appear to be cost-effective for Maryland residential customers.

The ENERGY STAR® measures have been consistently found to be cost effective from the standpoint of the participant. Since this program does not include major incentives, Staff recommends that the Commission accept the life-cycle analysis of the measure of cost-

effectiveness or a simple payback. Staff believes that this approach is sensible given the nature of the program and magnitude of the proposed expenditures.

B. Bill Impacts

The Table A-8 below provides a summary of the bill impacts associate with the implementation of a 0.5 mil surcharge on electric customers now served by BGE, Conectiv, Potomac Edison and Pepco. This program will initially rely on education and information. No direct financial incentives will be provided to customers⁴ but limited incentives may be provided to trade allies. Staff proposes that a maximum funding level of 0.5 miles be established for residential electric customers and a comparable level for residential gas customers.⁵ For a typical customer using 750 kWh per month, this would equal approximately 37.5 cents per month or \$4.50 per year⁶. Collections would total approximately \$10-12 million annually.

⁴ The use of rebates and other direct financial incentives would be considered if the program failed to achieve results and only after careful study of the impacts.

⁵ The Staff is not proposing a funding level for gas companies in this filing. Conceptually, Staff favors a funding formula that would create an equitable burden between gas and electric heating customers.

Table A-8 0.5 Mil Conservation Surcharge Rate Impact Analysis				
	1998 Residential Sales (GWH)	Estimated .5-mil Surcharge Collection	PSC-Approved Residential Rate Reduction/reduction as a percent of revenue	Surcharge as a Percent of Rate Reduction
BGE	10,995	\$5,497,500.00	\$50,200,000 -6.5%	10.95%
Conectiv	1689	\$844,500.00	\$12,400,000 -7.5%	6.81%
PE	2405	\$1,202,500.00	\$10,800,000 -7.0%	11.13%
Pepco	5161	\$2,580,500.00	\$10,100,000 -3.0%	25.55%
Total	20,250	\$10,125,000.00	\$83,500,000	12.13%

Exact collections would depend if this program to included all electric and gas companies in Maryland as proposed by Staff, or limited to electric companies.

C. Impacts on the Environment

The MD Utility-Energy Partnership Program will result in the conservation of electricity and natural gas. The emission factors associated with electricity products sold in Maryland is found below in Table A-9. To the extent that it reduces electricity consumption, there should be a corresponding reduction in sulfur dioxide, nitrogen oxides and carbon dioxides. Other reduction should occur substances emitted in the production of electricity, such as mercury and particulates. Additionally, there certain water and land-use benefits could accrue as well. Staff has not quantified these benefits, nor is it necessarily appropriate to do so given the relatively small size of this program. Further, it is unclear whether the magnitude of any reductions resulting from the implementation of this program would reduce any of the human health related risk associated with these emissions such as risk or occurrence of lung disease.

<p align="center">Table A-9 Pounds of Emissions per Megawatt Hour of Electricity Generated</p>		
Emission	APS Control Area	PJM Control Area
Sulfur Dioxide (SO ₂)	15.0	10.0
Nitrogen Oxides (NO _x)	5.6	3.3
Carbon Dioxide (CO ₂)	2,065.7	1,301.3

D. Impact on Jobs

Staff has not conducted an analysis of the employment impacts that would result from the implementation of this program. Staff believes the impacts to be quite small given the relatively small size of this program. Staff believes that given the magnitude of this program that a study to assess the impacts on jobs or the economy cannot be justified.

E. Other Criteria⁷

1. Expansion of existing information delivery mechanisms

Electric and gas companies regularly communicate with all of their customers. This communication occurs monthly, in the form of bills and bill inserts. Additionally, electric and gas companies may use other media such as advertisements in newspaper. This program will further develop and expand these mechanisms.

2. Flexible Approach

Electric and gas companies in Maryland come in all shapes and sizes. Baltimore Gas and Electric served over one million residential customers during 1998, while A&N in Maryland served approximately 300 customers. Assigning personnel at BGE to a program creates different

⁷ The order of the listed secondary factors is not a recommendation of the priority that should be given to any factor.

challenges than the Town of Berlin. Additionally, there are differences in the traditions of customer relations, and communications between cooperatives and municipalities and investor-owned utilities in Maryland. These differences offer both opportunities and challenges.

The MD Utility ENERGY STAR® Partnership Program will create a minimum standard for information and education about energy efficiency and conservation opportunities available to residential customers within a prescribed. The specifics of how an electric or gas company will comply with this standard is a matter for individual electric and gas companies to determine and subject to the approval of the Commission. The working group will propose a strategy for statewide efforts, such as marketing, and propose a funding a mechanism. Staff believes that, while a statewide approach is needed to coordinate efforts between electric companies (large and small) and to provide technical assistance as needed, these are company programs.⁸ This approach will permit programs to offer the best features of both statewide and utility-specific approaches to energy efficiency and conservation programs.

3. Coordination and Leveraging of Resources

One of the major advantages of the proposed program is that it seeks to utilize resources from a number of different sources, either through coordination and/or leveraging of resources. Among the areas identified to further this goal are:

- (1) State and federal Programs;
- (2) Technical assistance with trade and retail allies;
- (3) Cooperative advertising; and
- (4) Existing utility resources.

⁸ Process issues related to this program are discussed in the next section.

F. Conclusions and Recommendations

Staff believes that the proposed MD Utility ENERGY STAR® Partnership not only represents a reasonable balance of the statutory goals for both competition and energy-efficiency, but furthers both of these objectives.

Section VIII: Cost Recovery

This program would be through a surcharge on residential electric and gas customers pursuant to Section 7-211 (b) of the Public Utility Company Articles. The surcharge would be limited to direct approved program costs and carrying costs. Lost revenues would not be included in the surcharge. Utilities would have the option to defer and amortize these costs over a period beyond the year the expenditures occurred. This approach offers greater rate stability and can be used to mitigate rate impacts. Specific details regarding cost recovery would be approved by the Commission on a case-by-case basis. Costs associated with the ENERGY STAR® Transformer program would be not be eligible for recovery through the surcharge.