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# Energy Efficiency Program Portfolio

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# Proposed 3-yr Cycle Plan

- In developing this plan, the Company in conjunction with its consultant considered:
  - The requirement to achieve cost-effective energy savings at the program level for both its residential and non-residential customers
  - A pathway to meet EEAC endorsed incremental annual savings goals as a percentage of sales (.4% in year one, .7% in year two and 1% in year three)
  - The Company's current and past experience implementing EE programs in Maryland over the last eight years
  - Internal research, imminent changes in codes and standards, new technologies gaining traction, and the 2014 Potential Study prepared by Optimal Energy
  - The Evaluation, Measurement and Verification (EM&V) Regulations prepared by Optimal Energy
  - Program elements for low income customers
  - EEAC Stakeholder Input

# Proposed 3-yr Cycle Program Offering Summary

- Residential Sector
  - Consumer Products Program
  - Quick Home Energy Check-Up (QHEC) Program
  - Behavior Based Program

- Non-Residential Sector
  - Prescriptive Program
  - Custom Program

# Consumer Products Program

- Consumer Products consists of 3 main elements:
  - Residential Lighting - offers customers instant in-store discounts on select CFL, LED, and fixture products at participating retail locations.
  - Appliance Rebate - offers rebates for the purchase of ENERGY STAR certified refrigerators, clothes washers, freezers, room air conditioners (RACs), and heat pump water heaters.
    - Inexpensive refrigerators at code offered to low income customers at no cost if the old refrigerator is recycled
  - Appliance Recycling – removes old, inefficient refrigerators, freezers, dehumidifiers and RACs from the grid.

# Consumer Products Program (cont.)

- Target Market – All Residential Customers
- Market Analysis
  - Delmarva Power would include more standard and specialty LED products at variable incentive levels within its measure mix than in Maryland
  - Due to rising energy efficiency baselines and recently updated codes and standards, it is increasingly difficult to achieve lighting savings
  - The market is facing new competition from “Value LED bulbs” which are much less expensive and are successfully penetrating the market
  - During the period 2009-2013, the Company incented the replacement of a 100W incandescent bulb with a 13W CFL bulb at $1-$2 resulting in **43.5 – 87W/ $**. During the period 2014-2015, the Company incented the replacement of a 40W halogen bulb with a 9W LED bulb at $4 resulting in **7.75W/ $**

# Consumer Products Program (cont.)

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- Eligible Measures – Lighting
  - Standard CFLs
  - Standard LEDs
  - Specialty LEDs
  - Value LEDs
  - Fixtures
  - Ceiling Fans
  - Occupancy Sensors
- Eligible Measures – Appliance Rebates
  - Clothes washers
  - Refrigerators
  - Room Air Conditioners
  - Electric pump water heaters
  - Pool pumps
  - Clothes dryers
- Eligible Measures – Appliance Recycling
  - Refrigerators
  - Freezers
  - Room Air Conditioners
  - Dehumidifiers

# Assumptions used for Cost-Effectiveness Calculations



- Total Resource Cost (TRC) Test measures the net cost of a program, including both the participants' and the utility's costs.
  - Calculation includes Avoided Capacity Costs, Avoided Energy Costs, Avoided Transmission Costs and Avoided Distribution Costs
  - Calculation excludes Capacity DRIPE, Energy DRIPE, non-energy benefits, RPS Compliance and Air Emissions benefits
  - Company's Weighted Cost of Capital is used as the discount rate
- Societal Cost Test (SCT) was calculated in the same manner as the TRC Test but the societal discount rate (3%) was used

# Consumer Products Program (cont.)

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- Net Wholesale Forecast of Consumer Products Program

| Consumer Products Program | 2016 | 2017 | 2018 | Total |
|---|---|---|---|---|
| Annual MWh Savings | 4,656 | 6,318 | 9,476 | 20,451 |
| Annual MW Savings | 0.60 | 0.81 | 1.21 | 2.61 |
| Participants | 14,531 | 18,899 | 26,913 | 60,342 |
| Measures | 243,702 | 326,388 | 489,626 | 1,059,717 |
| Incentive Costs | $1,116,001 | $1,402,249 | $1,912,063 | $4,430,313 |
| Implementation Costs | $1,168,331 | $1,589,959 | $2,346,374 | $5,104,664 |
| Total Program Costs | $2,284,331 | $2,992,208 | $4,258,437 | $9,534,977 |
| TRC Ratio | | | | 1.12 |
| SCT Ratio | | | | 1.32 |

# Quick Home Energy Check-Up (QHEC) Program

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- QHEC Program is a customer education program that includes the installation of energy savings measures in customers' homes.
  - QHEC technician identifies opportunities to improve EE in the home, often by recommending participation in Delmarva Power or the SEU's suite of residential programs
  - As applicable, the technician will install low-cost energy savings measures (e.g., lightbulbs, efficient-flow showerheads, etc.) at no additional cost to the customer, that will immediately reduce the baseline energy usage in the home
  - The customer will receive a QHEC report that lists the installed measures and summarizes their potential savings while also prioritizing the opportunities for further identified EE improvement opportunities

# QHEC Program (cont.)

- Target Market – Single Family or Multi-Family residences as well as low income customers
- Market Analysis
  - The Lighting component of the QHEC is not producing the level of savings experienced historically
  - Delaware's retrofit market has not been saturated leaving plenty of opportunity for QHEC participation
- Eligible Measures
  - Lightbulbs (Type of bulb - TBD)
  - Pipe insulation
  - Water heater tank wrap
  - Efficient-flow showerhead
  - Efficient-flow aerator
  - Smart strip
  - Education

# QHEC Program (cont.)

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- Net Wholesale Forecast of QHEC Program

| QHEC Program | 2016 | 2017 | 2018 | Total |
|---|---|---|---|---|
| Annual MWh Savings | 1,464 | 1,757 | 2,108 | 5,328 |
| Annual MW Savings | 0.17 | 0.20 | 0.24 | 0.61 |
| Participants | 4,082 | 4,898 | 5,878 | 14,858 |
| Measures | 61,723 | 74,068 | 88,881 | 224,672 |
| Incentive Costs | $840,687 | $1,008,824 | $1,210,589 | $3,060,101 |
| Implementation Costs | $283,179 | $339,815 | $407,777 | $1,030,771 |
| Total Program Costs | $1,123,866 | $1,348,639 | $1,618,367 | $4,090,871 |
| TRC Ratio | | | | 0.92 |
| SCT Ratio | | | | 1.09 |

# Behavior Based Program

- The Behavior Program motivates Delmarva Power customers to engage in energy saving behavior through the regular distribution of personalized home energy reports.
  - Places customers in an anonymous representative group based on home location, size, and other publicly available criteria to make meaningful comparisons regarding the customers' usage relative to a peer group
  - Customers will be able to contact Company Customer Service Representatives and Energy Advisors as needed who will have online access to the mailed reports

# Behavior Based Program (cont.)

- Target Market – Most residential customers as well as targeted messages for low income customers
- Market Analysis
  - The operation of behavior based programs continues to make up a larger portion of utilities' EE and demand side management programs
  - The program could be useful in reaching and targeting the Company's gas customers as well as the electric customers
- Eligible Measures
  - Mailed Reports
  - Emailed Reports

# Behavior Based Program (cont.)

- Net Wholesale Forecast of Behavior Based Program

| Behavior Based Program | 2016 | 2017 | 2018 |
|---|---|---|---|
| Annual MWh Savings | 12,773 | 19,586 | 23,418 |
| Annual MW Savings | 3.96 | 4.71 | 5.68 |
| Participants | 180,000 | 180,000 | 180,000 |
| Measures | 1,080,000 | 900,000 | 900,000 |
| Incentive Costs | $0 | $0 | $0 |
| Implementation Costs | $2,184,211 | $2,078,947 | $2,078,947 |
| Total Program Costs | $2,184,211 | $2,078,947 | $2,078,947 |
| TRC Ratio | | | 2.29 |
| SCT Ratio | | | 2.39 |

Note: MWh savings, MW savings and participants are program-to-date snapshots for each year.

# Prescriptive Program



- The Prescriptive Program provides simple solutions to encourage large non-residential customers, small business customers, and multi-family customers to purchase efficient technologies that can produce verifiable savings.
  - Targets measures that have broad application in the non-residential sector
  - Customers eligible for this program are also eligible for the Custom Measures Program, which offers incentives for EE improvements that are less common than those included within the Prescriptive Program.

- Target Market
  - Large non-residential customers with electric demand greater than 60 kW including commercial, government, institutional, non-profit, faith-based and industrial customers. Key sectors include healthcare, schools, office buildings, government, grocery, industrial, and hospitality.
  - Small business customers and Multi-Family customers on a commercial rate code will also be eligible to participate.

# Prescriptive Program (cont.)



- Market Analysis
  - Building energy codes, equipment and appliance standards are continuing to increase baseline energy efficiency and drive more efficient retrofits. Program designs will be updated to compensate for these changes on an on-going basis in order to ensure the program offering exceeds these standards.
  - The greatest opportunity in Delaware's service territory will be for lighting upgrades. Various organizations, such as ENERGY STAR, Design Lights Consortium, Consortium for EE, are continuously listing and de-listing equipment and these entities' lists will be monitored to maintain program measure eligibility.

- Eligible Measures
  - High efficiency lighting and lighting controls
  - Energy efficient street lighting (not owned by Delmarva Power)
  - High efficiency packaged HVAC equipment
  - High efficiency chillers up to 1,000 tons
  - VFDs for motors in HVAC and process applications
  - Commercial refrigeration
  - Commercial kitchen appliances
  - Specialized controls, including occupancy controlled power strips, hotel room occupancy controlled thermostats, vending machine controls
  - Commercial water heating
  - Commercial clothes washers and water coolers
  - Residential appliances, when installed in commercial spaces
  - Dairy farm equipment

# Prescriptive Program (cont.)

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- Net Wholesale Forecast of Prescriptive Program

| Prescriptive Program | 2016 | 2017 | 2018 | Total |
|---|---|---|---|---|
| Annual MWh Savings | 4,089 | 5,616 | 6,543 | 16,248 |
| Annual MW Savings | 0.86 | 1.18 | 1.38 | 3.43 |
| Participants | 91 | 125 | 145 | 361 |
| Incentive Costs | $719,934 | $988,709 | $1,151,894 | $2,860,537 |
| Implementation Costs | $735,090 | $1,009,524 | $1,176,144 | $2,920,759 |
| Total Program Costs | $1,455,024 | $1,998,233 | $2,328,038 | $5,781,295 |
| TRC Ratio | | | | 1.66 |
| SCT Ratio | | | | 2.08 |

# Custom Program



- The Custom Program motivates large non-residential customers, small businesses and multi-family properties to select high efficiency options when making changes in facility and process operations.
  - Provides incentives for cost-effective energy efficient systems and designs that are selected and/or designed to the specific needs of the customer, and for equipment types not specifically included in the Prescriptive Program.
  - Customers eligible for this program are also eligible for the Prescriptive Program.

- Target Market
  - Large non-residential customers with electric demand greater than 60 kW including commercial, government, institutional, non-profit, faith-based and industrial customers. Key sectors include healthcare, schools, office buildings, government, grocery, industrial, and hospitality.
  - Small business customers and Multi-Family customers on a commercial rate code will also be eligible to participate.

# Custom Program (cont.)



- Market Analysis
  - Building energy codes, equipment and appliance standards are continuing to increase baseline efficiency and drive more efficient retrofits. Program designs will be updated to compensate for these changes on an on-going basis in order to ensure the program offering exceeds these standards.

- Eligible Measures
  - Industrial process improvements
  - Compressed air system improvements
  - Improvements to or replacement of large refrigeration systems or chiller systems
  - Building automation and energy management systems
  - Building envelope improvements that reduce heat gains during the summer months and/or reduce heat losses during the winter months
  - Improvements that increase the efficiency of an energy-consuming system rather than a single item of equipment, such as chiller system optimization.

# Custom Program (cont.)

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- Net Wholesale Forecast of Custom Program

| Custom Program | 2016 | 2017 | 2018 | Total |
|---|---|---|---|---|
| Annual MWh Savings | 1,664 | 8,321 | 9,985 | 19,970 |
| Annual MW Savings | 0.27 | 1.34 | 1.60 | 3.21 |
| Participants | 7 | 36 | 44 | 87 |
| Incentive Costs | $366,326 | $1,831,631 | $2,197,958 | $4,395,915 |
| Implementation Costs | $212,084 | $1,060,418 | $1,272,502 | $2,545,004 |
| Total Program Costs | $578,410 | $2,892,050 | $3,470,459 | $6,940,919 |
| TRC Ratio | | | | 1.16 |
| SCT Ratio | | | | 1.36 |

# Summary of Delmarva Power's 3-yr Program Cycle

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- Total Savings and Cost-Effectiveness

| All EE Programs | 2016 | 2017 | 2018 |
|---|---|---|---|
| Annual MWh Savings | 24,647 | 41,598 | 51,530 |
| Annual MW Savings | 5.86 | 8.24 | 10.11 |
| Participants | 198,711 | 203,958 | 212,980 |
| Measures | 1,385,524 | 1,300,617 | 1,478,697 |
| Incentive Costs | $3,042,948 | $5,231,414 | $6,472,504 |
| Implementation Costs | $4,582,894 | $6,078,663 | $7,281,745 |
| Total Program Costs | $7,625,842 | $11,310,077 | $13,754,249 |
| Total Program Benefits | $10,779,959 | $15,988,028 | $19,443,131 |
| TRC Ratio | | | 1.41 |
| SCT Ratio | | | 1.64 |

# Summary of Delmarva Power's 3-yr Program Cycle (cont.)

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- Incremental Annual Savings as a % of Distribution Sales

| All EE Programs | 2016 | 2017 | 2018 |
|---|---|---|---|
| Annual MWh Savings | 24,647 | 41,598 | 51,530 |
| Forecasted MWh Distribution Sales | 8,052,095 | 8,061,366 | 8,075,797 |
| Incremental Annual Savings % | 0.31% | 0.52% | 0.64% |
| EEAC Target Goal | 0.40% | 0.70% | 1.00% |

- Estimated Monthly Bill Impacts Using 5-Yr Amortization

| All EE Programs | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| Total Residential Costs | $5,592,408 | $6,419,795 | $7,955,751 | $7,955,751 | $7,955,751 |
| Average Residential Monthly Bill Impact (912 kwh) | $0.08 | $0.58 | $1.14 | $1.72 | $2.26 |
| | | | | | |
| Total Non-Residential Costs | $2,033,434 | $4,890,282 | $5,798,498 | $5,798,498 | $5,798,498 |
| Non-Residential Surcharge Estimate (¢/kwh)* | 0.001878 | 0.020797 | 0.049187 | 0.078217 | 0.105166 |

*Note: For example, a pizza shop which uses 11,000 kwh on a monthly basis would experience a monthly surcharge of $.21 in 2016, $2.29 in 2017 and $5.41 in 2018.