



LARRY HOGAN
Governor
BOYD K. RUTHERFORD
Lt. Governor
KENNETH C. HOLT
Secretary

December 30, 2019

Maryland Commission on Climate Change
C/O Maryland Department of the Environment
Secretary Ben Grumbles
1800 Washington Blvd.
Baltimore MD. 21230

Commissioner Grumbles:

On behalf of the Maryland Department of Housing and Community Development, I am pleased to submit the *2019 Annual State Agency Report* for the Maryland Department of Housing and Community Development developed in accordance with the State Environment Article §2-1305, as defined in House Bill 514 Chapter 429,2015 . This status of programs annual requirement under the law that governs the Maryland Commission on Climate Change asks that numerous state agencies submit annual reports on progress surrounding the implementation of climate change programs to both the Governor and the Commission. This report details the results of the efforts for / CY 2018 reductions.

Sincerely,

Kenneth C. Holt

Secretary
Maryland Department of Housing and Community Development



MARYLAND DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
7800 HARKINS RD • LANHAM, MD 20706 • DHCD.MARYLAND.GOV
301-429-7400 • 1-800-756-0119 • TTY/RELAY 711 or 1-800-735-2258





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The Honorable Larry Hogan
State House
100 State Circle
Annapolis, Maryland 21401

Governor Hogan:

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2019 Status of Programs, Annual State Agency Report
Greenhouse Gas Emission Reductions for CY 2018
Energy Efficiency for Affordable Housing
Statewide Building Codes

This report provides an estimate of reduced greenhouse gas (GHG) emissions as a result of the Maryland Department of Housing and Community Development's (Department) programs during calendar year (CY) 2018. This report is pursuant to State Government Article §2-1305, as defined in House Bill 514 Chapter 429, 2015.

Program Descriptions

The Department implements housing policy that promotes and preserves homeownership and creates community development initiatives to meet the challenges of a growing Maryland. These programs cover homeownership, rental housing, business lending, affordable housing development, and energy conservation and efficiency.

Within the Department, the division of Housing and Building Energy programs manages a suite of loan and grant programs for Maryland homeowners, renters and other building owners. These programs reduce energy costs and address critical health and safety issues for Maryland residents and limited income families.

In CY 2018, the Department's energy programs installed upgrades that saved **0.005** million metric tons of carbon dioxide equivalent (MMTCO₂e) in the first year of installation. Taking into account the estimated lifetime of energy measures, the Department's programs realized a reduction of **0.065** MMTCO₂e in CY 2018 from projects completed from CY 2011 to CY 2018. Finally, from CY 2011 to CY 2018, the cumulative savings from all projects across years was **0.33** MMTCO₂e.

To calculate greenhouse gas reductions, the Department reports on reductions associated solely with its energy focused programs. During FY 2020, the Department will continue to review other programs to estimate the significant GHG reductions in programs that have not been included in this calculation.

The Department's Housing and Building Energy Programs division includes the following grant programs:

- **The Weatherization Assistance Program** installs energy conservation measures for eligible limited income households. These measures also reduce greenhouse gas emissions and the cost of maintenance for these homes. Funding is provided by the U.S. Department of Energy and the Strategic Energy Investment Fund. The Department works with Local Weatherization Agencies (non-profits and local governments) to complete these projects.
- **The EmPOWER Low Income Energy Efficiency Program and the Multifamily Energy Efficiency and Housing Affordability Program** help limited income households and affordable

housing managers with installation of energy conservation measures in their homes and buildings. Funding is provided by ratepayers of the five (5) participating EmPOWER Maryland utility companies. These funds are regulated by the Maryland Public Service Commission.

The following grant programs are closed, but the lifetime of their savings continue.

- **The Targeted and Enhanced Weatherization Program** combined typical weatherization improvements with measures that reduced health and safety risks in the home. This program for limited income homeowners in the Baltimore Gas & Electric territory outside of Baltimore City was funded through the Customer Investment Fund created during the merger of Constellation and Exelon. This program was funded with a one-time grant and has been fully expended.
- **The Improved Efficiency for Affordable Multifamily Housing Program** was funded through the Customer Investment Fund and it covers the costs of energy conservation measures for affordable multifamily projects in the Baltimore Gas & Electric territory. This pilot program was funded with a one-time grant and has been fully expended. Construction completed in CY 2018.

The Department also offers a growing portfolio of energy loan products.

- **The BeSMART Home Energy Loan Program** offers financing to homeowners across the state for energy efficiency replacement and/or upgrade of appliances, heating, cooling and ventilation systems and whole house envelope improvements.
- **The Net Zero Construction Loan Program** funds the construction of new or existing single and multifamily housing in Maryland. The project must be Net Zero or Net Zero Ready (Home Energy Rating System score of 50). The Department deployed this program at the Perry Point Veterans Housing Project, using funding from the Strategic Energy Investment Fund and leveraged with the BeSMART loan program for efficiency measures. Construction finished in CY 2018.

Program Objectives

Under the Housing and Building Energy Programs, the Division provides grants and low cost loans with flexible terms for the purchase and installation of energy efficiency improvements in single family and affordable multifamily rental housing developments. The program is being undertaken as part of the State's efforts to:

1. reduce the energy cost burden on Marylanders,
2. increase energy efficiency,
3. reduce greenhouse gas emissions,
4. promote energy efficiency and renewable energy sources,
5. provide a healthier environment in which to live,
6. create and preserve affordable rental housing opportunities,
7. create jobs, and
8. foster business development and sustainable mortgages by reducing the energy burden on residents and property owners.

Implementation Milestones

The 2015 Greenhouse Gas Emissions Reduction Act Plan Update published October 2015 stated that the Department's programs could reduce 0.02 million metric tons of carbon dioxide equivalent (MMTCO_{2e}) by 2020 (LIEEP, MEEHA, WAP).

In CY 2018, the Department's energy programs completed energy efficiency upgrades of **4,787** households. These improvements represent a first year reduction of **5,440** metric tons of carbon dioxide

equivalent (MTCO_{2e}) - or **0.005** MMTCO_{2e}. The average life of savings for each energy project is eight years. For the **40,301** households that received energy efficiency upgrades since CY 2011, in CY 2018 the realized savings over eight years were **64,651** MTCO_{2e} (0.065 MMTCO_{2e}).

| Year | Households Served |
|---------|-------------------|
| CY2011 | 6,317 |
| CY2012 | 3,222 |
| CY2013 | 3,788 |
| CY2014 | 6,517 |
| CY2015 | 5,458 |
| CY2016 | 5,517 |
| CY2017 | 4,695 |
| CY 2018 | 4,787 |

Estimated Emission Reductions for CY 2018

In CY 2018, the Department's Housing and Building Energy programs installed energy efficiency retrofits for single family households, renters, and multifamily tenants. The programs delivered **62,469** in MMBtu savings. Below is a table of savings by program.

| CY 2018 – SAVINGS IN THE INSTALLATION YEAR | | |
|---|---------------|--------------------|
| Program | MMBtu Saved | MTCO _{2e} |
| EmPOWER - Single Family and Multifamily (State) | 14,242 | 1,276 |
| Customer Investment Fund - Single Family (State) | 3,534 | 247 |
| DOE Weatherization Assistance Program (Federal) | 5,743 | 515 |
| EmPOWER - Multifamily Cycle 2016-2018 carryover (State) | 25,042 | 2,066 |
| Customer Investment Fund - Multifamily | 13,908 | 1,336 |
| First Year Reductions: TOTAL | 62,469 | 5,440 |

For the work installed in CY 2011 to 2018, the division estimates that the average life of its measures is eight years. For the projects installed in CY 2018, these projects will continue to reduce GHG emissions every year until 2026. Some measures will provide savings well into the future, beyond 2030, that this calculation does not capture.

For CY 2017 and CY 2018, the Department reported the savings that have persisted on projects for seven to eight years. This figure is the GHG reduction achieved in CY 2018 from both new projects and the remaining useful life on projects installed in prior years.

In CY 2018, the savings from CY 2011 will exceed the useful life estimate and the savings will no longer be calculated for these projects. Going forward the Department anticipates using an 8 year useful life for reporting savings.¹

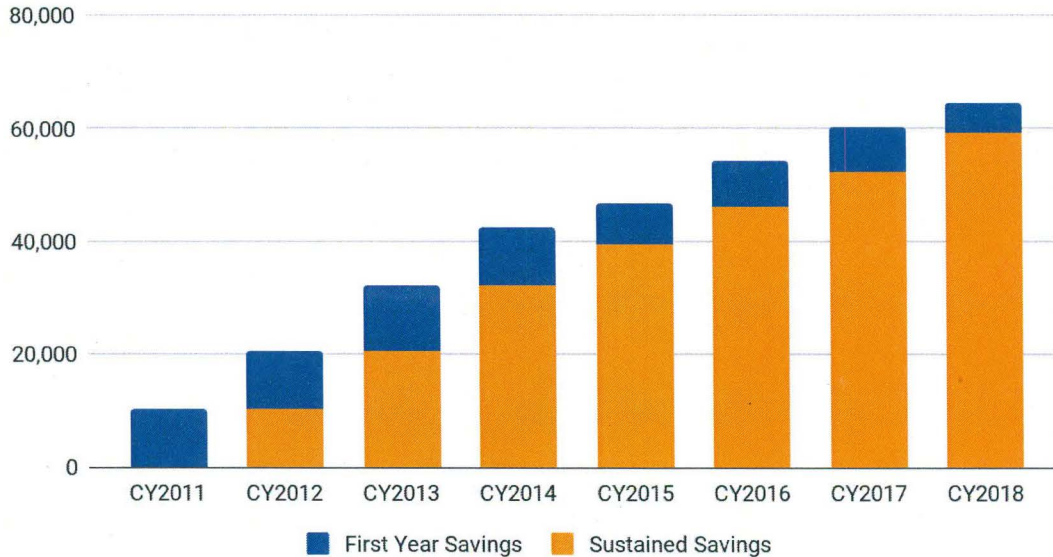
¹ EUL see page 3 for Table1 - Berkeley Labs - Energy Savings lifetimes and Persistence
<https://eta.lbl.gov/sites/all/files/publications/savings-lifetime-persistence-brief.pdf>

| CY 2018 – SUSTAINED SAVINGS OVER LIFETIME OF EQUIPMENT | | | |
|--|-----------------------------------|-----------------------------------|-----------------------------------|
| Year | First Year MTCO ₂ e | Sustained MT CO ₂ e | Sustained MMTCO ₂ e |
| CY 2011 | 10,331 | 10,331 | 0.010 |
| CY 2012 | 10,218 | 20,124 | 0.020 |
| CY 2013 | 11,782 | 32,229 | 0.032 |
| CY 2014 | 10,169 | 42,301 | 0.042 |
| CY 2015 | 7,346 | 46,832 | 0.047 |
| CY 2016 | 8,164 | 54,200 | 0.054 |
| CY 2017 | 7,971 | 60,366 | 0.060 |
| CY 2018 | 5,440 | 64,651 | 0.065 |

Note: Emission factors change over time based on the efficiency of the electrical grid. This means that 1 kWh reduction in CY 2011 resulted in more GHG emissions avoided than 1 kWh in CY 2018.

In the following chart, the first year savings are included with the sustained savings over time.

DHCD Energy Programs: GHG Reductions CY 2011 - CY 2018



The Division’s reduction in greenhouse gas emissions was calculated using project specific energy reductions estimated per measure. The Division used the 2018 emission factors provided by PJM, the Maryland region electric grid operator, the Department of Energy’s eGRID sub-regional data and data from the U.S. Environmental Protection Agency’s national greenhouse gas inventory.²

² The Division used CO₂ emission factors from the PJM Environmental Information System, [https://www.pjm-eis.com/reports-and-events/public-reports.aspx], CH₄ and N₂O factors from the DOE Power Profiler tool based on the eGRID subregion [http://www.epa.gov/powerprofiler], and natural gas and oil factors from the EPA’s national inventory [https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf]. Global Warming Potential data come from the Intergovernmental Panel on Climate Change’s Second Assessment Report (100 year).

| Fuel | Value | Unit | Source | Link |
|---------------------------------|---------|---------------|--------|---|
| Electricity | | | | |
| CO ₂ | 924.255 | lbs/MWH | PJM | System Mix 2018, https://gats.pjm-eis.com/gats2/PublicReports/PJMSystemMix/Filter |
| CH ₄ | 0.050 | | DOE | 2016 eGRID, RFCE http://www.epa.gov/powerprofiler |
| N ₂ O | 0.009 | | | |
| Natural Gas | | | | |
| CO ₂ | 0.05444 | kg/scf | EPA | https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf |
| CH ₄ | 0.00103 | g/scf | | |
| N ₂ O | 0.0001 | | | |
| Oil | | | | |
| CO ₂ | 10.21 | kg/gallon | EPA | https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf |
| CH ₄ | 0.41 | g/gallon | | |
| N ₂ O | 0.08 | g/gallon | | |
| Global Warming Potential | | | | |
| CO ₂ | 1 | SAR, 100 Year | IPCC | https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html |
| CH ₄ | 21 | | | |
| N ₂ O | 310 | | | |

The Department also took into account changes in the grid over time in calculating historic savings. The PJM Factor for CO₂ emissions has decreased 19 percent since CY 2011.

| PJM Factor | |
|------------|---------------------------|
| Year | CO ₂ (lbs/MWH) |
| CY2011 | 1,146 |
| CY2012 | 1,092 |
| CY2013 | 1,112 |
| CY2014 | 1,108 |
| CY2015 | 1,014 |
| CY2016 | 992 |
| CY2017 | 948 |
| CY2018 | 924 |

Enhancement Opportunities

In CY 2018, the Department continued to pursue opportunities to expand its loan and grant programs. The Department sees an opportunity from leveraging the experience of its multifamily, single family, and business lending to grow the energy programs.

Funding

In each of the last three fiscal years, the Division's financial commitments (direct benefits to Marylanders and administrative costs) averaged \$30 million. This is largely supported by the EmPOWER funding which requires renewal every three years and the Customer Investment Fund, which was fully expended in FY 2018.

Challenges

At the current time the department is not slated to receive SEIF funds from RGGI proceeds in FY 2020 which will impact our savings potential in several programs as this critical leveraging source is not

available. These funds allow us to maximize savings per project. The Department also fully expended the Customer Investment Fund award, which has reduced production.

Relevant Information

The portfolio of programs within the Department of Housing and Community Development has a direct impact on the economic vitality of the State.

The Division's programs support residents and businesses in direct funding of energy efficiency projects that create or sustain jobs. Energy bill reductions free up funds that can be spent on family well-being or as investments. The Division's programs improve health through reduced air and water pollution from power plants, but also directly remediate hazards such as mold, asbestos and lead in the house.

Program Change

Until June 30, 2018, Maryland Law, Public Safety Article, Section 12-503, required the Department of Housing and Community Development (DHCD) to adopt through regulation (Maryland Building Performance Standards; COMAR 05.02.07) the latest version of the International Building Code (IBC), the International Residential Code (IRC) and the International Energy Conservation Code (IECC) with any modifications as the Maryland Building Performance Standards (MBPS). The MBPS applies to all buildings and structures constructed within the State. Local jurisdictions are authorized to adopt amendments to MBPS to suit local conditions.

This program was transferred to the Department of Labor, Licensing & Regulation as of July 1, 2018.

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