



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Policy Office

Pennsylvania's Climate Change Action Plan

Solid Waste Advisory Committee

April 27, 2016

Tom Wolf, Governor

John Quigley, Secretary

The Pennsylvania Climate Change Act

Act 70 of 2008 was enacted on July 9, 2008

- 47-3 in the Senate
- 176-24 in the House

The Pennsylvania Climate Change Act

- Establishes the Climate Change Advisory Committee (CCAC)
- 18 members reflect a diversity of viewpoints from various affected communities – business, transportation, environmental, etc.
- 3 ex officio members – DCNR, DCED, and PUC

The Pennsylvania Climate Change Act

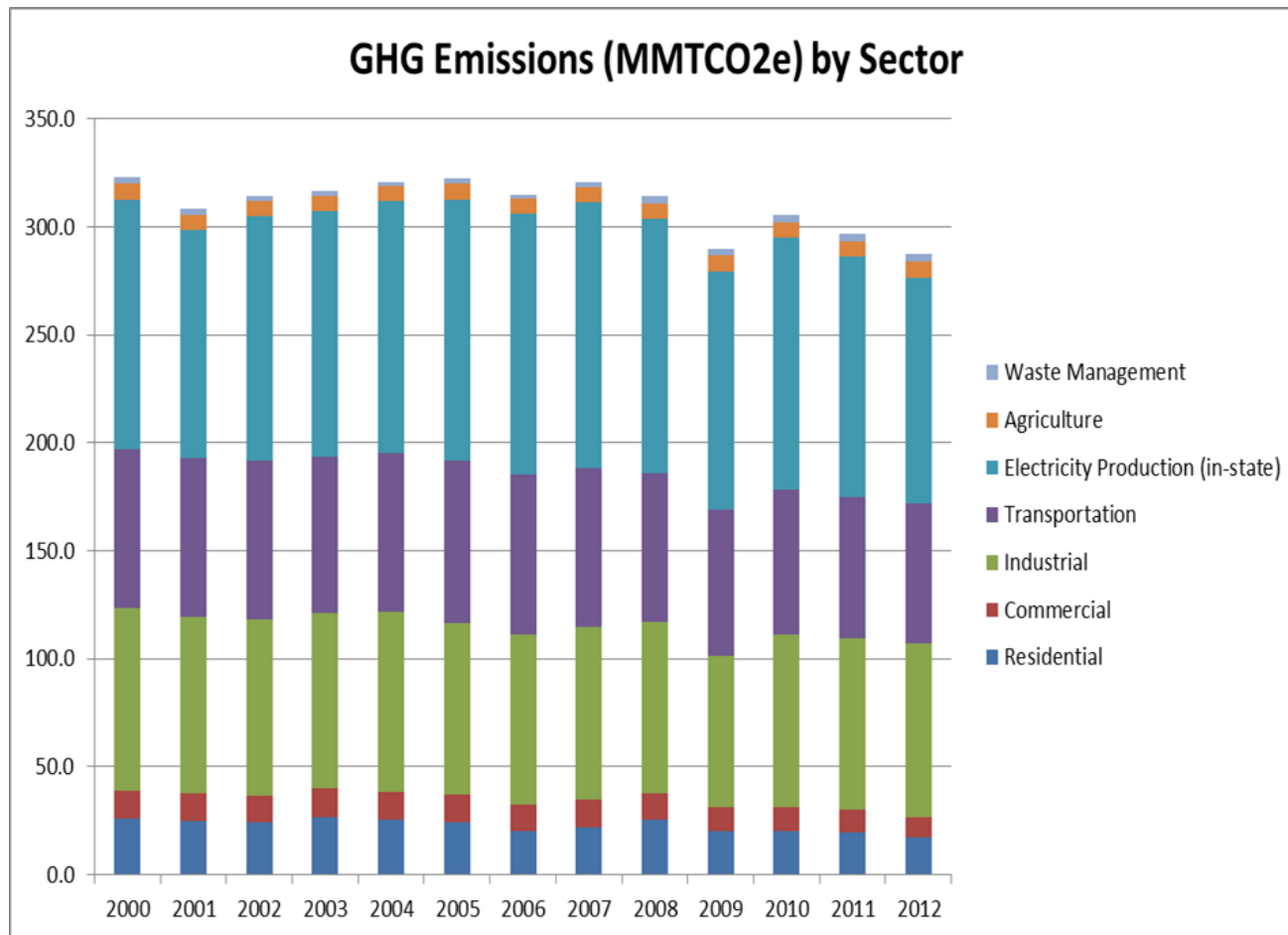
- Climate Change Action Plan
 - Identifies GHG emission and sequestration trends and baselines
 - Evaluates cost-effective strategies for reducing GHG emissions
 - Identifies costs, benefits, and cobenefits of GHG reduction strategies

The Pennsylvania Climate Change Act

- Climate Change Action Plan
 - Areas of agreement and disagreement among CCAC members
 - Includes legislative recommendations
- Updated every three years
 - 2009
 - 2013
 - 2015

Climate Change Action Plan

Inventory based on EPA data (State Inventory Tool)



Climate Change Action Plan

Inventory based on EPA data (State Inventory Tool)

Sector / Emission Source (MMTCO ₂ e)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Waste Management	3.06	3.07	2.45	2.53	1.59	2.43	1.93	2.05	3.51	3.17	3.19	3.39	3.64
Solid Waste and Combustion	1.40	1.42	0.79	0.87	-0.07	0.77	0.25	0.36	1.81	1.47	1.47	1.67	1.91
Wastewater	1.66	1.65	1.66	1.66	1.66	1.66	1.68	1.69	1.70	1.70	1.72	1.72	1.73

Climate Change Action Plan

GHG emissions in Waste sector come from:

- Landfill gas
- Solid waste combustion
- Wastewater Treatment

Climate Change Action Plan

Landfill Methane (State Inventory Tool)

MMTCO2E	1990	1995	2000	2005	2010	2011	2012
Potential Landfill CH4	8.205	8.617	8.658	8.915	10.143	10.392	10.632
CH4 Avoided	-2.061	-3.819	-8.311	-9.850	-11.014	-11.093	-11.093
Oxidation	0.614	0.480	0.035	-0.094	-0.087	-0.070	-0.046
Total CH4 Emissions (Landfills)	5.530	4.318	0.313	-0.842	-0.784	-0.630	-0.415

Climate Change Action Plan

Solid Waste Combustion

MMTCO ₂ e	1990	1995	2000	2005	2010	2011	2012
CO ₂	0.222	0.670	1.059	1.580	2.213	2.256	2.283
N ₂ O	0.008	0.021	0.027	0.034	0.043	0.043	0.043
CH ₄	0.000	0.001	0.001	0.001	0.001	0.001	0.001
CO₂, N₂O, CH₄ Emissions (Waste Combustion)	0.231	0.692	1.087	1.615	2.257	2.301	2.328

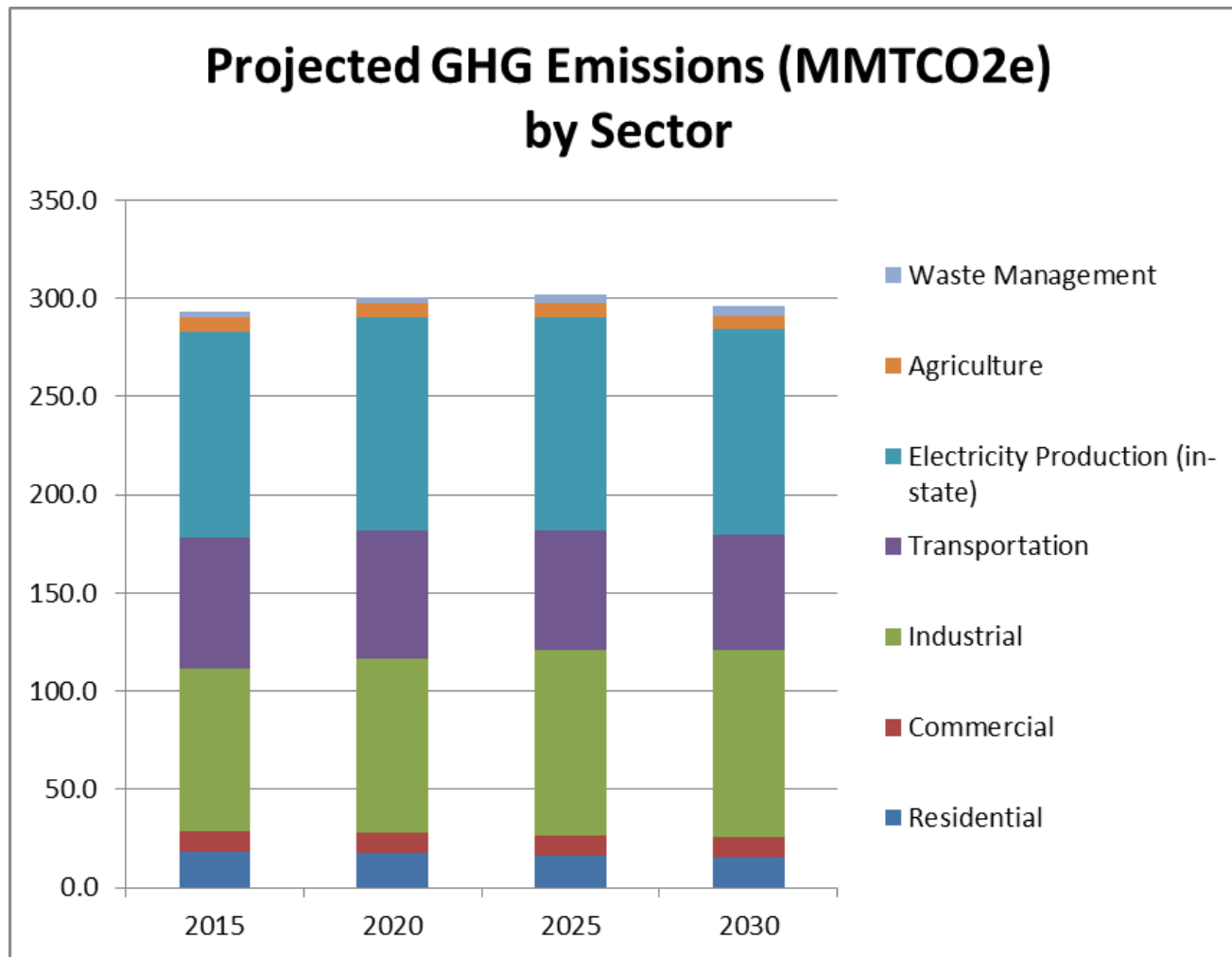
Climate Change Action Plan

Wastewater Treatment

MMTCO₂e	1990	1995	2000	2005	2010	2011	2012
Municipal CH₄	0.953	0.964	0.984	0.989	1.018	1.020	1.022
Municipal N₂O	0.311	0.322	0.338	0.334	0.354	0.355	0.357
Industrial CH₄	0.030	0.034	0.336	0.338	0.344	0.342	0.348
Total Emissions Wastewater Treatment	1.293	1.321	1.657	1.661	1.715	1.717	1.726

Climate Change Action Plan

Projections based on EPA data (State Inventory Tool)



Climate Change Action Plan

Projections based on EPA data (EPA's Projection Tool)

Sector / Emission Source (MMTCO ₂ e)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Waste Management	2.93	3.05	3.18	3.30	3.43	3.55	3.68	3.80	3.93	4.05	4.18	4.30	4.43	4.55	4.68	4.80
Solid Waste and Combustion	1.05	1.15	1.25	1.35	1.45	1.55	1.65	1.75	1.85	1.95	2.05	2.15	2.25	2.35	2.45	2.55
Wastewater	1.87	1.90	1.93	1.95	1.98	2.00	2.03	2.05	2.08	2.10	2.13	2.15	2.18	2.20	2.23	2.25

Climate Change Action Plan

- DEP & CCAC began development of 2015 Plan in early 2014 focusing on implementation
- 13 work plans outline cost-effective GHG reduction strategies
 - Coal Mine Methane Recovery
 - Act 129 of 2008 Phases IV & V
 - Adopt Current Building Energy Codes
 - Geoechange Systems
 - Heating Oil Conservation and Fuel Switching
 - Combined Heat and Power

Climate Change Action Plan

- 13 work plans outline cost-effective GHG reduction strategies (cont.)
 - High Performance Buildings
 - Re-Light Pennsylvania
 - Manufacturing Energy Technical Assistance
 - Energy Efficiency Finance in PA (non-quantifiable)
 - Semi-Truck Freight Transportation
 - Urban and Community Forestry
 - Manure Digesters

Climate Change Action Plan

Chapter 9: Waste Management

Pennsylvania can further reduce emissions by:

- Preventing illegal dumping and open burning
- Employing BMPs to reduce fugitive emissions from landfills
- Encourage expanded use of collected lfg as an alternative energy source
- Co-locating industrial facilities with W-T-E facilities
- Exploring alternative technologies for management of organic wastes

Climate Change Action Plan

- In addition to work plans, DEP included ideas for what you can do to reduce your ghg footprint
 - Energy
 - Energy Efficiency Financing
 - Transportation
 - Forests
 - Agriculture
 - Waste

Climate Change Action Plan

- If implemented, the 12 quantifiable work plans would:
 - Reduce 337.69 MMtCO₂e through 2020
 - Result in a **savings** of \$1,222.38 per MMtCO₂e

Climate Change Action Plan

- 60-day public comment period closed on March 30
- 13 commentators provided comments
- All comments available on eComment
- DEP currently evaluating comments
- Draft-Final version discussed with CCAC on May 17th
- Final in summer 2016

Climate Change Action Plan

2018 Action Plan:

- Being discussed now
- Climate change adaptation
- Stay tuned/get involved



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