Climate Change Advisory Committee Meeting

August 23, 2022

Tom Wolf, Governor

Ramez Ziadeh, Acting Secretary

Agenda

- **Introduction**
- Approval of June Minutes
- Presentation/Discussion – Advances in Nuclear and Future Uses
- Presentation/Discussion – Getting to Net-Zero Power
- Public Comment
- Break
- CCAC Officer Elections
- Presentation/Discussion – DRAFT 2022 GHG Inventory Report
- Updates
- Next Meeting
- New Business

August 23, 2021

GHG Reduction Strategy	Expected Implementation Timeframe
Maintain nuclear generation at current levels	Near term
Create a carbon emissions free grid	Long term

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Public Comment (15 min)

Break

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CCAC Officer Elections

- Nominations from the floor

- Voting
  - <u>For members present in-person</u>: Slips of paper will be provided for you to write down your vote. Votes will be collected by Lindsay and tallied.

  - <u>For members present virtually</u>: Use WebEx Chat feature to submit your vote *privately* to Lindsay Byron. Votes will be tallied along with in-person votes.

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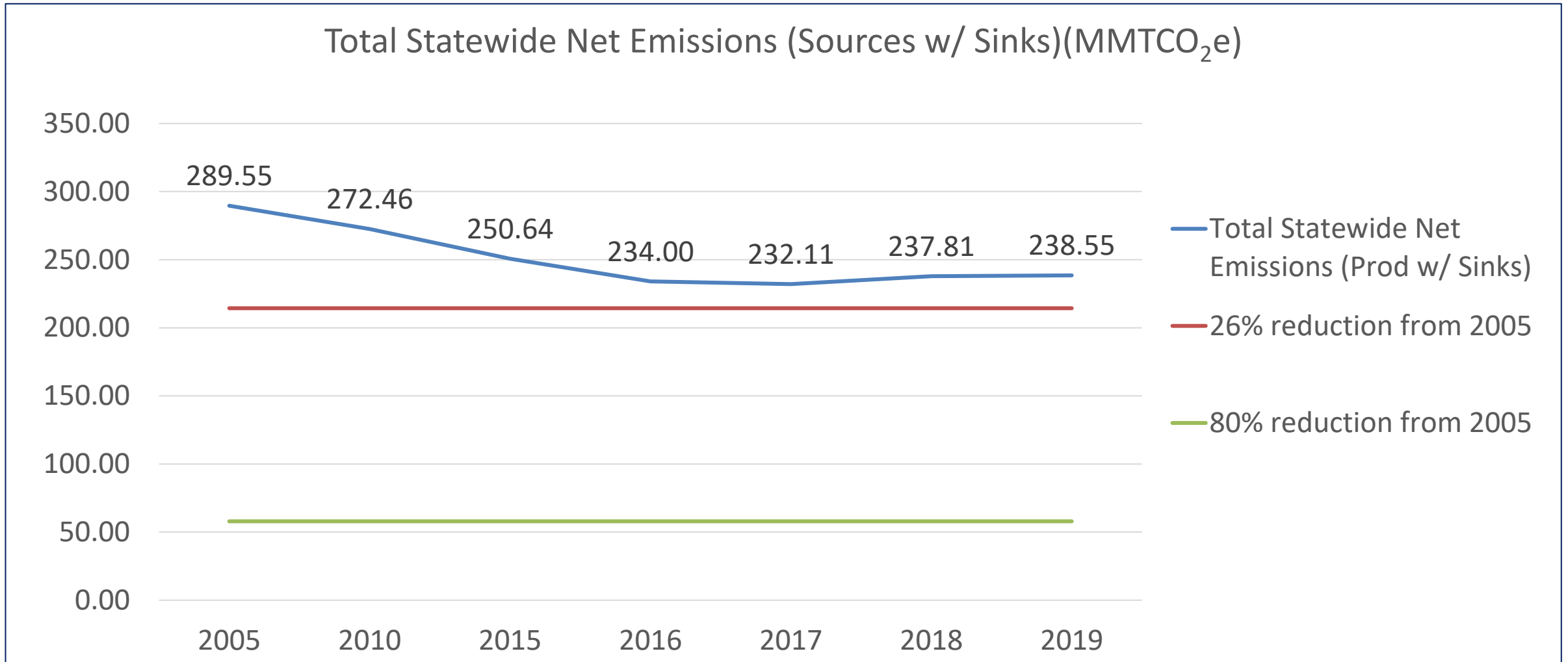# DRAFT 2022 Pennsylvania Greenhouse Gas Inventory Report (2019 Data Year)

GHG Emissions Inventory

- ## State Inventory Tool (SIT)
  - Made available in March 2022
  - EPA updated all 11 modules with data through 2019

- ## Fuel consumption data for 2020 included from SEDS

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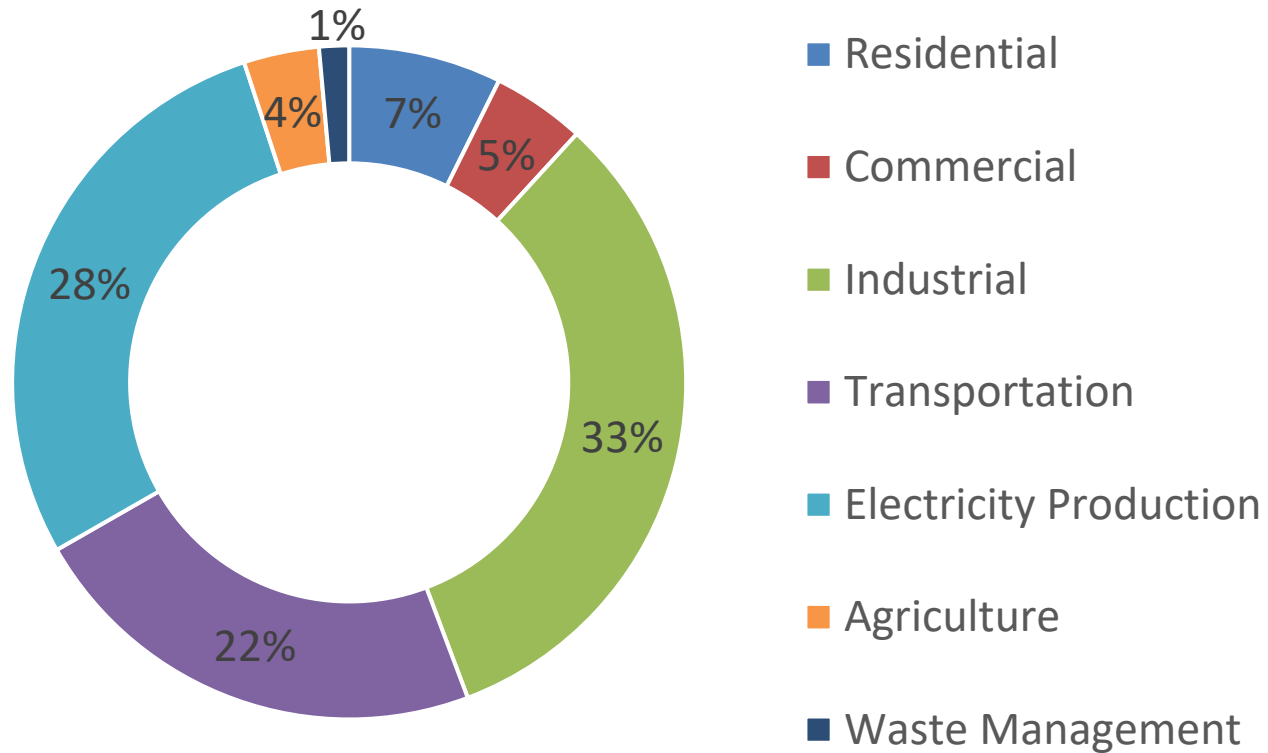PROTECTION

GHG Emissions Inventory

- 2019 data shows a net emissions increase from 2018. This is the second consecutive year with a GHG increase.

- Emissions increases occurred in the Industrial, Transportation, and Electricity Production sectors.

- Emissions decreases occurred in the Residential, Commercial, and Agricultural sectors.

- The Waste Management sector saw no significant change in emissions.

- There was a decrease in CO_2 sequestered in the LULUCF sector in 2019 compared to 2018.

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GHG Emissions Inventory

Total Statewide Net Emissions (Sources w/ Sinks)(MMTCO$_2$e)

Data values labeled on the Total Statewide Net Emissions (Prod w/ Sinks) line:

Year	Value
2005	289.55
2010	272.46
2015	250.64
2016	234.00
2017	232.11
2018	237.81
2019	238.55

Legend:
- Total Statewide Net Emissions (Prod w/ Sinks)
- 26% reduction from 2005
- 80% reduction from 2005

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GHG Emissions Inventory

Pennsylvania 2019 GHG Emissions
% of Total by Sector

- Residential — 7%
- Commercial — 5%
- Industrial — 33%
- Transportation — 22%
- Electricity Production — 28%
- Agriculture — 4%
- Waste Management — 1%

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GHG Emissions Inventory

GHG Emissions (MMTCO$_2$e) by Sector

Legend: LULUCF, Waste Management, Agriculture, Electricity Production, Transportation, Industrial, Commercial, Residential, Net Emissions
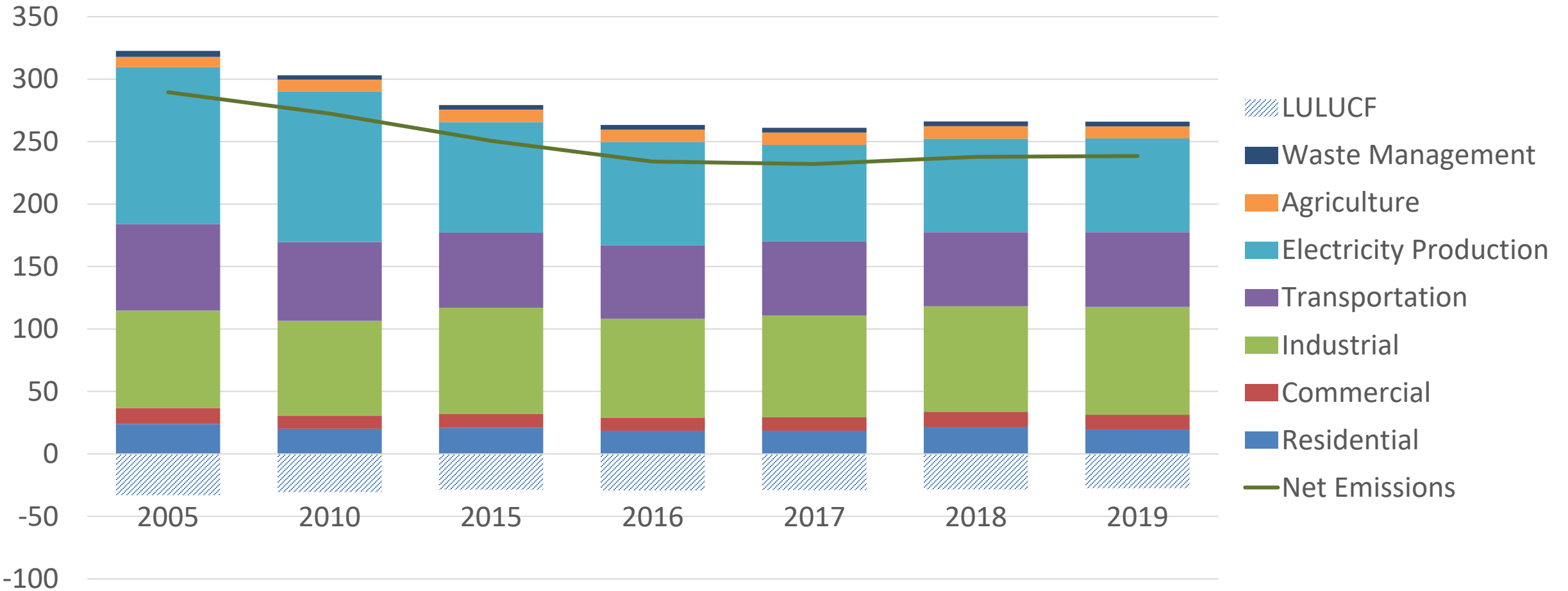
GHG Emissions Inventory

2019 GHG Emissions By Sector (MMTCO$_2$e)

Electricity Production

GHG Emissions from Electricity Production (MMTCO$_2$e)

Year	Value
2005	125.75
2010	120.80
2015	88.56
2016	82.63
2017	77.04
2018	74.85
2019	75.09

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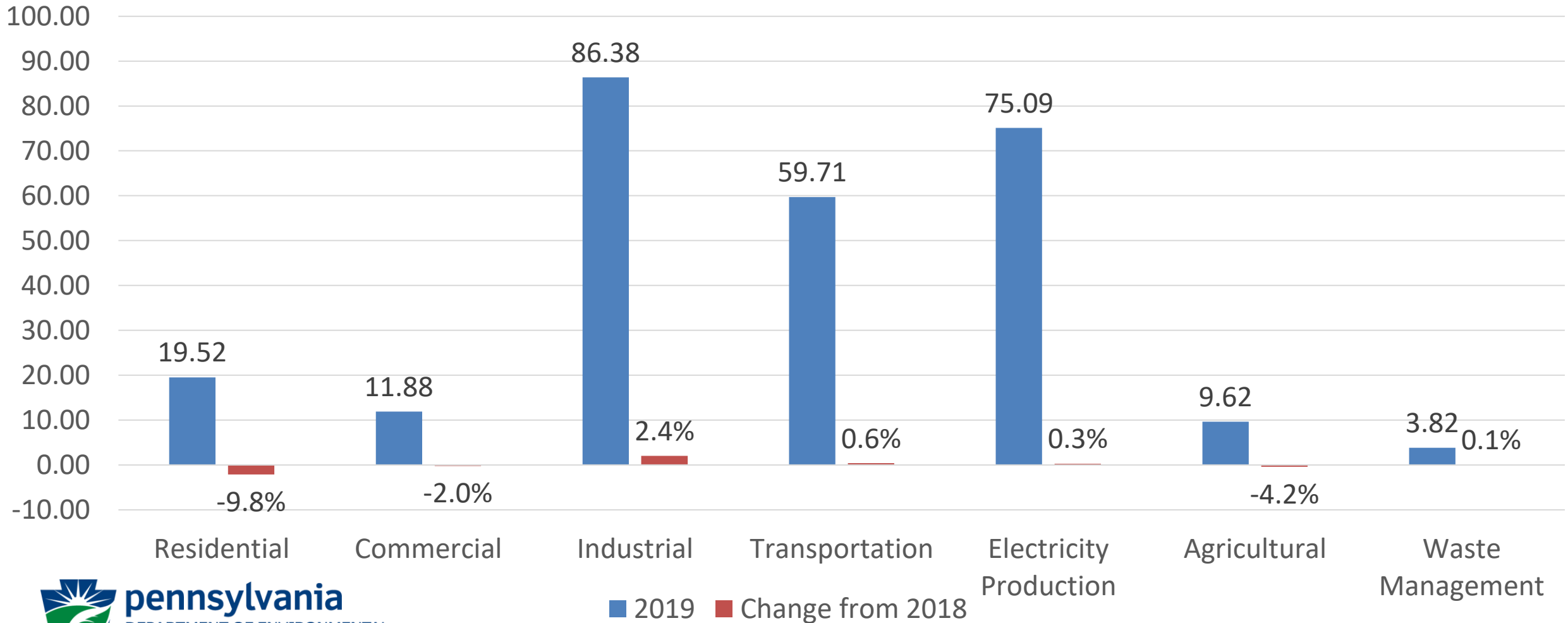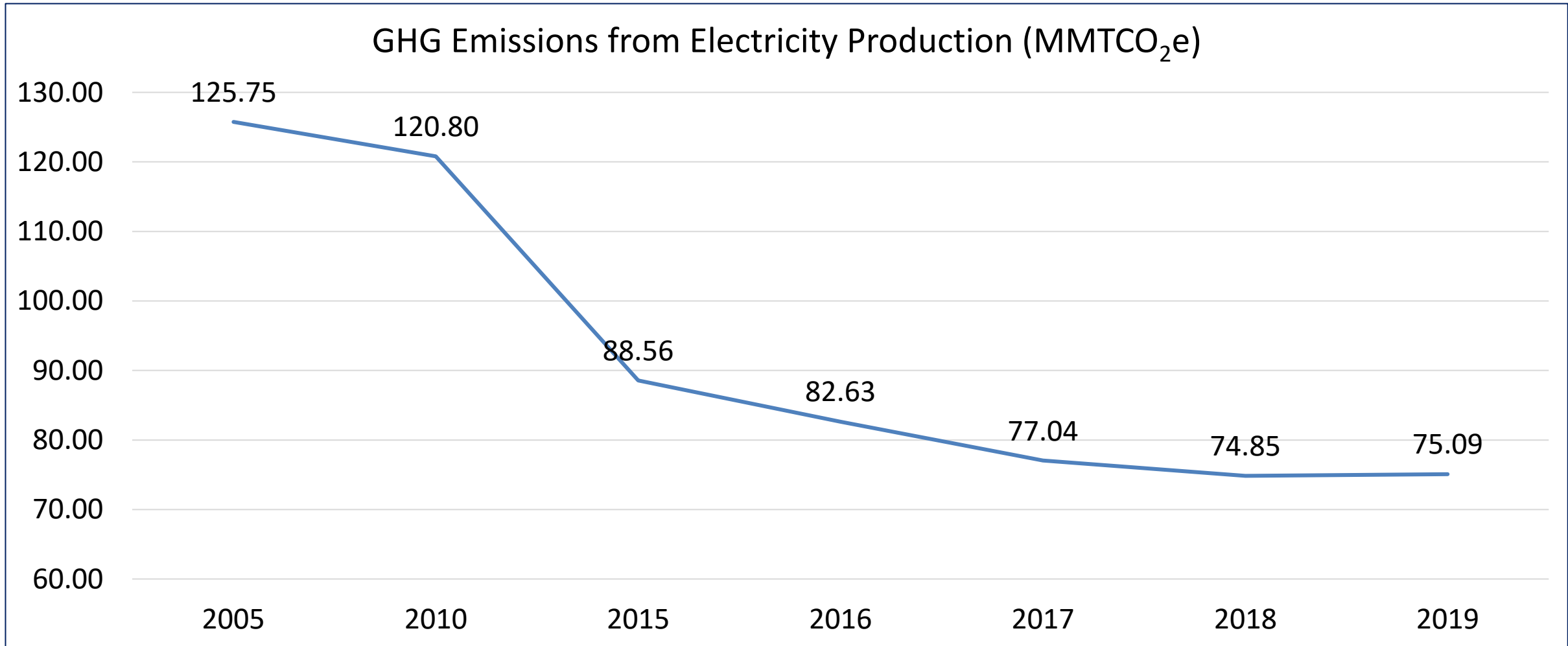
Electricity Production

Total Electricity Generated, Consumed, and Exported (TWh)
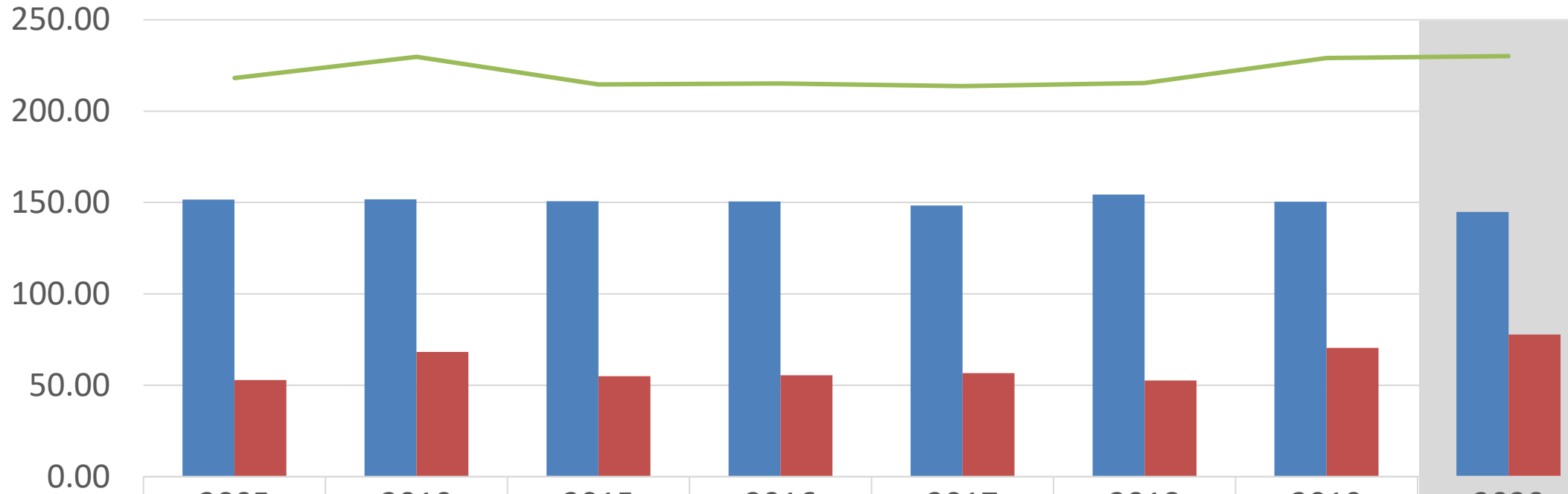
	2005	2010	2015	2016	2017	2018	2019	2020
Electricity Consumed	151.56	151.75	150.67	150.53	148.33	154.37	150.40 ↓	144.86 ↓
Electricity Exported	52.86	68.26	54.93	55.49	56.61	52.57	70.48 ↑	77.81 ↑
Electricity Generated	218.09	229.75	214.57	215.07	213.64	215.39	229.00 ↑	230.14 ↑

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Electricity Production

Percent Electricity Production By Fuel Type

	2005	2010	2015	2016	2017	2018	2019	2020
■ Oil	2.3%	0.2%	0.3%	0.2%	0.2%	0.3%	0.1%	0.0%
■ Natural Gas	5.0%	14.7%	27.7%	31.6%	33.9%	35.5%	42.8% ↑	52.5% ↑
■ Coal	55.5%	48.0%	30.1%	25.4%	22.3%	20.5%	16.6% ↓	10.2% ↓

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Electricity Production

GHG Emissions from Electricty Production Sector by Source
(% of Total)

	2005	2010	2015	2016	2017	2018	2019	
Oil	3.3%	0.4%	0.5%	0.3%	0.3%	0.8%	0.2%	
Natural Gas	3.5%	11.0%	27.2%	33.3%	37.4%	39.4%	49.1%	↑
Coal	93.2%	88.5%	72.2%	66.4%	62.3%	59.8%	50.7%	↓

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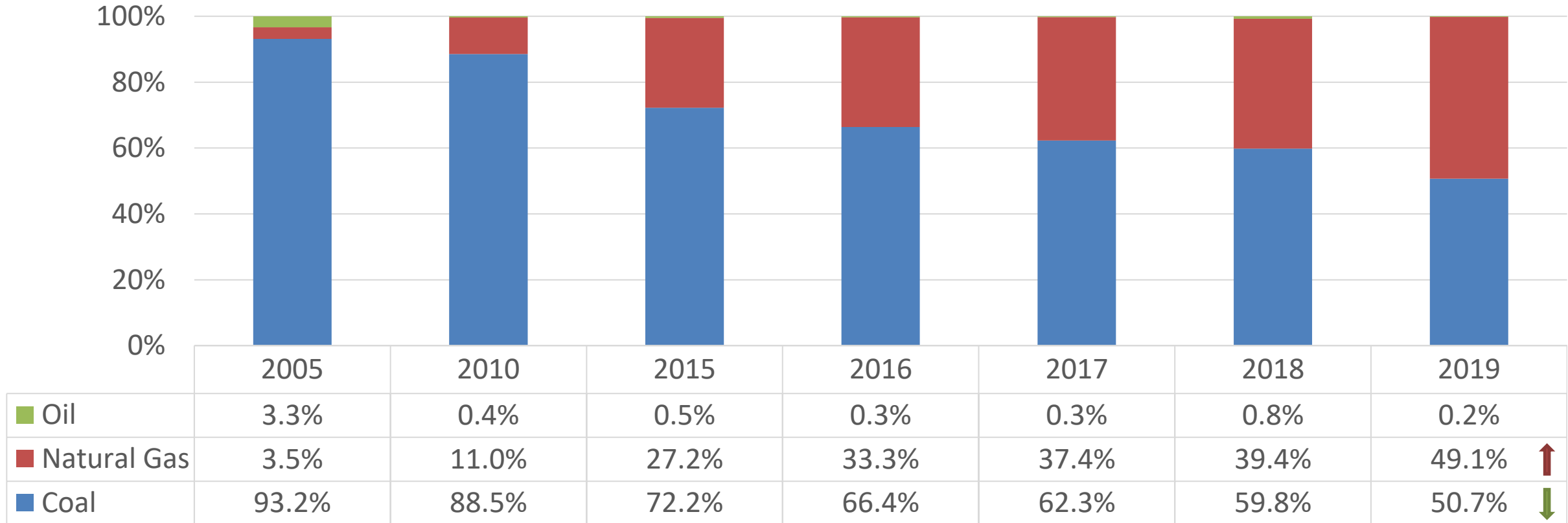
Industrial Sector

GHG Emissions from Industrial Sector (MMTCO$_2$e)
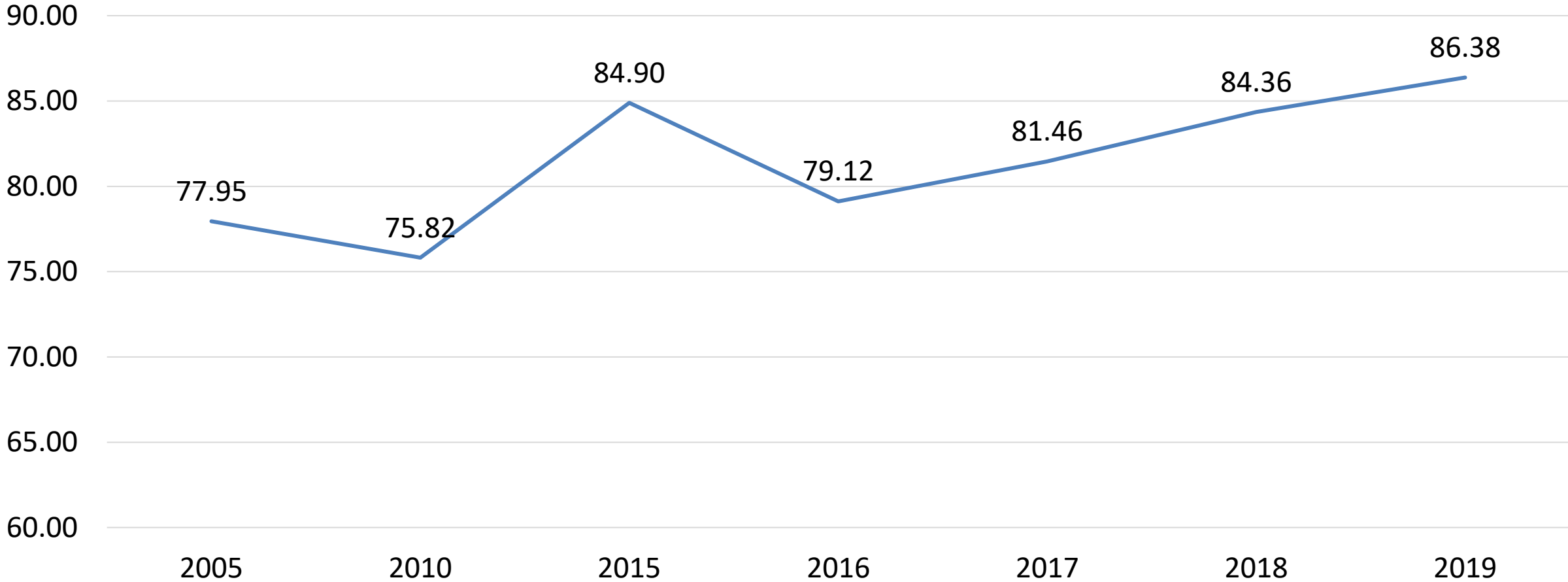
Industrial Sector

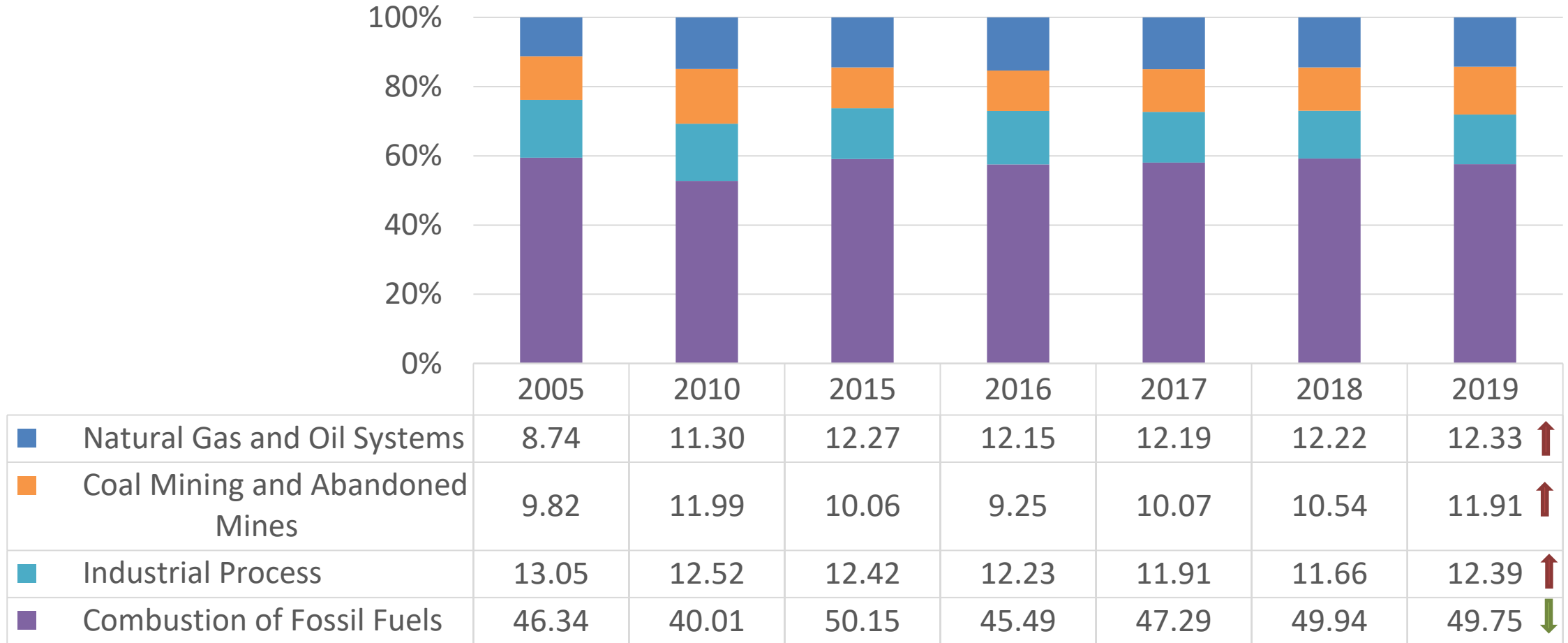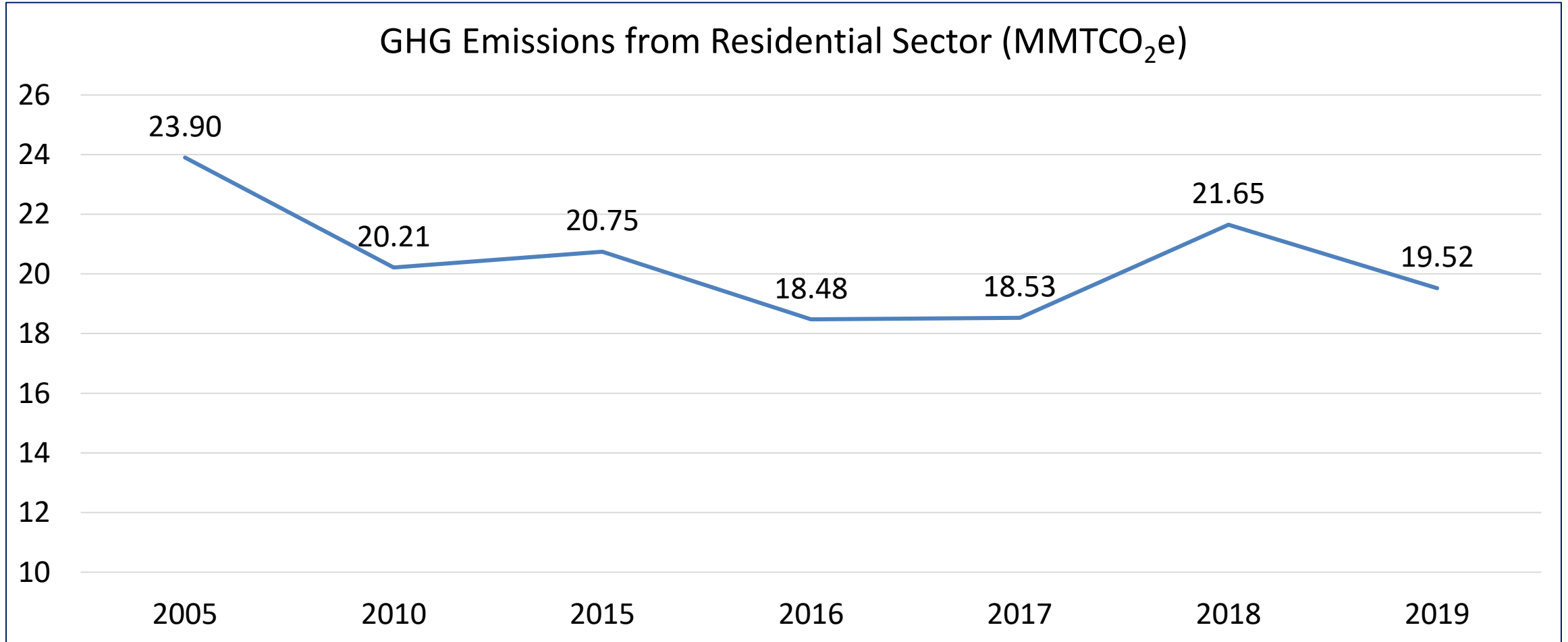## GHG Emissions from Industrial Sector by Source (% of Total)

	2005	2010	2015	2016	2017	2018	2019	
🟦 Natural Gas and Oil Systems	8.74	11.30	12.27	12.15	12.19	12.22	12.33	⬆
🟧 Coal Mining and Abandoned Mines	9.82	11.99	10.06	9.25	10.07	10.54	11.91	⬆
🟦 Industrial Process	13.05	12.52	12.42	12.23	11.91	11.66	12.39	⬆
🟪 Combustion of Fossil Fuels	46.34	40.01	50.15	45.49	47.29	49.94	49.75	⬇

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Table values presented in MMTCO$_2$e

Residential Sector

GHG Emissions from Residential Sector (MMTCO$_2$e)

Residential Sector

Residential Emissions by Fuel Type (% of Total)

	2005	2010	2015	2016	2017	2018	2019
■ Natural Gas	13.49	12.26	13.07	11.89	12.07	13.89	13.01 ↓
■ Propane	0.95	1.31	1.15	1.06	1.11	1.31	1.49 ↑
■ Kerosene	0.76	0.31	0.10	0.11	0.07	0.07	0.08
■ Heating Oil	8.58	6.33	6.43	5.42	5.28	6.38	4.94 ↓
■ Coal	0.12	0.00	0.00	0.00	0.00	0.00	0.00

Table values presented in MMTCO$_2$e

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Commercial Sector

GHG Emissions from Commercial Sector (MMTCO$_2$e)

- 2005: 12.86
- 2010: 10.53
- 2015: 11.44
- 2016: 10.57
- 2017: 10.85
- 2018: 12.12
- 2019: 11.88

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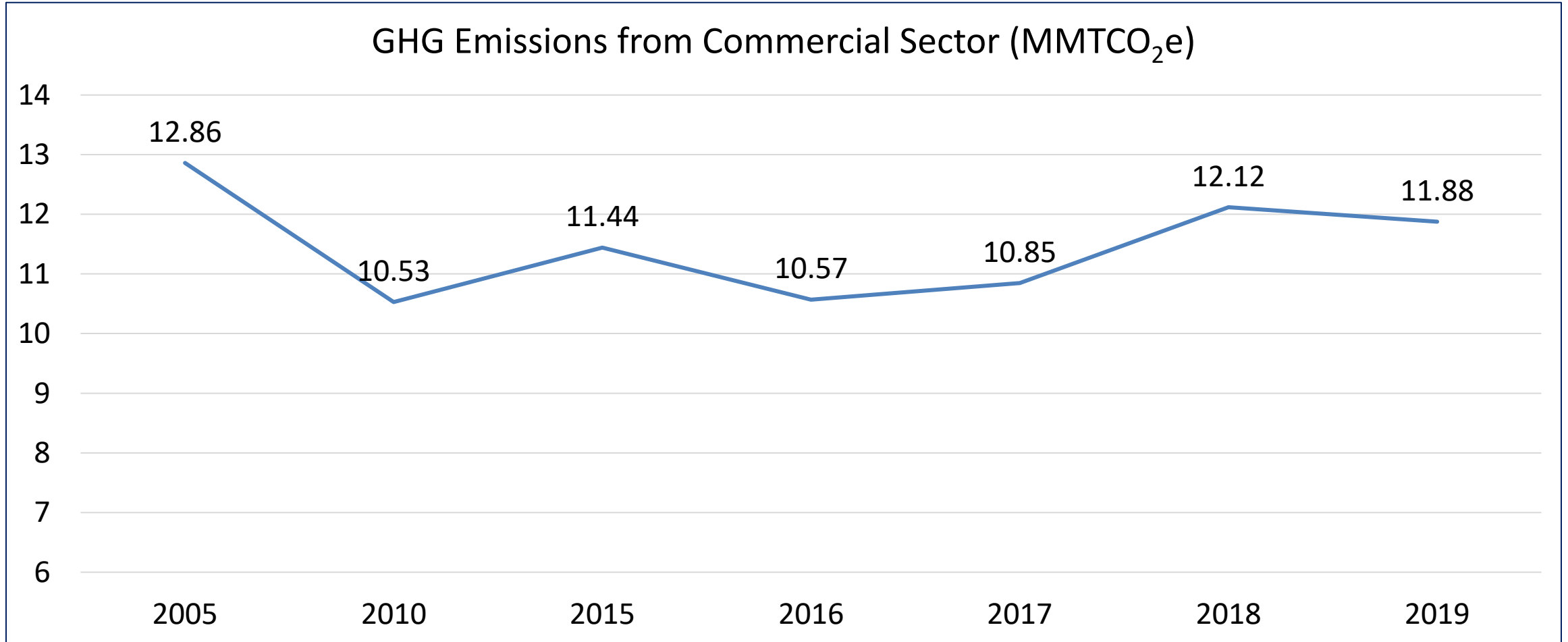
Commercial Emissions by Fuel Type (% of Total)
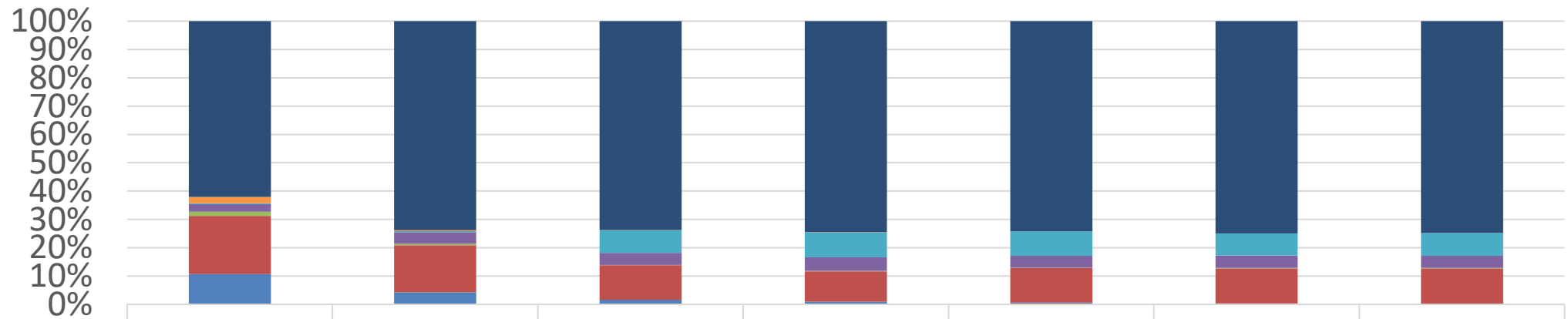
	2005	2010	2015	2016	2017	2018	2019
■ Natural Gas	7.98	7.77	8.43	7.87	8.05	9.08	8.89 ⬇
■ Residual Fuel	0.30	0.04	0.00	0.01	0.00	0.00	0.00
■ Motor Gasoline	0.03	0.03	0.92	0.93	0.94	0.96	0.96
■ Propane	0.35	0.43	0.49	0.51	0.45	0.53	0.50
■ Kerosene	0.19	0.06	0.01	0.02	0.01	0.01	0.02
■ Heating Fuel	2.64	1.75	1.39	1.13	1.33	1.51	1.48
■ Coal	1.38	0.45	0.19	0.10	0.06	0.04	0.03

Table values presented in $MMTCO_2e$

Transportation Sector

GHG Emissions from Transportation Sector (MMTCO2e)

Data points:
- 2005: 69.25
- 2010: 62.98
- 2015: 60.01
- 2016: 58.95
- 2017: 59.48
- 2018: 59.34
- 2019: 59.71

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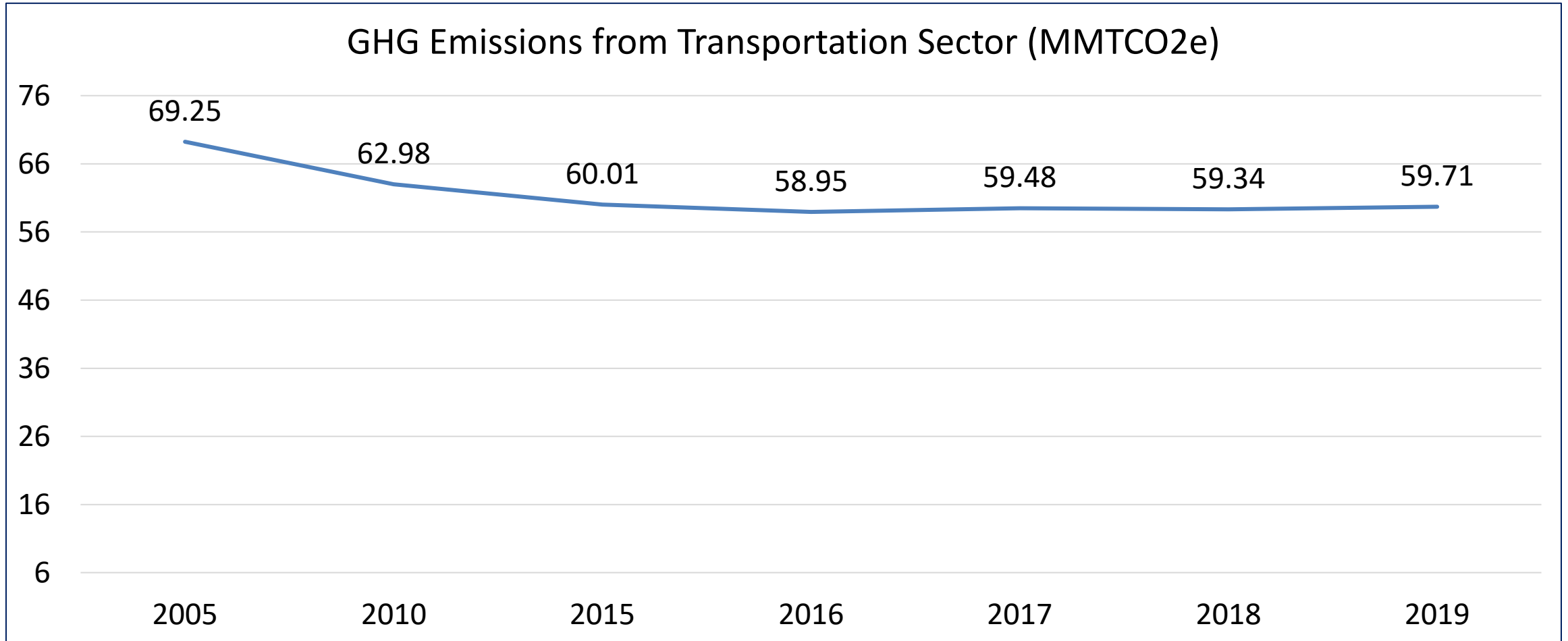
Transportation Sector

Transportation Fuel Use by Type (% of Total)
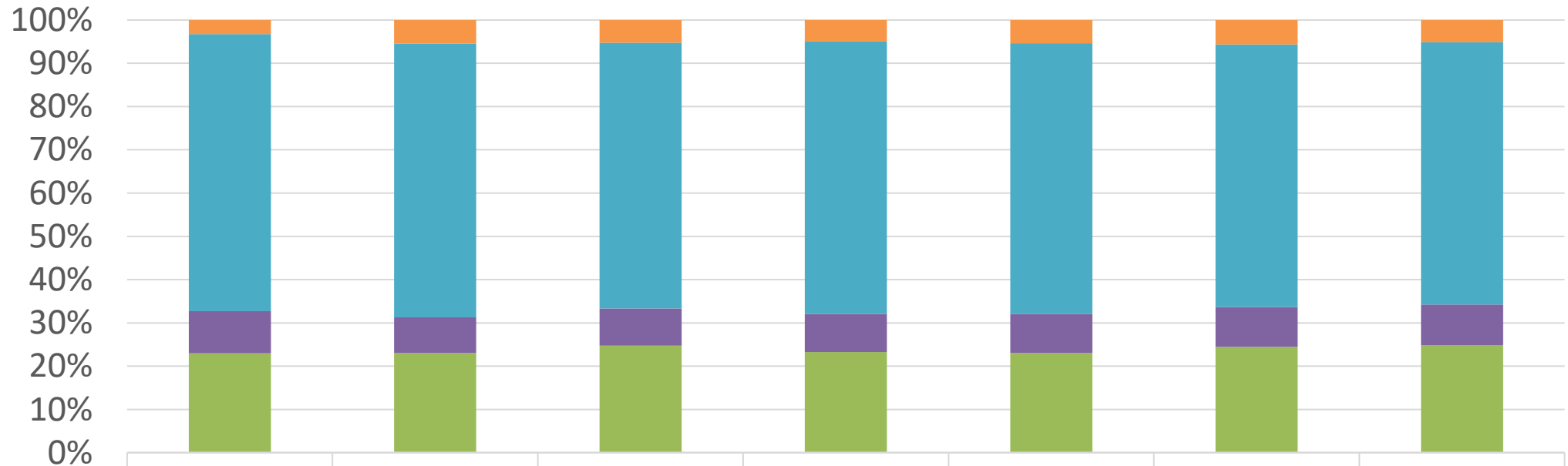
	2005	2010	2015	2016	2017	2018	2019	
Natural Gas	32,312	49,517	45,700	42,547	46,208	48,893	44,314	↓
Motor Gasoline	628,121	571,588	532,669	535,957	539,177	522,404	524,459	↑
Jet Fuel	95,404	74,774	74,673	74,912	77,287	79,228	82,141	↑
Diesel	225,678	208,177	214,410	198,257	198,552	210,825	214,525	↑

Table values presented in BBtu
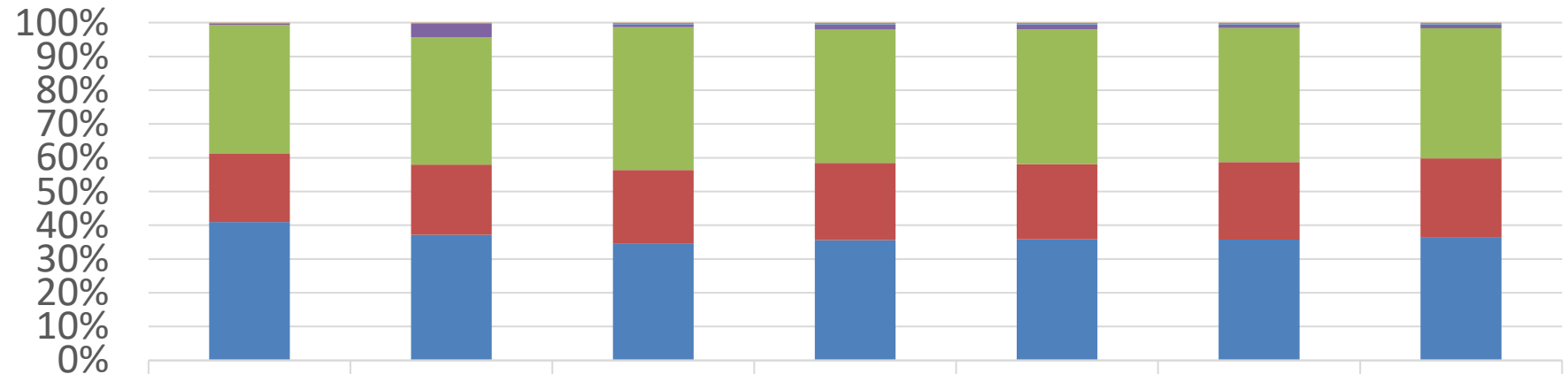
Waste Management Sector

2019 GHG Emissions from Waste Management Sector by Source (Percent of Total)
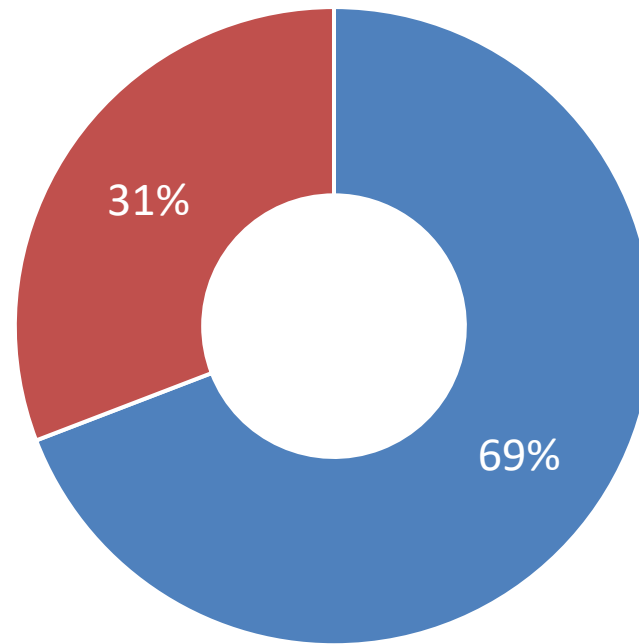
■ Solid Waste   ■ Wastewater

Agricultural Sector

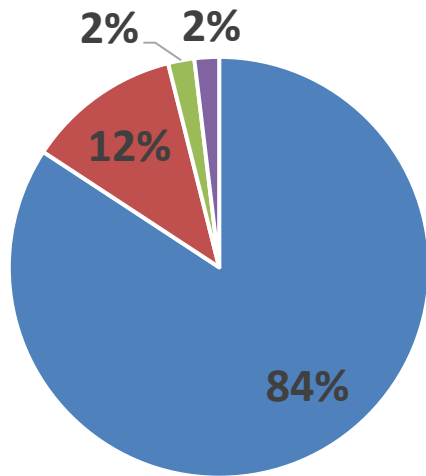## GHG Emissions from Agricultural Sector by Source (% of Total)

	2005	2010	2015	2016	2017	2018	2019
Burning of Agricultural Crop Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urea Fertilization	0.02	0.03	0.04	0.04	0.04	0.04	0.04
Liming of Soils	0.03	0.38	0.08	0.16	0.15	0.11	0.11
Agricultural Soil Management	3.13	3.49	4.20	3.90	3.98	3.99	3.71 ↓
Manure Management	1.68	1.93	2.17	2.26	2.22	2.31	2.24
Enteric Fermentation	3.37	3.44	3.43	3.51	3.57	3.59	3.51

Table values presented in MMTCO$_2$e

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Summary by Gas

GHG Emissions by Gas, 2019

- Gross CO2 — 84%
- CH4 — 12%
- N2O — 2%
- HFC, PFC, SF6 and NF3 Emissions — 2%

GHG Emissions by Gas, 2005-2019
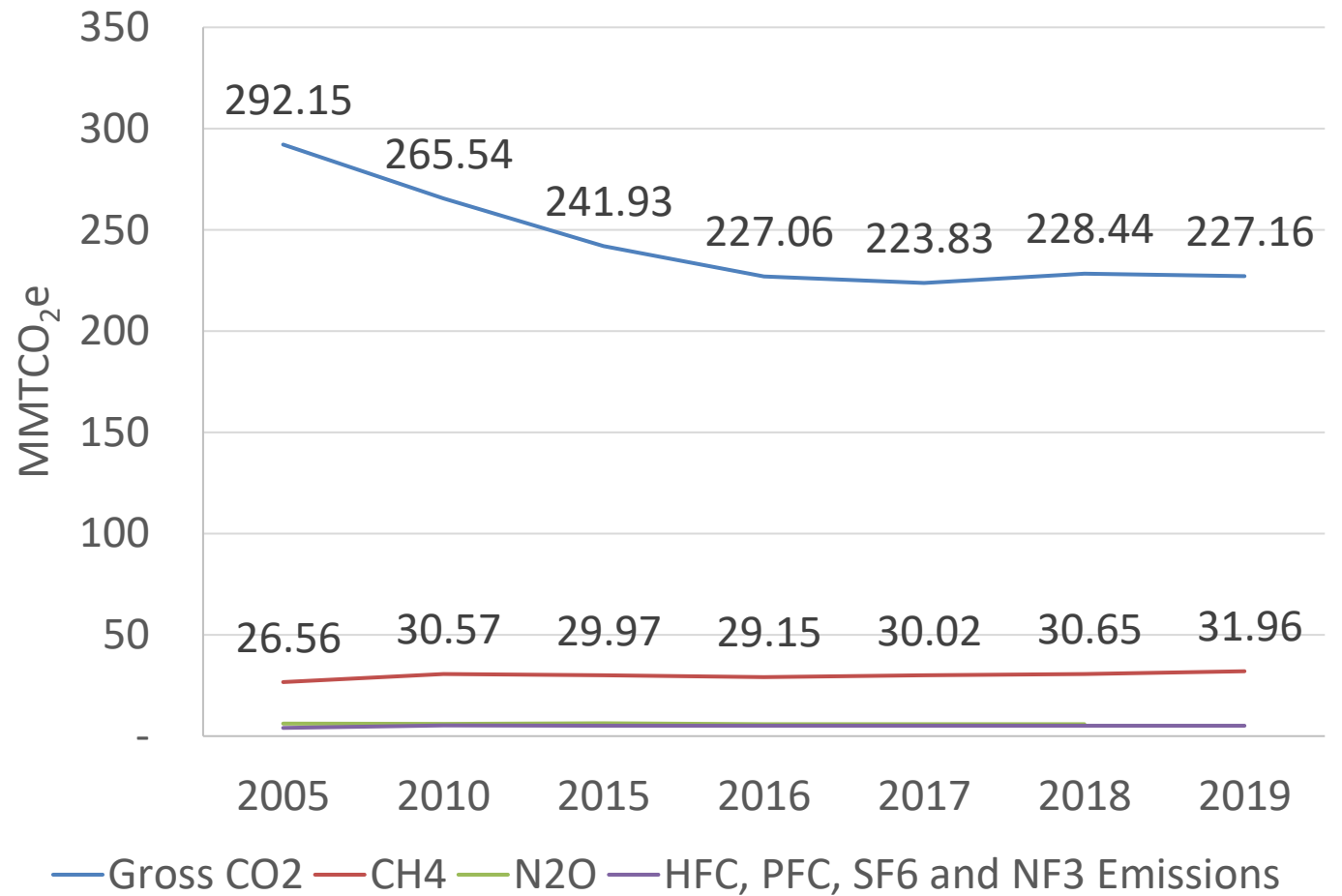
Gross CO2: 292.15, 265.54, 241.93, 227.06, 223.83, 228.44, 227.16

CH4: 26.56, 30.57, 29.97, 29.15, 30.02, 30.65, 31.96

Years: 2005, 2010, 2015, 2016, 2017, 2018, 2019

Legend: Gross CO2, CH4, N2O, HFC, PFC, SF6 and NF3 Emissions

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Questions?

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Pennsylvania Climate Action to Benefit Disadvantaged Communities

- EPO's Clean Energy Program Plan: "Consider effects on equity, access, and inclusion and the needs of and effects on vulnerable communities".

- DEP's Draft Environmental Justice (EJ) Policy : DEP will "Create and implement outreach and engagement strategies to ensure participation by, and feedback from, EJ Area residents, community organizations and communities vulnerable to climate change impacts in climate planning and investment initiatives. Public input processes involving EJ communities should be conducted early in the planning process and provide a meaningful opportunity to impact the outcome".

- DEP plans to hire a contractor to develop a plan for community engagement, facilitate that engagement, solicit and coordinate input from DACs and experts on diversity, equity and inclusion (DEI), and develop a guide that answers questions related to implementation of climate strategies for maximum benefit to DACs and how to measure success. This guide will be useful not only as EPO prepares the 2024 Climate Impacts Assessment and CAP, but also as we develop programs to deploy federal Bipartisan Infrastructure Law funding.

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DEP Updates

DEP Climate Outreach Efforts:

- 6/23/22 – FEMA Region 3The Regional Interagency Steering Committee / Regional Advisory Council (RISC / RAC) Meeting
- 6/27/22 – Local Climate Action Event Planning Meeting with CONNECT
- 7/6/22 – Discussion with State of DE on development of LCAP

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2022 Meeting Planning

Proposed Themes:

- ~~February 22 - Transportation~~
- ~~April 14 – Agriculture & LULUCF~~
- ~~June 23 - Buildings~~
- ~~August 23 - Electricity Generation~~
- **October 25 - Industrial & Fuel Supply (additional topics)**
- December 13 – Climate Adaptation

October 25, 2021

GHG Reduction Strategy	Expected Implementation Timeframe
Increase industrial energy efficiency and fuel switching	Near term
Increase production and use of biogas/renewable gas	Midterm
Incentivize and increase use of distributed Combined Heat and Power	Near term
Reduce methane emissions across oil and natural gas systems	Midterm
Reduce food waste	Near term
Reduce waste generated by citizens and businesses and expand beneficial use of waste	Near term

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Next Meeting – Proposed Agenda

October 25, 2022 – Industrial and Fuel Supply:
- Introduction
- Approval of August Minutes
- **Presentation TBD**
- **Environmental Justice/Equity TBD**
- Public Comment
- Break
- **Local government climate action – LCAP Participant TBD**
- **DEP Updates**
- **Next meeting's agenda: Dec. 14, Climate Adaptation**
- New Business

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