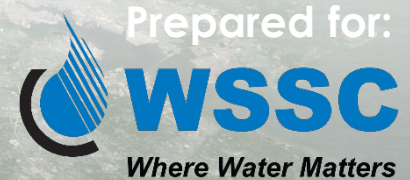


Climate Change Vulnerability Assessment, Adaptation, and Mitigation Planning

Greenhouse Gas Inventory and Action Plan 2017 Update—
Task 6



Prepared by:
ch2mSM

in association with:



June 2018
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Presentation Overview

- GHG Reduction Goals
- GHG Inventory 2005-2017
- Emissions Projections to 2035
- GHG Reduction Strategies

GHG Reduction Goals



Starting Point for WSSC GHG Reduction Goals



State of Maryland

- GHG Reduction Goal and Targets
 - **10% reduction every 5 years** through 2050
 - 80% below 2006 levels by 2050

Montgomery County and Metropolitan Washington Council of Governments (MWCOG)

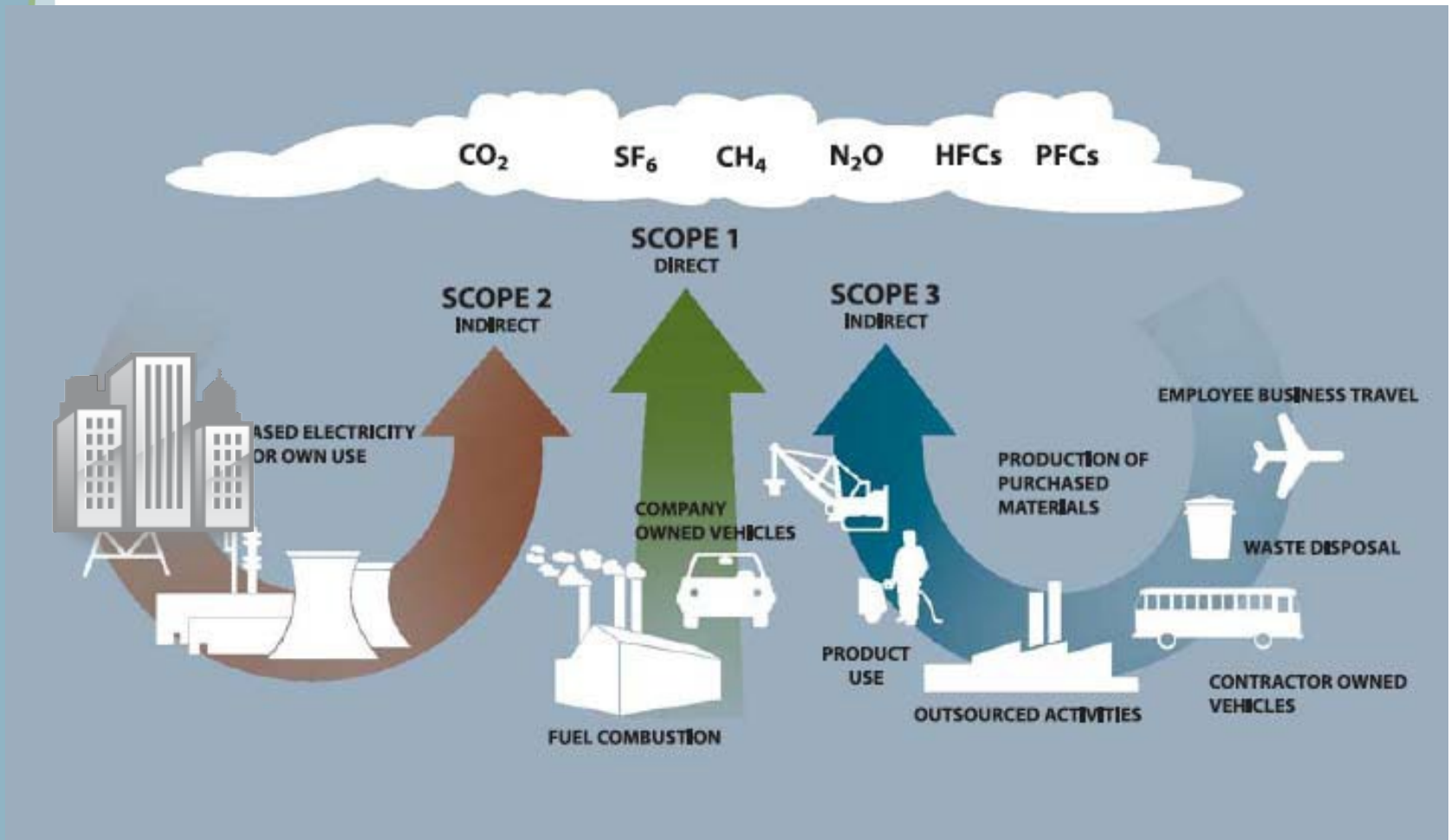
- Developed Climate Protection Plan to establish framework for meeting reduction goals
 - **10% reduction every 5 years** through 2050
 - 80% below 2005 levels by 2050

Montgomery County GHG Reduction Goals



- 2005: Developed Climate Protection Plan to establish framework for meeting reduction goals
 - **10% reduction every 5 years** through 2050 (or 2% per year reduction)
 - 80% below 2005 levels by 2050
- 2017: County Council Issued Climate Emergency Resolution
 - **Goal is to achieve 100% reduction by 2035**
 - Starting in CY2018, in order to achieve 100% reduction of 2005 emissions by 2030, plan requires a reduction of 5.85% per year

What an inventory includes . . .



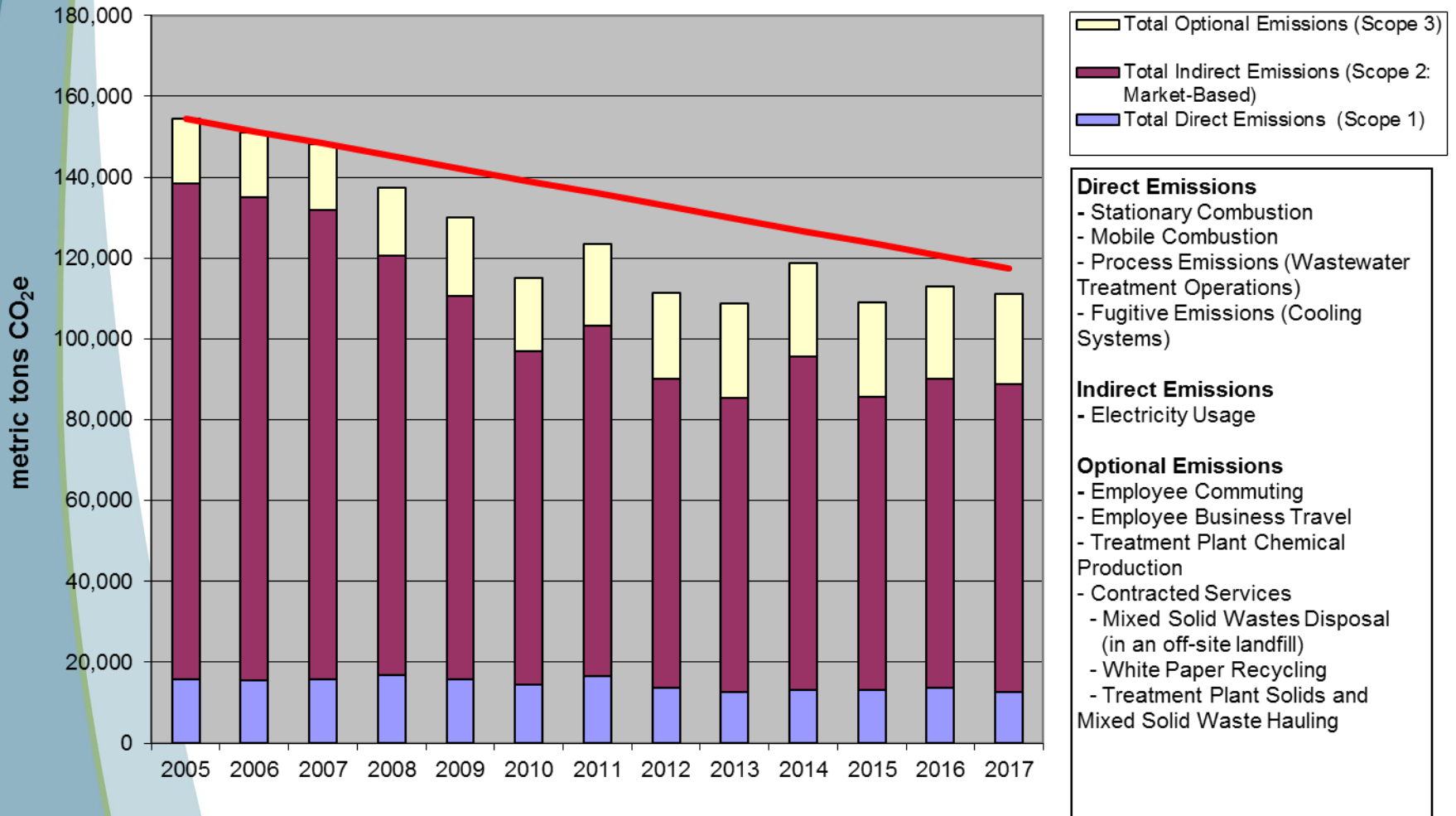
Areas Included in WSSC Inventories

- Transportation – fleet vehicles, trucks, and heavy equipment
- Equipment Fuel Use – generators, emergency pumps, transfer pumps, and other auxiliary equipment
- Operations – water/wastewater treatment facilities and biosolids land application
- Electricity usage – all facilities and equipment
- Chemical usage – manufacture only; not transport
- Employee commuting and business travel
- Contracted services – treatment plant solids and waste hauling

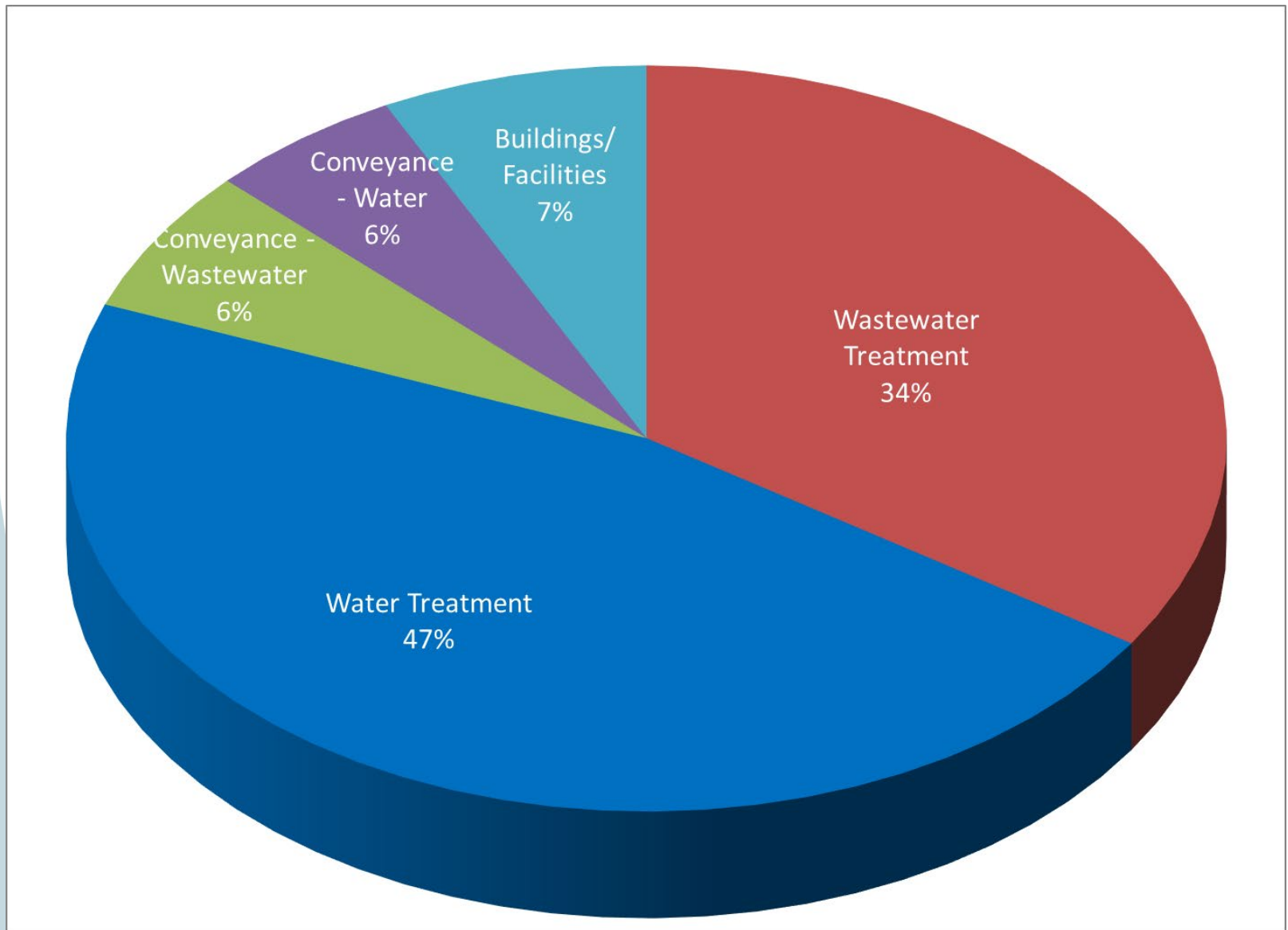
GHG Inventory 2005 - 2017



Comparison of CY2005 – 2017



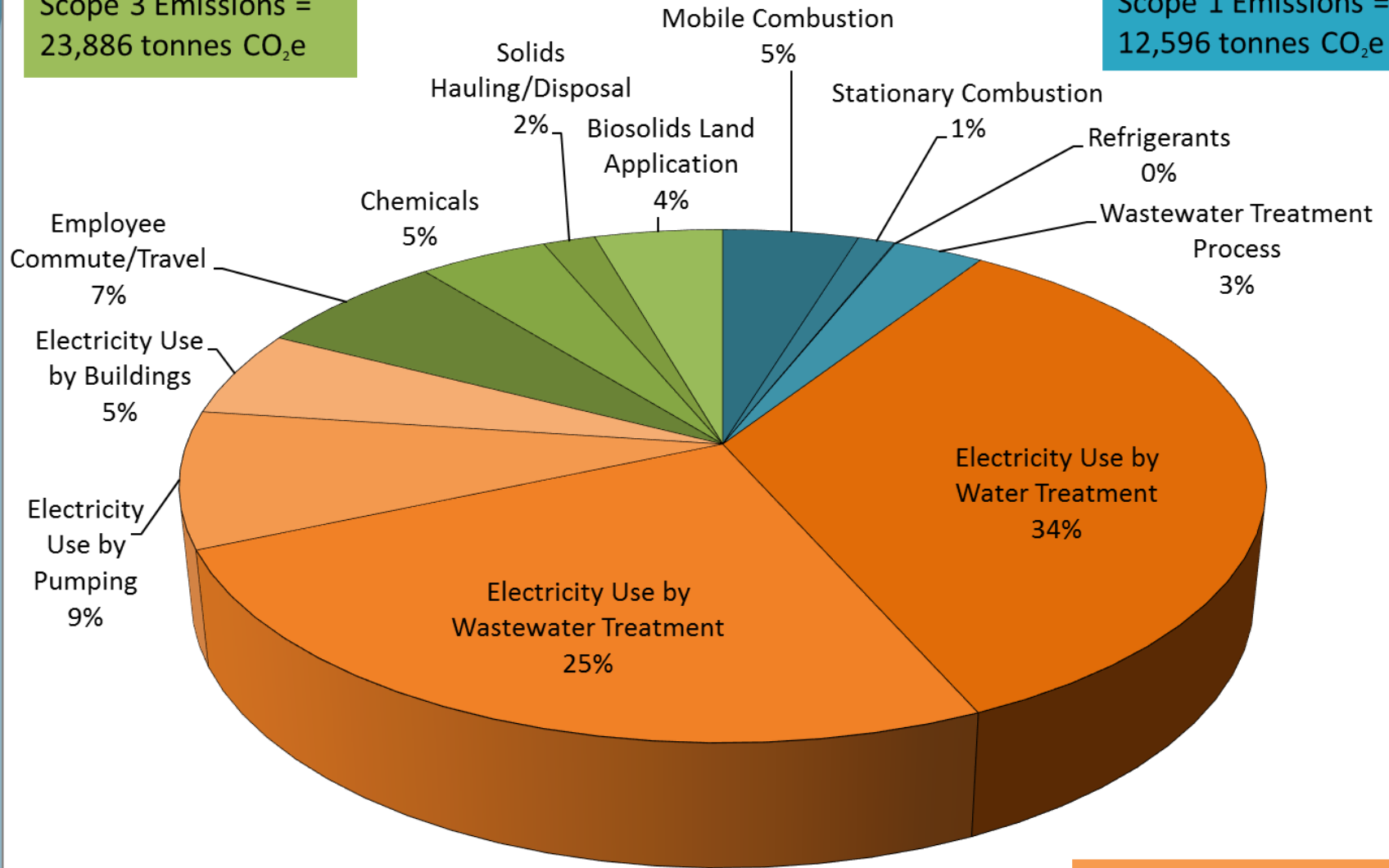
Electricity Use in 2017



GHG Inventory 2017 – Gross Emissions (without avoided emissions)

Scope 3 Emissions =
23,886 tonnes CO₂e

Scope 1 Emissions =
12,596 tonnes CO₂e



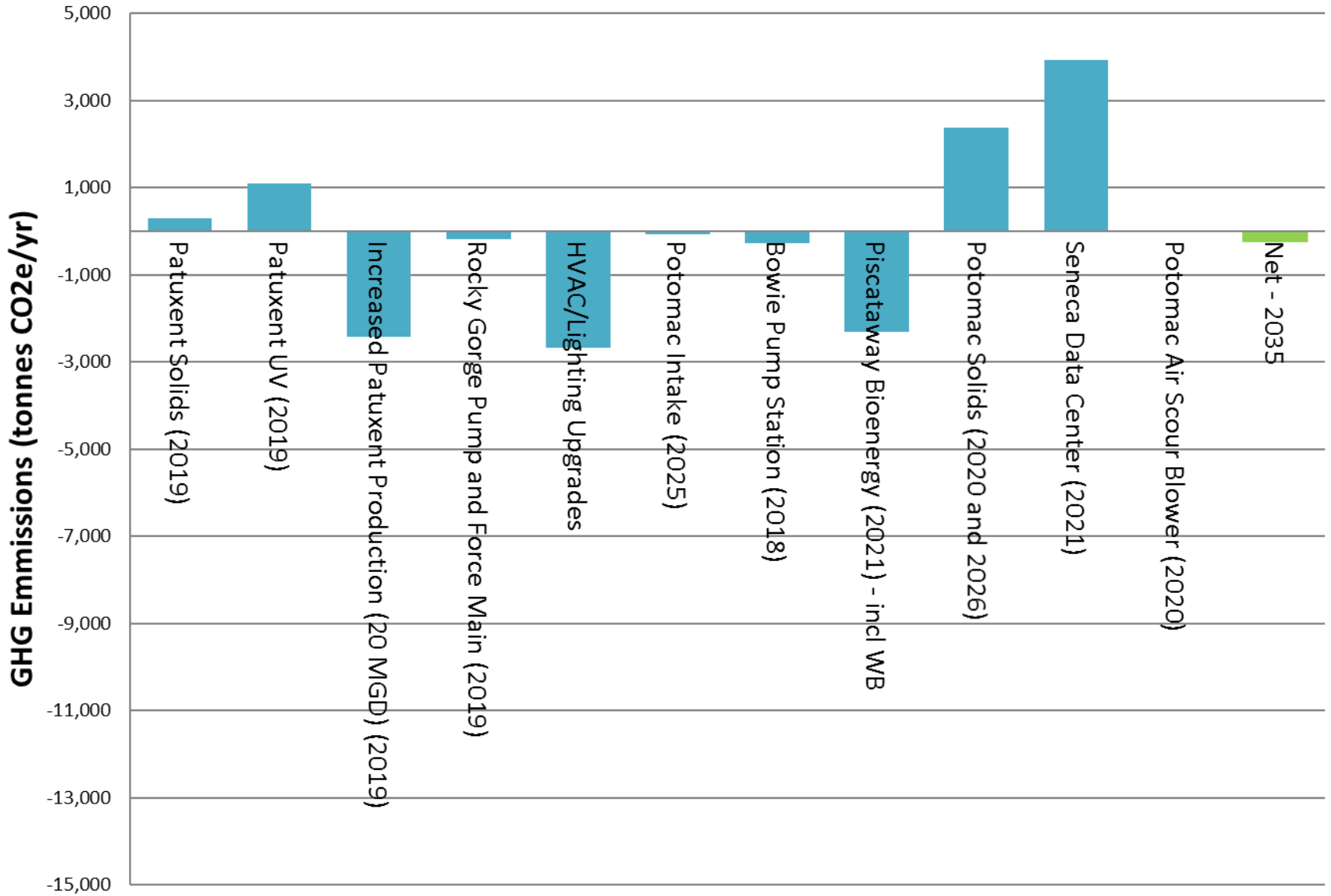
Total CY 2017 Annual
Emissions = 136,895 tonnes CO₂e

Scope 2 Emissions =
100,413 tonnes CO₂e

Emissions Projections to 2035

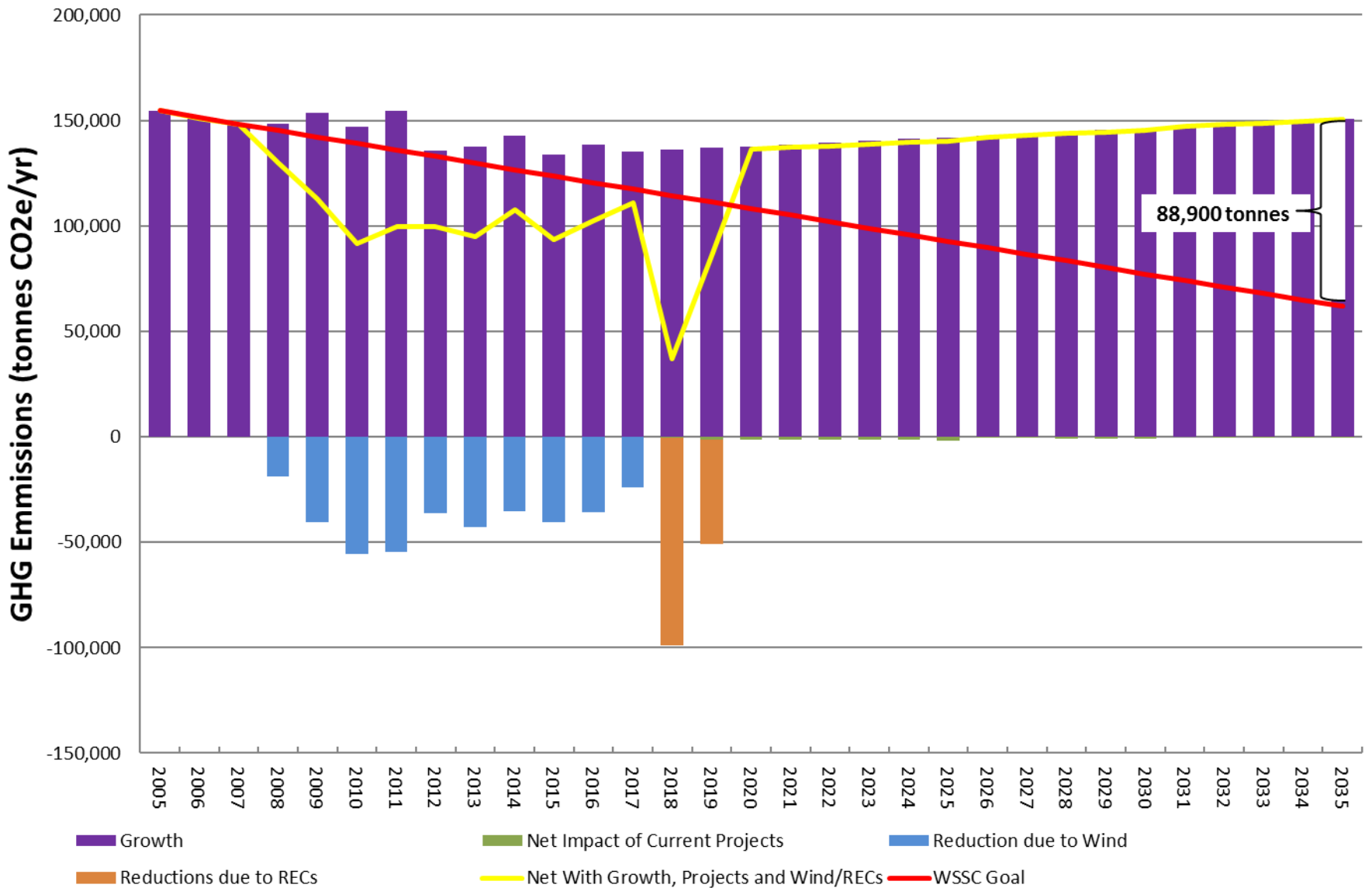


Estimated Net Contribution of Current Projects to Year 2035 GHG Emissions



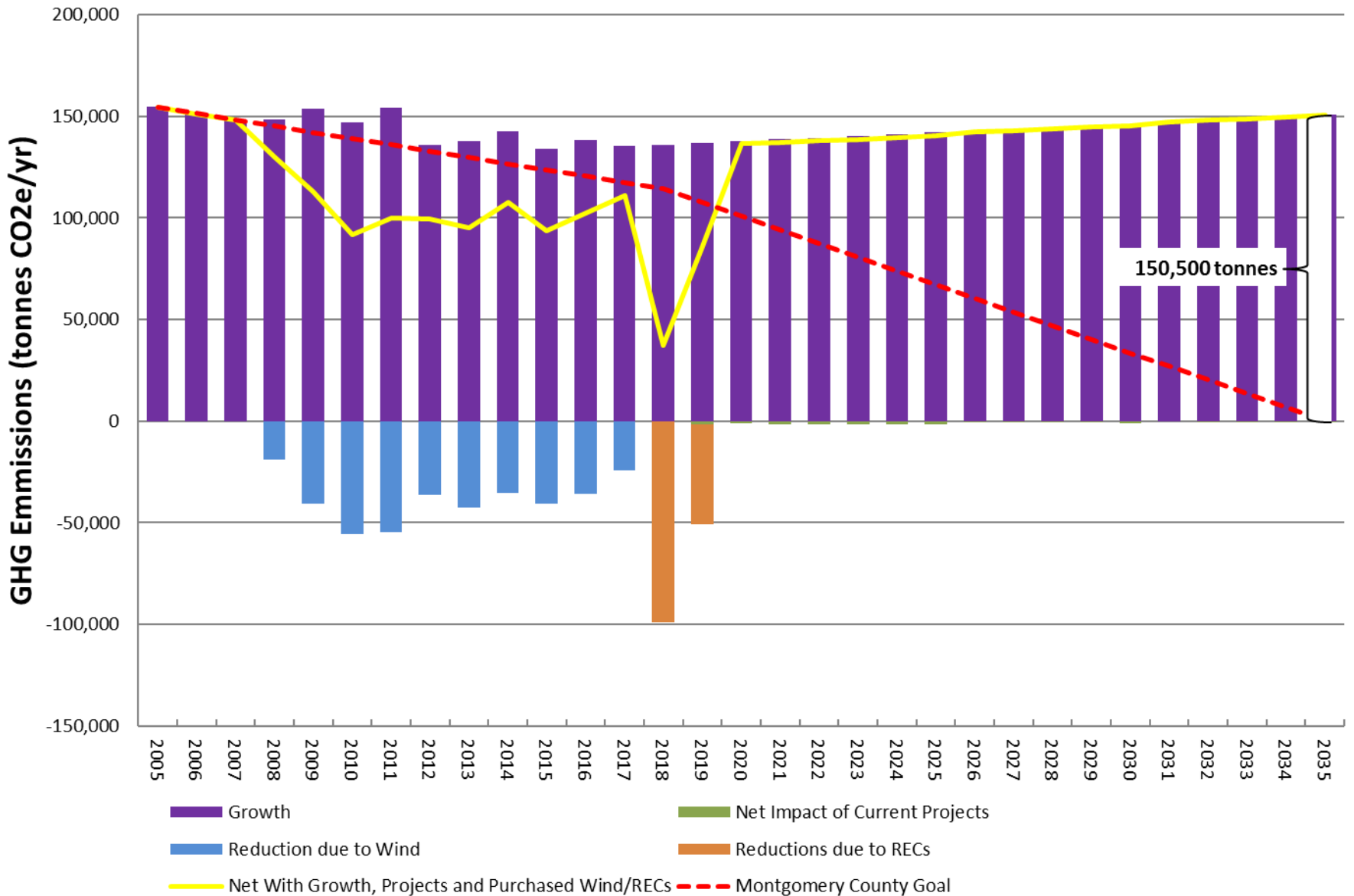
WSSC GHG Projections (2005 - 2035)

Growth and Current Capital Improvement Projects vs. WSSC Goal



WSSC GHG Projections (2005 - 2035)

Growth and Current Capital Improvement Projects vs. Montgomery County Goal



GHG Reduction Strategies



Group 1 – System Efficiency

No.	Name	2035 GHG (tonnes/yr CO2e)	LCC through 2035
1.4	Track Water Distribution System Valves (2025)	-299	-\$124,000

Group 2 – Equipment Efficiency

No.	Name	2035 GHG (tonnes/yr CO ₂ e)	LCC through 2035
2.3	Replace Mixers at Piscataway WWTP (2020)	-559	\$1,073,000
2.5	Potomac High Zone Pump VFDs (2020)	-108	-\$1,122,000
2.6	Aeration Efficiency at Piscataway WWTP (2020)	-1,889	\$1,122,000
2.8	Replace Mixers at Parkway WWTP (2020)	-171	\$144,000
2.9	Potomac Main Zone Pump #1 (2020)	-437	-\$482,000

Group 3 – Residuals/Process

No.	Name	2035 GHG (tonnes/yr CO2e)	LCC through 2035
3.3	Airprex Process (2026)	-1,500	\$1,983,000
3.4	Green Carbon Sources for Denitrification (2018)	-3,591	- \$3,482,000
3.5	Recycling Program (2018)	-32	\$0
3.6 A	Implement Aeration Control at Seneca and Western Branch (2023)	-752	-\$5,000
3.6 B	Implement Mainstream Anammox at Piscataway (2023)	-1,417	\$3,606,000

Group 4 – Transportation

No.	Name	2035 GHG (tonnes/yr CO2e)	LCC through 2035
4.1	Hybrid/Alt Fuel (2019)	-2,221	\$5,083,000
4.2	Telecommuting (2019)	-427	\$0

Group 5 – Lighting/HVAC

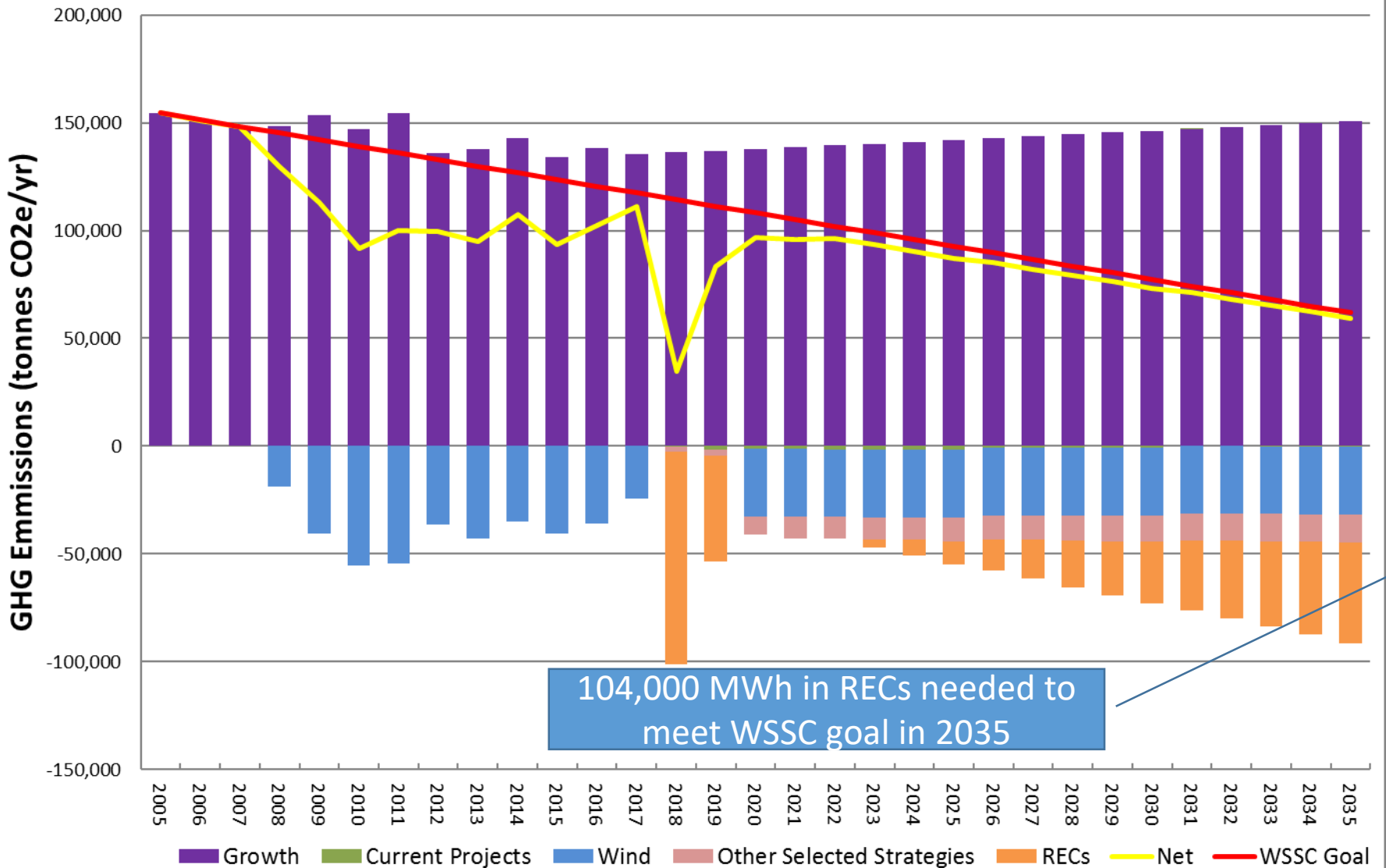
No.	Name	2035 GHG (tonnes/yr CO2e)	LCC through 2035
5.5	Office Equipment (2020)	-146	-\$430,000

Group 6 – Renewable Resources

No.	Name	2035 GHG (tonnes/yr CO ₂ e)	LCC through 2035
6.2	Additional Solar Installation (6 MW)	No offset	
6.3	Wind Energy (70,000 MWh/yr)	-28,312	\$0
6.4	Renewable Energy Credits (RECs) – (104,000 MWh/yr by 2035)	-31,424	\$390,000

WSSC GHG Projections (2005 - 2035)

Impact of Selected Strategies



Group 6 – Renewable Resources to Meet Montgomery County Goal

No.	Name	2035 GHG (tonnes/yr CO2e)	LCC through 2035
6.4A	Renewable Energy Credits (RECs) – (174,000 MWh/yr by 2035)	-78,400	\$914,000
6.4B	Renewable Energy Credits (RECs) – (104,000 MWh/yr by 2035)	-27,500	TBD

WSSC GHG Projections (2005 - 2035)

Impact of Projects, Strategies, Wind Contract, REC and Carbon Credit Purchase

