

DRAFT November 2007
Draft Greenhouse Gas Inventory Projection
for the Washington, DC-MD-VA Region

Draft greenhouse gas emission estimates were developed for the metropolitan Washington region for use in discussing possible emission reduction goals. The region covered includes all counties considered part of the 8-hour ozone nonattainment area. Given data availability, 2005 was selected as the base year. Projections were developed by applying growth factors to the base year emissions by sector.

2005 Base Year Estimates

Source	General Methodology	Possible Improvements
Energy/Electrical Generating Units (EGUs) and Electricity Import	Emissions for power plants in the COG Region provided by EPA Clean Air Markets Division. Imports based net KWh imports and on EIA regional emission factor.	Additional research on supply, demand, and net imports of electricity is needed.
Transportation Combustion	All emissions provided by COG DTP, see attachment.	Compare to statewide motor fuel consumption scaled to region.
Residential Fuel Use	Total Residential Natural Gas, Distillate Oil, and Residual Oil by State provided by U.S. DOE EIA, scaled to region using population.	Possible collection of data locally?
Commercial Fuel Use	Total Commercial Natural Gas, Distillate Oil, and Residual Oil by State provided by U.S. DOE EIA, scaled to region using population.	Allocate statewide emissions to region using sales tax data instead of population.
Industrial Fuel Use	Total Industrial Natural Gas, Distillate Oil, and Residual Oil by State provided by U.S. DOE EIA, scaled to region using population.	Additional research on appropriate scaling factors needed.
Other Fuel Use	Total "Other" Natural Gas, Distillate Oil, and Residual Oil by State provided by U.S. DOE EIA, scaled to region using population.	
Commercial Aviation	Total U.S. Commercial Aviation Emissions from EPA GHG Inventory scaled to region based on Bureau of Transportation Statistics Total Miles for All Arriving and Departing Flights. Divided by two.	Possible EDMS model revisions.
Hydrofluorocarbons	Total US Emissions scaled to region using employment.	
Wastewater	EPA State Inventory Tool, IPCC formulas, default inputs, population-based.	Confirmation of inputs from wastewater utilities.

EIA emission factors were used to convert fuel consumption to CO₂ emissions, and are generally consistent with IPCC, ICLEI, and EPA State Inventory Tool (see attached emission factor table). Additional important sources to add to the

preliminary inventory include direct emissions from landfills and forest loss, and indirect emissions from consumption of consumer products.

2020 and 2030 Emission Projections

Outyear emission projections were developed by applying the growth factors in the table below to the preliminary 2005 Base Year Inventory.

Growth Factors Applied for Projection Inventory

	2020	2030	Growth Factor
Energy/Electrical Generating Units (EGUs) and Electricity Import	20%	33%	EIA Total Electric Power
Transportation Combustion	25%	38%	COG DTP
Residential Fuel Use	22%	33%	COG Population
Commercial Fuel Use	25%	39%	COG Employment
Industrial Fuel Use	10%	19%	EIA Total Industrial Energy
Other Fuel Use	18%	31%	EIA Total Energy Consumption
Commercial Aviation	35%	40%	EIA Jet Fuel
Hydrofluorocarbons	25%	39%	COG Employment
Wastewater	22%	33%	COG Population
Others:			
Population	22%	33%	COG
Households	23%	35%	COG
Employment	25%	39%	COG

Source: U.S. Department of Energy, Energy Information Administration, Annual Energy Outlook 2007. Transportation growth percentage calculated based on COG DTP projections. COG Round 7.a Cooperative Forecast projections for Population, Households, and Employment are provided for comparison purposes.

Results

The table and graph below provide the preliminary greenhouse gas emission projections for the Washington region.

2005
DRAFT Regional Greenhouse Gas Emission Estimate
for the Washington, DC-MD-VA Region (YR 2005)
(Million Metric Tonnes CO₂e/year)

	Suburban Maryland	District of Columbia	Northern Virginia	Total
Energy/Electrical Generating Units (EGUs)	15.35	0.17	3.58	19.11
Transportation Combustion	10.88	1.94	9.77	22.58
Residential Fuel Use	2.85	0.98	2.47	6.30
Commercial Fuel Use	1.95	1.19	1.65	4.79
Industrial Fuel Use	0.56	0.00	1.29	1.85
Other Fuel Use	0.64	0.12	1.00	1.76
Commercial Aviation	-	-	4.02	4.02
Hydrofluorocarbons	0.90	0.63	1.05	2.58
Wastewater	0.15	0.04	0.15	0.34
Subtotal Direct Emissions	33.28	5.07	24.98	63.32
Import of Electricity	-	3.33	7.54	10.86
Regional Total	33.28	8.39	32.51	74.19

2020
DRAFT Regional Greenhouse Gas Emission Estimate
for the Washington, DC-MD-VA Region (YR 2020)
(Million Metric Tonnes CO₂e/year)

	Suburban Maryland	District of Columbia	Northern Virginia	Total
Energy/Electrical Generating Units (EGUs)	15.35	0.20	4.30	19.86
Transportation Combustion	13.47	2.16	12.51	28.14
Residential Fuel Use	3.47	1.20	3.01	7.68
Commercial Fuel Use	2.43	1.49	2.06	5.98
Industrial Fuel Use	0.62	0.00	1.42	2.03
Other Fuel Use	0.76	0.14	1.18	2.08
Commercial Aviation	-	-	5.42	5.42
Hydrofluorocarbons	1.13	0.79	1.31	3.23
Wastewater	0.18	0.05	0.18	0.41
Subtotal Direct Emissions	37.41	6.03	31.40	74.84
Import of Electricity	3.07	3.99	9.04	16.11
Regional Total	40.48	10.02	40.45	90.95

2030
DRAFT Regional Greenhouse Gas Emission Estimate
for the Washington, DC-MD-VA Region (YR 2030)
(Million Metric Tonnes CO₂e/year)

	Suburban Maryland	District of Columbia	Northern Virginia	Total
Energy/Electrical Generating Units (EGUs)	15.35	0.23	4.77	20.35
Transportation Combustion	15.01	2.29	13.95	31.25
Residential Fuel Use	3.78	1.30	3.28	8.37
Commercial Fuel Use	2.71	1.66	2.29	6.65
Industrial Fuel Use	0.67	0.00	1.53	2.20
Other Fuel Use	0.84	0.15	1.31	2.31
Commercial Aviation	-	-	5.62	5.62
Hydrofluorocarbons	1.25	0.88	1.46	3.59
Wastewater	0.20	0.05	0.20	0.45
Subtotal Direct Emissions	39.82	6.56	34.43	80.80
Import of Electricity	5.07	4.43	10.02	19.52
Regional Total	44.89	10.99	44.45	100.32

