ENVIRONMENTAL ADVISORY COUNCIL

RADNOR TOWNSHIP, PENNSYLVANIA
GREENHOUSE GAS EMISSIONS INVENTORY REPORT
BASELINE YEAR 2005

EXECUTIVE SUMMARY

In September, 2007 the Radnor Township Board of Commissioners adopted Resolution 2007-24 and declared its intent to endorse the U.S. Mayors' Climate Protection Agreement, which calls upon cities across the United States to join in establishing goals and strategies to reduce their emissions of greenhouse gases. In addition, the Board declared its intent to develop an action plan to limit the increase in Township energy costs and reduce greenhouse gas (GHG) emissions from the community. The Commissioners recognized the need to anticipate rising energy costs and to continue Radnor's leadership role in environmental protection, building on the benefits already accrued through Radnor Township's purchase of energy from renewable sources and investments in energy efficiency.

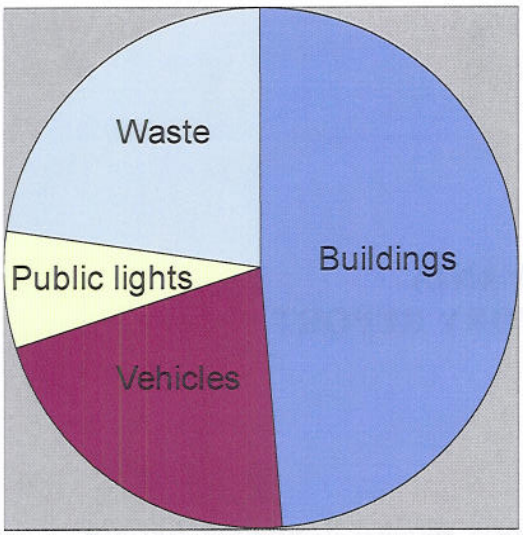
The Commissioners tasked the Radnor Township Environmental Advisory Council (EAC) with coordinating an inventory of Radnor's GHG emissions and developing, for the Board's consideration a recommended action plan to limit the emissions. To facilitate the process, the Commissioners agreed to join the International Council for Local Environmental Initiatives (ICLEI), a non-profit organization that offers technical assistance in climate action planning. This process offered a structured way for Radnor to pursue additional cost effective savings, building on previous initiatives including the purchase of green power and switching traffic lights to light-emitting diode (LED) technology.

To assist local communities in identifying and reducing their GHG emissions, ICLEI provides a process with five milestones:

(1) conduct an inventory of local GHG emissions;
(2) establish a GHG emissions reduction target;
(3) develop an action plan for achieving the emissions reduction target;
(4) implement the action plan;
(5) monitor and report progress.

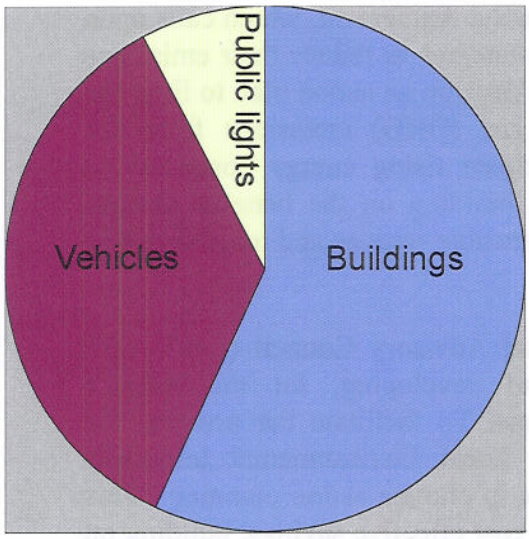
This report presents the inventory of emissions from Radnor's municipal operations, including the School District and other facilities that received Radnor Township funding and/or services for the baseline year of 2005. Five sources of GHG emissions are considered: buildings, vehicles, public lighting, water/sewage and waste. As shown in the following charts, the total emissions from these sources in 2005 were calculated at 10,827 tons of carbon dioxide equivalent (CO_2e). The total cost

of the energy used by these sources was $1,762,161. With the completion of the inventory, the Township can now move forward, assisted by the EAC, in developing an action plan for energy savings and GHG emission reductions.



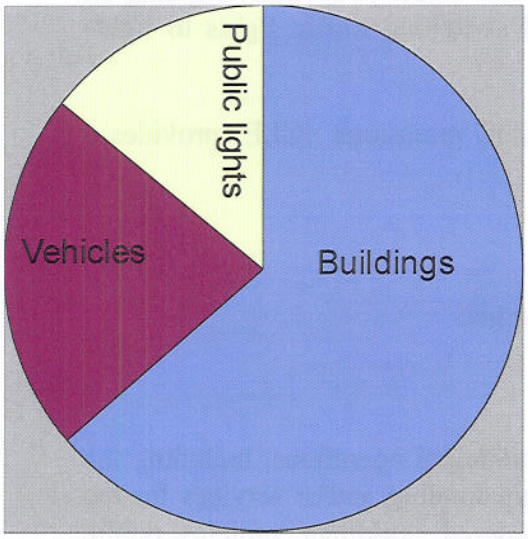
Air Emissions by Source
in Tons of CO_2e

Buildings	5,253	49%
Vehicles	2,324	21%
Public lighting	763	7%
Waste	2,471	23%
Water/sewer	16	0%
Total	10,827	tons CO_2e



Total Energy Usage by Source
in millions of BTU

Buildings	43,175	57%
Vehicles	26,945	35%
Public lighting	5,848	8%
Waste	NA	NA
Water/sewer	100	0%
Total	76,068	million BTU



Cost for Energy by Source
In dollars per year

Buildings	$1,115,150	63%
Vehicles	391,594	22%
Public lighting	248,486	14%
Waste	NA	NA
Water/sewer	6,931	0%
Total	$1,762,161	

1. INTRODUCTION

In September 2007 the Radnor Township Board of Commissioners adopted Resolution 2007-24 and declared its intent to endorse the U.S. Mayors' Climate Protection Agreement, which calls upon cities across the United States to join in establishing goals and strategies to reduce their emissions of greenhouse gases. In addition, the Board declared its intent to develop an action plan to limit the increase in Township energy costs and reduce greenhouse gas (GHG) emissions from the community. The Commissioners recognized the need to anticipate rising energy costs and to continue Radnor's leadership role in environmental protection, building on the benefits already accrued through Radnor Township's purchase of energy from renewable sources and investments in energy efficiency.

The Commissioners tasked the Radnor Township Environmental Advisory Council (EAC) with coordinating an inventory of Radnor's GHG emissions and developing, for the Board's consideration, a recommended action plan to limit emissions. To facilitate the process, the Commissioners agreed to join the International Council for Local Environmental Initiatives (ICLEI), a non-profit organization that offers technical assistance in climate action planning. This process offered a structured way for Radnor to pursue additional cost effective savings, building on previous initiatives including the purchase of green power and switching traffic signals to light-emitting diode (LED) technology.

In embracing the emissions reduction initiative in 2007, the Board of Commissioners was responding to two driving concerns: the rising costs of energy and the community's contribution to global warming. With the electricity rate caps slated to be lifted in Pennsylvania beginning in 2010, the Board recognized that the energy bills for the township and its residents would be expected to rise substantially, and conservation and efficiency measures could mitigate the burden of those cost increases. In endorsing the Mayors' Climate Protection Agreement, the Board joined Radnor Township with the more than 850 municipalities across the U.S. and the globe that have committed their communities to reducing their contributions to global warming.

The Earth's climate is determined by the presence of heat-trapping gases, including water vapor, carbon dioxide, ozone, methane and nitrous oxide that prevent heat from the sun radiating back from the Earth's surface from escaping into the atmosphere. Without this natural "greenhouse effect", the Earth's surface temperature would be much colder. "Global warming" is the intensification of the greenhouse effect caused by the buildup of greenhouse gases in the Earth's atmosphere as a result of the burning of fossil fuels (coal, oil and natural gas) as well as increased emissions of methane, nitrous oxide and other greenhouse gases.

The evidence of global warming and climate disruption and the urgency of action to mitigate GHG emissions have mounted further since the Mayors' Climate Protection Agreement was initiated. In November, 2007 the International Panel on Climate Change (IPCC) released its 4th Assessment Report, finding increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.[1] The IPCC also found

[1] International Panel on Climate Change. Climate Change 2007: Synthesis Report, Summary for Policymakers. p.2. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

that eleven of the previous twelve years (1995-2006) ranked among the twelve warmest years in the instrumental record of global surface temperature (since 1850). [2]

Since that time, scientists have documented widespread effects of climate change, such as changes in precipitation patterns, greater storm intensity, and more prolonged periods of dryness. The recently published report by the U.S. Global Change Research Program, "Global Climate Change Impacts in the United States," synthesizes recent research and summarizes the anticipated impacts of climate change on the United States, depending on current and future GHG emissions. A key finding of the report is that "future climate change and its impacts depend on choices made today."[3]

Pennsylvania is a major contributor to global warming, ranking third among the 50 states in GHG emissions from fossil fuels.[4] As detailed in a study by the American Council for an Energy-Efficient Economy, however, Pennsylvania has the potential to substantially reduce its vulnerability to high energy costs as well as GHG emissions, through investment in energy efficiency as well as installation of renewable energy.[5] Addressing the challenge requires action at all levels of government, as well as by individuals. Recent initiatives at the state-level, especially the Act 129 energy efficiency financing program adopted in 2008, have the potential to spur significant investment. Local governments have an important role to play in complementing the state-level initiatives, and modeling energy efficiency and conservation strategies for their citizens.

Radnor Township elected to pursue the effort through a partnership with ICLEI, which offers technical assistance in assessing the major emission sources and developing a strategy to reduce them.[6] To simplify the process, and in light of complementary initiatives by Delaware County and the Delaware Valley Regional Planning Commission ("DVRPC") discussed below, it was decided to focus on local government emissions, including the school system, rather than undertake the more comprehensive township-wide analysis, including residential and commercial sources. The major sources of municipal GHG emissions are: municipal buildings, the vehicle fleet, public lighting, water and sewage pumping and waste disposal.

The ICLEI Five Milestone Process provides a framework for local communities to identify and reduce their greenhouse gas emissions. The five milestones are:

(1) conduct an inventory of local GHG emissions;
(2) establish a GHG emissions reduction target;

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[2] Ibid, p. 2.
[3] U.S. Global Change Research Program, "Global Climate Change Impacts in the United States," p. 12. www.globalchange.gov/usimpacts
[4] Union of Concerned Scientists, "Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State," 2008, p. 1.
[5] ACEEE, "Potential for Energy Efficiency, Demand Response and On-site Solar Energy in Pennsylvania," [Report No. E093], April, 2009.
[6] The Southeastern Pennsylvania Group of the Sierra Club, which had advocated for Radnor's participation in the Mayors' Climate Protection Agreement and reducing the community's emissions, provided matching funds for the ICLEI membership.

(3) develop an action plan for achieving the emissions reduction target;
(4) implement the action plan;
(5) monitor and report progress.

The Township staff, EAC members and community volunteers received training on the use of the ICLEI computer software and then began data gathering in March, 2008. The EAC enlisted the help of community members and reached out to Villanova University for assistance with data gathering and entry. A student interning with Villanova's Facilities Department completed much of the data collection. A Sierra Club contribution provided financial support for this internship. Also Villanova donated the use of a computer for data entry and report production,. Additional data gathering and entry was completed by EAC and community members. The first milestone has now been reached, with the completion of the inventory.

An important first step in Radnor Township's GHG emissions initiative was the establishment of a baseline year for the GHG emissions inventory. The calendar year 2005 was selected as the baseline year for the Radnor emissions inventory, in part, because a robust data set for Radnor Township was available for use in calculating greenhouse gas emissions for that year. Also, the DVRPC has prepared a greenhouse gas emissions inventory report for the entire Delaware Valley, which also used 2005 as the baseline year. By using the same baseline year as the DVRPC, this report can be used in conjunction with the DVRPC report to assemble a complete picture of GHG emissions in our community.

The DVRPC regional GHG emissions inventory was designed to identify and quantify the emissions sources in the region on a macro level and then to allocate a proportional amount of the emissions to each of the region's nine counties and 352 municipalities. The inventory calculated GHGs for energy used in the residential, commercial, and industrial sectors, as well as the transportation sector, which includes on-road transportation, passenger and freight rail, aviation, marine transportation, and off-road vehicles. Emissions resulting from waste management (solid waste and wastewater), agriculture processes (both animal and plant related), non-energy-related emissions from industrial processes, and fugitive emissions from fuel systems (natural gas systems and petroleum systems) were also included. This macro level assessment can help to inform the specific GHG emissions identified in the Radnor Township emissions inventory.

The software used to calculate and compile the GHG emissions for Radnor Township was developed by ICLEI. The software was designed to calculate GHG emissions from data entered by the user. The data includes electric and natural gas usage data from utility bills, as well as liquid fuel deliveries. Emission factors that convert such usage data into GHG emission data are embedded into the ICLEI software.

The Wayne Art Center, the Radnor Memorial Library, the Wayne Senior Center and the Radnor Fire Company were included in the government analysis. Similarly, emissions from buildings and vehicles owned by the Radnor School District were included in the government analysis. The School District collects utility data based upon the school year, rather than the calendar year. Therefore, baseline District data entered into the ICLEI software was totaled from July 2005 through June 2006.

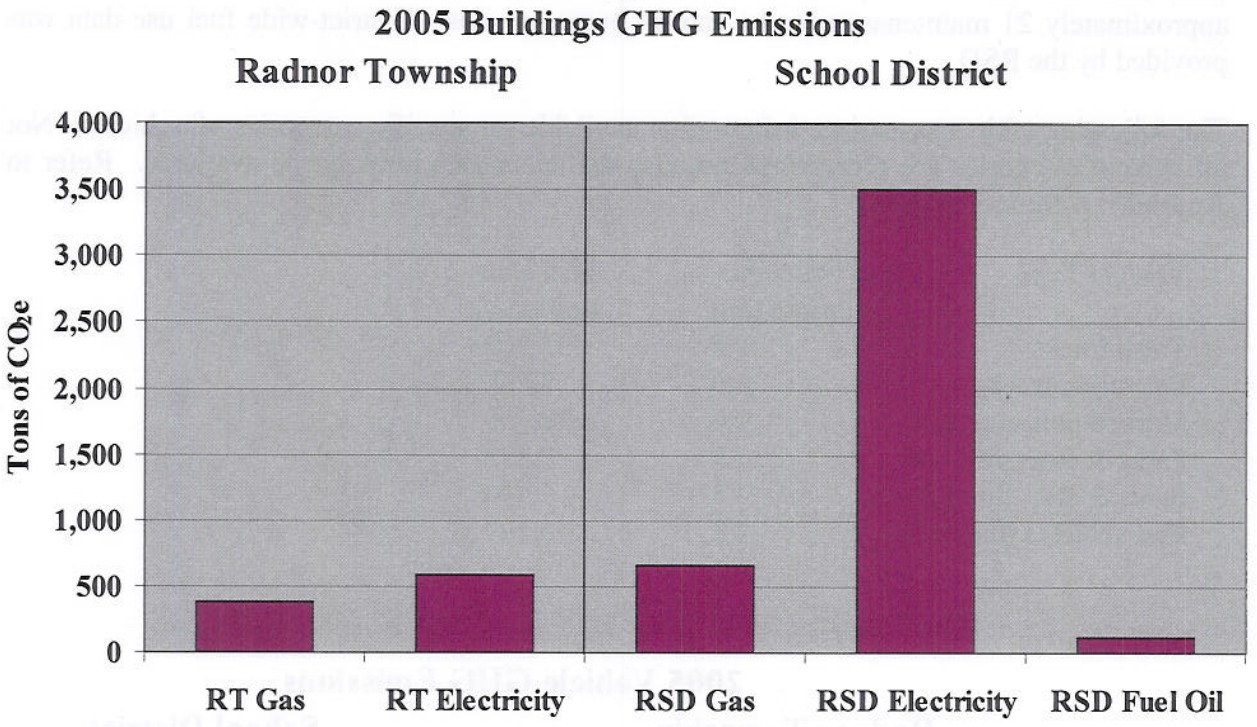
2. BUILDINGS SECTOR

The building sector is the single largest component of the Township's energy consumption, energy cost and greenhouse gas emissions. Twelve Radnor Township buildings and five Radnor School District buildings were included in the 2005 GHG inventory. The seventeen buildings' emitted greenhouse gases totaling approximately 5,253 tons of CO_2e, which equates to 49% of the total reported GHG emissions attributed to the Township. The building sector consumed 46,706 million BTUs, costing the Township $1,236,633. Refer to Appendix A to compare the relative energy use, cost and attributable air emissions from each building.

Residential energy consumption is not included in this report. The DVRPC Greenhouse Gas Emission Inventory report of 2009 estimates that 4.0 tons per capita of CO_2e can be attributed to residential building emissions in the Delaware Valley area. Using Radnor Township's 2000 population of 30,878 (source: U.S. Bureau of Census), we estimate that the residential component of Radnor's greenhouse gas emissions are 123,512 tons of CO_2e. Compared to the government building component (5,253 tons), the residential building component is about 25 times larger.

Building emissions are calculated from the electric, natural gas and fuel oil (if applicable) delivered to the building during the calendar year. Electric is measured by PECO-owned electric meters and reported in the monthly utility bill. Natural gas usage is similarly measured. Fuel oil usage is assumed to be the amount of fuel oil delivered to the building during the calendar year. The fuel oil usage is approximate, as some fuel oil delivered in 2004 is consumed in 2005, and some fuel oil delivered during 2005 is consumed in 2006. Utility bills were obtained from the Township's accounting department and manually transcribed into a Microsoft Excel spreadsheet. Annual utility totals were calculated in the spreadsheet, and then manually entered into the ICLEI software.

Electricity, natural gas and fuel oil expenditures totaled approximately $1.1 million for the year. Of that $1.1 million, Radnor School District accounted for approximately $900,000. Approximately 25,000 of the total 43,175 million BTUs of energy consumed by the buildings was in the form of electricity. Aside from a small amount of heating oil consumed in the Radnor High School, the remaining BTUs consumed were in the form of natural gas. The emissions can be divided among the three major fuel sources as follows: 2% from fuel oil, 20% from natural gas and 78% from electricity.



Note: RT = Radnor Twp, RSD = Radnor Twp School District, Gas = Natural gas by PECO

3. VEHICLE FLEET

The vehicle sector is the second largest component of the Township's energy usage and cost. Vehicle emissions totaled 2,324 tons of CO_2e in 2005. Those emissions represent 21% of the total reported emissions for Radnor Township. The vehicles consumed 26,945 million BTUs of energy, costing the Township $391,594. Vehicles comprising the vehicle fleet were compiled from two databases: Radnor Township vehicles, and Radnor Township School District (RSD) vehicles.

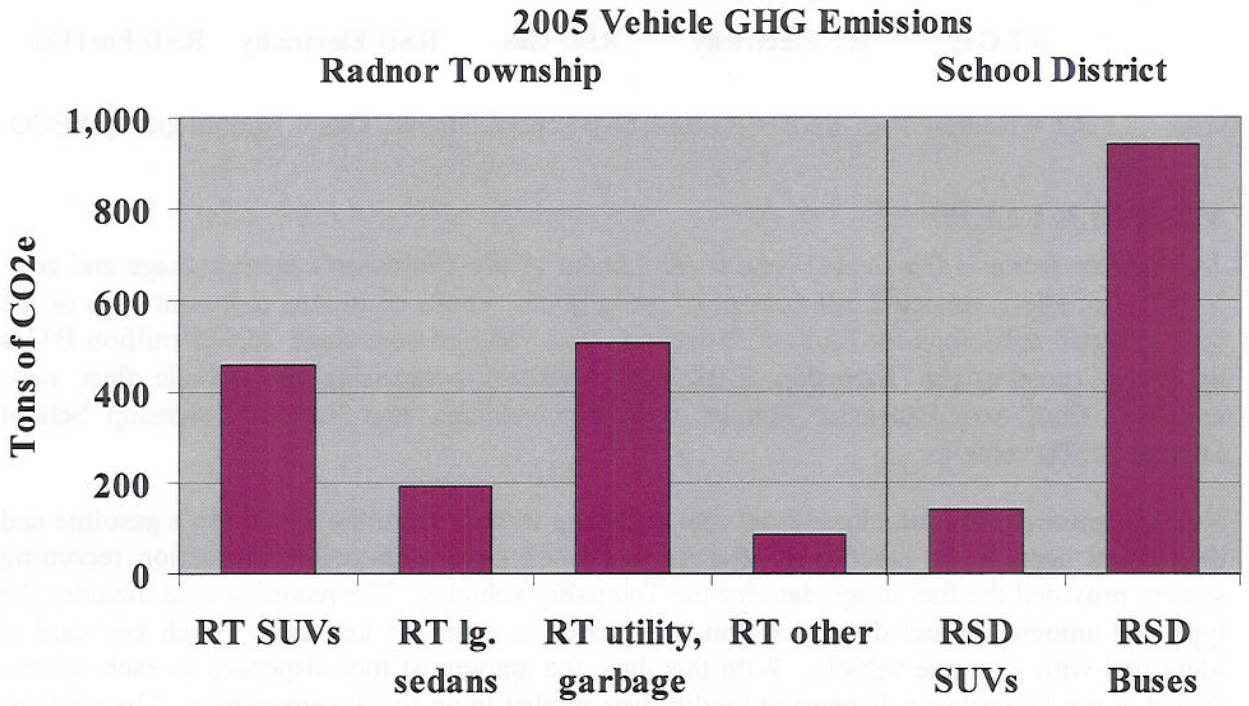
Vehicle emissions are calculated from fuel dispenser records from the Township's gasoline and diesel fuel depot. An electronic database generated by a card-swipe transaction recording system provided the fuel usage data for the Township vehicles. The recorded data includes the type and amount of fuel dispensed and is matched to a unique key card. Each key card is identified with a unique vehicle. With this data, the amount of fuel dispensed to each vehicle fueled at the Township's dispensing facility was totaled in an Excel spreadsheet. The vehicles are grouped into similar classifications (i.e. large sedans) and entered as a group into the ICLEI software. The RSD vehicle list and fuel usage data was provided by Mr. Leo Bernabei, Director of Operations at the RSD.

The Township vehicles include approximately 150 vehicles ranging from gasoline powered sedans operated by Township administration to diesel powered heavy trucks used by the Township Public Works Department. Each vehicle has a unique vehicle ID number. The recorded computer data from each fuel dispensing event includes the date and time, vehicle ID, odometer reading, type of fuel (gasoline or diesel) and the amount of fuel dispensed. It is from

these data that the Township vehicle fuel usage data was derived. The RSD vehicles include approximately 21 maintenance trucks and 64 buses or vans. District-wide fuel use data was provided by the RSD.

The following table summarizes information available on specific categories of vehicles. Not all vehicle categories are represented because sufficient data may not be available. Refer to Appendix A for more details.

Vehicle Type	Fuel Efficiency (miles/gallon)	Fuel Use (gallons)
Trash trucks	2.7	22,507
Recycling trucks	4.6	3,752
Marked police cars	9.4	16,750
Parks & Rec. pick-ups	7.3	7,322
Parks & Rec. dump trucks	4.5	5,440
Fire vehicles (diesel only)	4.2	6,599



Note: RT = Radnor Township, RSD = Radnor Township School District
SUV = sport utility and pickup trucks, Utility = garbage, leaf & street sweepers, etc.
Diesel and gasoline, when combusted in an internal combustion engine, emit on average approximately 10.4 tons of CO_2e per 1,000 gallons.

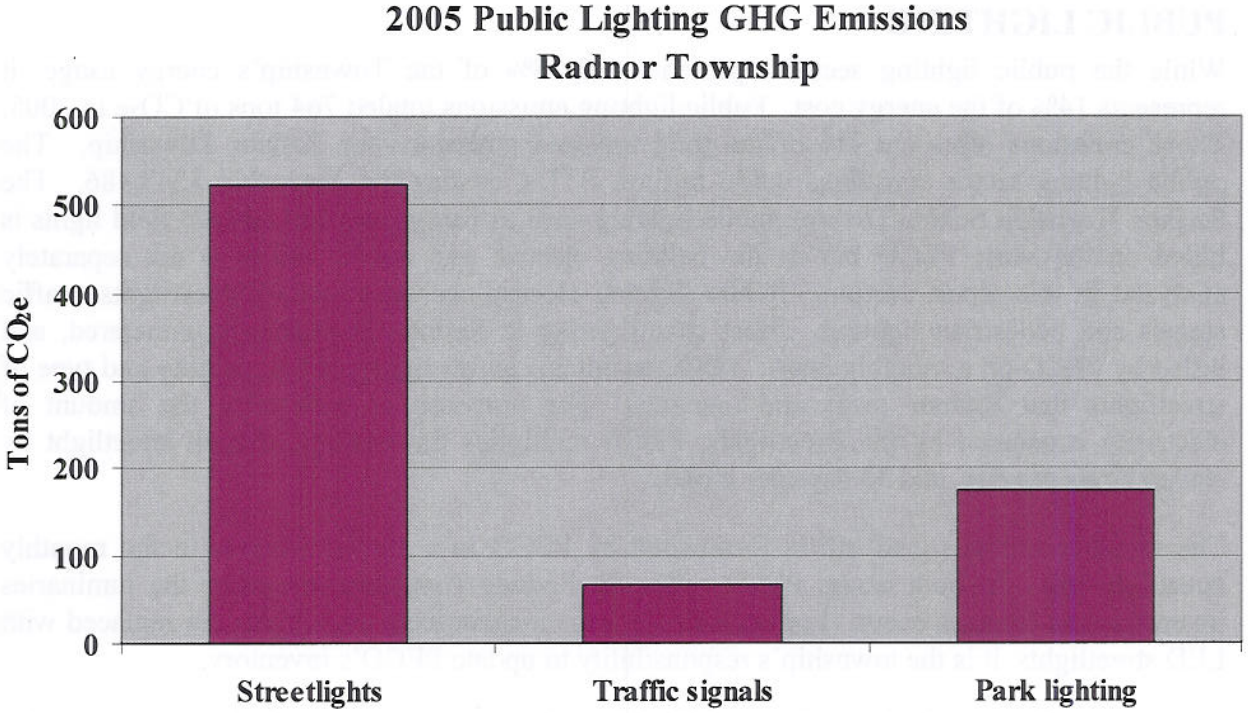
4. PUBLIC LIGHTING

While the public lighting sector represents only 8% of the Township's energy usage, it represents 14% of the energy cost. Public lighting emissions totaled 764 tons of CO_2e in 2005. Those emissions represent 7% of the total reported emissions for Radnor Township. The public lighting sector consumed 4,650 million BTUs, costing the Township $248,486. The Radnor Township School District public lighting such as parking lot and athletic field lights is billed on the same PECO bill as the building electric use, and therefore is not separately analyzed in this report section. Public lighting electric accounts include streetlights, traffic signals and pedestrian lighting. Most streetlighting in Radnor Township is unmetered, and billed by PECO on a monthly basis. PECO maintains an inventory of the quantity and type of streetlights that Radnor owns and operates. For purposes of estimating the amount of electricity consumed by the streetlights, PECO multiplies the wattage of each streetlight by eleven hours per day, and 30 days per month.

The monthly traffic signal bill is formulated by PECO in a similar manner to the monthly streetlight bill. In both cases, PECO relies on Radnor Township to update the luminaries inventories as changes occur. For instance, if some incandescent streetlights are replaced with LED streetlights, it is the township's responsibility to update PECO's inventory.

Many public lights in the Township are billed through metered accounts. In these accounts, the cost of the monthly bill is determined by multiplying the meter reading in kWh with the appropriate service rate in dollars per kWh. The lighting in most parks and playing fields within the township falls under this category.

Lighting Type	CO_2e emissions (tons of CO_2e)	Energy Use (10^6 BTU)	Cost ($)
Streetlights	523	3,186	$179,334
Traffic Signals	66	402	$14,342
Parks	175	1,062	$54,810
Total	764	4,650	$248,486



Notes: Streetlights = unmetered streetlight account
Traffic lights = unmetered traffic signal account
Parks = metered accounts for parks, playgrounds, other streetlights, etc.

5. WATER/SEWAGE SECTOR

The Water/Sewage sector makes the smallest contribution to Radnor's total government emissions. Water/sewage emissions totaled 16 tons of CO_2e in 2005. Those emissions represent less than 1% of the total reported emissions for Radnor Township. The energy consumed in the water/sewer sector totaled 100 million BTU, costing the Township $6,931. Because water is provided to Township facilities from a private purveyor, the energy use for water delivery is not included in the inventory. Water/sewer emissions are calculated from electric usage reported on the PECO electric bills. Water/sewer accounts are typically related to sewage transfer pumping operations.

The sewer system for Radnor Township is managed by the Radnor Haverford Marple (RHM) Sewer Authority. Flows from Radnor are delivered to the Delaware County Regional Water Quality Control Authority (DELCORA) facility in Chester, and are pumped from there to the Southwest Wastewater Treatment Plant (SWWTP) in Philadelphia for treatment. The energy use attributable to Radnor for wastewater flows is based on metered electric usage at each sewage pumping station. The energy use for the actual wastewater treatment at SWWTP is included in Philadelphia's emissions inventory, and is therefore excluded from this inventory to avoid double counting.

6. WASTE RELATED EMISSIONS

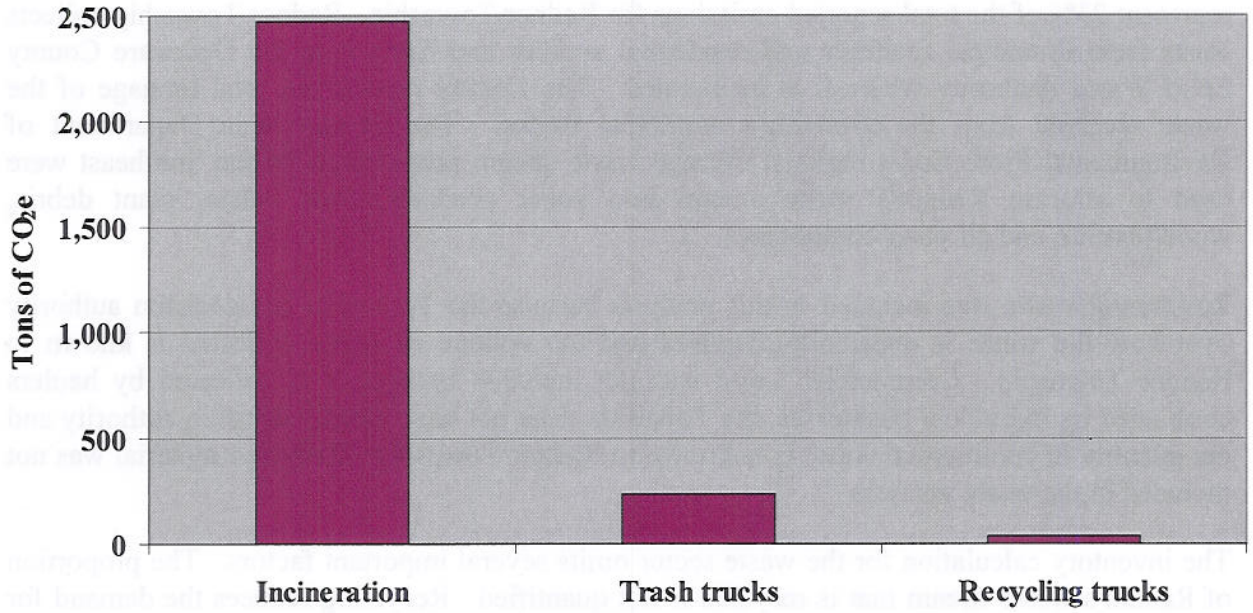
The waste sector represents the second largest component of the Township's greenhouse gas emissions. Waste-related emissions totaled 2,471 tons of CO_2e in 2005. Those emissions represent 23% of the total reported emissions for Radnor Township. Radnor Township collects waste from municipal facilities and residential sources and hauls it to the Delaware County Solid Waste Authority where it is incinerated. The County reports the total tonnage of the waste received from the township's municipal trucks. The Pennsylvania Department of Environmental Protection's regional average waste stream proportions for the Southeast were used to allocate Radnor's waste stream into paper products, food waste, plant debris, wood/textiles, and all other components.

Residential waste was included in this analysis because the Township has decision authority over how the waste is eventually disposed and the volume of waste collected is known to Radnor Township. Commercial waste was not included because it is collected by haulers contracted by individual businesses, the Township does not have similar decision authority and the quantity of commercial waste is unknown to Radnor Township. Recycled material was not included in the waste analysis.

The inventory calculation for the waste sector omits several important factors. The proportion of Radnor's waste stream that is recycled is not quantified. Recycling reduces the demand for energy associated with production of materials from virgin sources. This is especially the case with materials that require energy-intensive production, including metals, glass, plastic and paper. The amount of leaf and yard waste collected by Radnor Township is also not calculated. To the extent this material would otherwise be hauled to the county incinerator, there is a savings in the amount of fuel used for the hauling.

Greenhouse gas emissions associated with Radnor municipal waste management might include the vehicle emissions associated with trash hauling for disposal, including curbside trash pickup and leaf and materials recycling. The share of emissions from waste management then would include the 273 tons of CO_2e emissions from Radnor's trash trucks' diesel fuel usage, bringing total emissions for waste management to 25% of Radnor's total emissions. Reductions in waste generated by municipal facilities and residents would be reflected in reduced emissions related to hauling (trucks) and disposal (incineration).

2005 Waste-related GHG Emissions
Radnor Township



Notes: Incineration = tons of CO_2e emitted during the incineration of the municipal waste collected from municipal buildings and residences.

Trash trucks & Recycling trucks = Approximate emissions from the combustion of diesel fuel during trash and recycling collection process. These emissions are included in the "Vehicles" section, and therefore are not included in "Waste" total.

7. CONCLUSION

This report is an inventory of municipal greenhouse gas emissions in Radnor Township and it represents the achievement of the first milestone of the ICLEI Five Milestone Process designed to provide a framework for local communities to identify and reduce their greenhouse gas emissions. This report presents the inventory of emissions from Radnor's municipal operations, including the School District and other facilities that received Radnor Township funding and/or services for the baseline year of 2005. In choosing to join ICLEI and undertake the Five Milestone process, Radnor Township has demonstrated its commitment to studying and evaluating emissions of greenhouse gases in Radnor. This report lays the groundwork for this effort by estimating baseline emissions levels against which future progress can be demonstrated.

Five sources of GHG emissions were considered: buildings, vehicles, streetlights, water/sewage and waste. The total 2005 emissions from these sources were calculated to be 10,827 tons of carbon dioxide equivalent (CO_2e) and cost the Township $1,762,161. The emissions can be attributed to the following sources:

Buildings	5,253 tons	49%
Vehicles	2,324 tons	21%
Public lighting	763 tons	7%
Waste	2,471 tons	23%
Water/sewer	16 tons	0%
Total	10,827 tons of CO_2e	

In keeping with the ICLEI methodology, the next step for Radnor Township is to consider potential greenhouse gas reduction targets for internal government operations. With the completion of the inventory, the Township can now move forward, assisted by the EAC, in developing an action plan for energy savings and GHG emission reductions.

Emissions in 2005

Government Greenhouse Gas
Detailed Report

	Equiv CO 2 (tons)	Equiv CO 2 (%)	Energy (MMBtu)	Cost ($)
Buildings				
Radnor Township, PA				
108 Station Rd Main Line Senior Services				
Electricity	28	0.2	170	8,261
Natural Gas	13	0.1	210	2,478
Subtotal 108 Station Rd Main Line Senior Services		0.4	380	10,739
235 E Lancaster Gas				
Natural Gas	17	0.1	271	3,310
Subtotal 235 E Lancaster Gas	17	0.1	271	3,310
235 E Lancaster N Shed				
Natural Gas	51	0.4	825	9,549
Subtotal 235 E Lancaster N Shed	51	0.4	825	9,549
235 E Lancaster PW				
Electricity	104	0.9	634	22,174
Natural Gas	38	0.3	622	7,296
Subtotal 235 E Lancaster PW	143	1.3	1,256	29,470
301 Iven Mun				
Electricity	183	1.6	1,112	33,628
Natural Gas	114	1.0	1,840	20,725
Subtotal 301 Iven Mun	296	2.6	2,952	54,353
315 Iven				
Electricity	0	0.0	2	113
Subtotal 315 Iven	0	0.0	2	113
388 Liberty Lane				
Electricity	0	0.0	3	193
Subtotal 388 Liberty Lane	0	0.0	3	193
490 Darby 2nd Floor				
Electricity	7	0.1	44	1,763
Subtotal 490 Darby 2nd Floor	7	0.1	44	1,763
Ithan Elementary School				
Electricity	465	4.1	2,828	99,119
Natural Gas	78	0.7	1,261	

16,313			
Subtotal Ithan Elementary School	543	4.8	4,089
115,432			
Radnor Elementary School			
Electricity	543	4.8	3,308
118,091			
Natural Gas	14	0.1	223
3,392			
Subtotal Radnor Elementary School	557	4.9	3,531
121,483			
Radnor High School			
Electricity	1,540	13.5	9,374
298,598			
Light Fuel Oil	114	1.0	1,377
7,868			
Natural Gas	36	0.3	581
15,193			
Subtotal Radnor High School	1,690	14.8	11,333
321,659			
Radnor Library			
Electricity	154	1.4	938
45,602			
Subtotal Radnor Library	154	1.4	938
45,602			
Radnor Middle School			
Electricity	627	5.5	3,817
136,160			
Natural Gas	190	1.7	3,078
45,935			
Subtotal Radnor Middle School	817	7.2	6,894
182,095			
RSD Administration Building			
Electricity	289	2.5	1,760
58,733			
Natural Gas	92	0.8	1,490
23,173			
Subtotal RSD Administration Building	381	3.3	3,250
81,906			
Wayne Art Center			
Electricity	112	1.0	684
31,982			
Natural Gas	61	0.5	992
13,482			
Subtotal Wayne Art Center	174	1.5	1,676
45,464			
Wayne Elementary School			
Electricity	588	5.2	3,581
133,673			
Natural Gas	267	2.3	4,318
63,337			
Subtotal Wayne Elementary School	855	7.5	7,899
197,010			
Willows Garage			
Natural Gas	21	0.2	339
3,998			
Subtotal Willows Garage	21	0.2	339
3,998			
Willows Mansion			
Natural Gas	63	0.6	1,025
12,494			
Subtotal Willows Mansion	63	0.6	1,025
12,494			
Subtotal Buildings	5,811	51.0	46,706

1,236,633

	Equiv CO 2 (tons)	Equiv CO 2 (%)	Energy (MMBtu)	Cost ($)
Vehicle Fleet				
Radnor Township, PA				
Radnor School District Vehicles				
Gasoline	144	1.3	1,685	23,525
Diesel	958	8.4	11,044	163,967
Subtotal Radnor School District Vehicles		9.7	12,729	187,492
Radnor Township Vehicles				
Gasoline	670	5.9	7,860	109,723
Diesel	552	4.8	6,357	94,379
Subtotal Radnor Township Vehicles	1,222	10.7	14,217	204,102
Subtotal Vehicle Fleet	2,324	20.4	26,945	391,594

	Equiv CO 2 (tons)	Equiv CO 2 (%)	Energy (MMBtu)	Cost ($)
Streetlights				
Radnor Township, PA				
1050 Sproul Road				
Electricity	0	0.0	0	107
Subtotal 1050 Sproul Road	0	0.0	0	107
122 Aberdeen PPR				
Electricity	1	0.0	5	364
Subtotal 122 Aberdeen PPR	1	0.0	5	364
275 Radnor Chester				
Electricity	21	0.2	130	9,421
Subtotal 275 Radnor Chester	21	0.2	130	9,421
402 E Lancaster Pole Lights				
Electricity	2	0.0	15	2,746
Subtotal 402 E Lancaster Pole Lights	2	0.0	15	2,746
490 Darby Paoli				
Electricity	33	0.3	198	8,173
Subtotal 490 Darby Paoli	33	0.3	198	8,173
Bryn Mawr & Ithan				
Electricity	0	0.0	0	140
Subtotal Bryn Mawr & Ithan	0	0.0	0	140
Con & Rock Playground				
Electricity	0	0.0	1	

157			
Subtotal Con & Rock Playground	0	0.0	1
157			
Cowan Park			
Electricity	0	0.0	0
96			
Subtotal Cowan Park	0	0.0	0
96			
Fenimore Park			
Electricity	1	0.0	5
356			
Subtotal Fenimore Park	1	0.0	5
356			
Filp Park			
Electricity	1	0.0	4
338			
Subtotal Filp Park	1	0.0	4
338			
Gulph & Hermitage			
Electricity	3	0.0	21
1,155			
Subtotal Gulph & Hermitage	3	0.0	21
1,155			
KOP & Off Creek			
Electricity	50	0.4	306
10,300			
Subtotal KOP & Off Creek	50	0.4	306
10,300			
Maplewood Field			
Electricity	1	0.0	5
2,344			
Subtotal Maplewood Field	1	0.0	5
2,344			
Matsonford Rd			
Electricity	17	0.1	103
3,410			
Subtotal Matsonford Rd	17	0.1	103
3,410			
New South Devon Avenue			
Electricity	0	0.0	2
491			
Subtotal New South Devon Avenue	0	0.0	2
491			
Parking Bell & Lancaster			
Electricity	7	0.1	42
1,484			
Subtotal Parking Bell & Lancaster	7	0.1	42
1,484			
Soccer Field Lights			
Electricity	22	0.2	135
10,562			
Subtotal Soccer Field Lights	22	0.2	135
10,562			
South Devon Park			
Electricity	0	0.0	0
194			
Subtotal South Devon Park	0	0.0	0
194			
Tunnell/Garrett Field			
Electricity	0	0.0	0
194			
Subtotal Tunnell/Garrett Field	0	0.0	0
194			

Unmetered Streetlight Account			
Electricity	523	4.6	3,186
179,334			
Subtotal Unmetered Streetlight Account	3	4.6	3,186
179,334			
Unmetered Traffic Signal Account			
Electricity	66	0.6	402
14,342			
Subtotal Unmetered Traffic Signal Account		0.6	402
14,342			
Willows Park			
Electricity	15	0.1	88
2,778			
Subtotal Willows Park	15	0.1	88
2,778			
Subtotal Streetlights	764	6.7	4,650
248,486			

	Equiv CO 2 (tons)	Equiv CO 2 (%)	Energy (MMBtu)	Cost ($)
Water/Sewage				
Radnor Township, PA				
128 Woods Pump				
Electricity	6	0.1	38	1,539
Subtotal 128 Woods Pump	6	0.1	38	1,539
21 Courtney Apt A				
Electricity	3	0.0	21	1,280
Subtotal 21 Courtney Apt A	3	0.0	21	1,280
28 Haymarket Pump				
Electricity	4	0.0	22	1,149
Subtotal 28 Haymarket Pump	4	0.0	22	1,149
717 Maplewood				
Electricity	1	0.0	5	356
Subtotal 717 Maplewood	1	0.0	5	356
Fenimore & Chamounix Pump				
Electricity	2	0.0	13	2,607
Subtotal Fenimore & Chamounix Pump	2	0.0	13	2,607
Subtotal Water/Sewage	16	0.1	100	6,931

	Equiv CO 2 (tons)	Equiv CO 2 (%)	Energy (MMBtu)	Cost ($)
Waste				
Radnor Township, PA				
Total reported waste stream		Disposal Method - Controlled Incineration		
Paper Products	246	2.2		0
Food Waste	88	0.8		

0			
Plant Debris	69	0.6	
0			
Wood/Textiles	150	1.3	
0			
All Other Waste	1,917	16.8	
0			
Subtotal Total reported waste	2,471	21.7	
0			
Subtotal Waste	2,471	21.7	
0			

	Equiv CO 2	Equiv CO 2	Energy	Cost
	(tons)	(%)	(MMBtu)	($)
Total	11,385	100.0	78,401	1,883,644

This report has been generated for Radnor Township, PA using STAPPA/ALAPCO and ICLEI's Clean Air and Climate Protection Software developed by Torrie Smith Associates Inc.