

Center for Sustainable Communities  
TEMPLE UNIVERSITY®

# Top Down – Bottom Up Climate Action Planning

**Prof. Bradley Flamm**

**Temple University**

**Department of Community & Regional Planning and**

**Center for Sustainable Communities**

Pennsylvania Chapter of the American Planning Association

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# Temple University GHG inventories

- Upper Dublin Township – Spring 2008
- Montgomery Township – January to July 2009
- Delaware County Multi-Municipal Project –  
In progress
- Bucks County Multi-Municipal Project – In  
progress

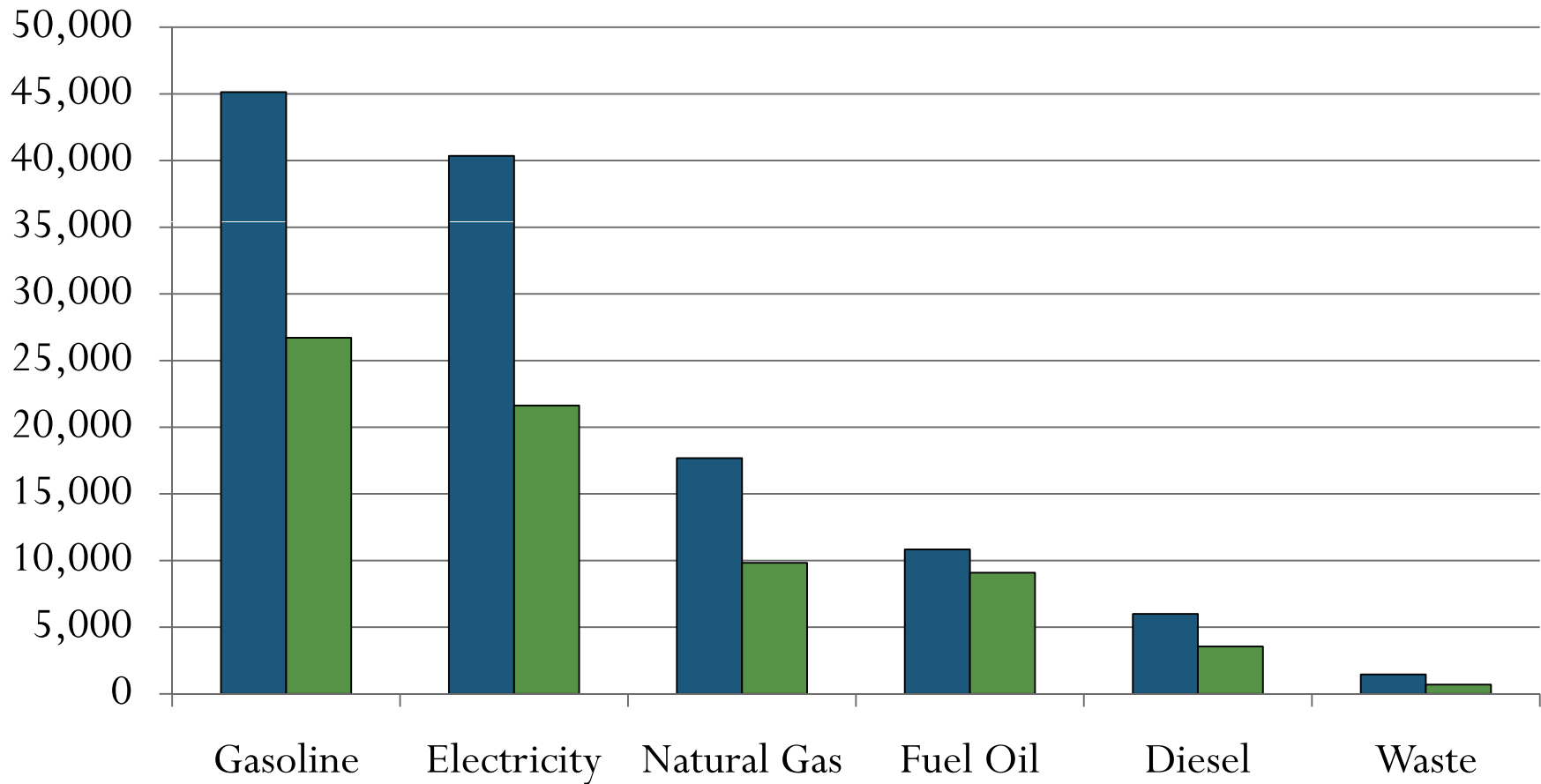
# Project approach

- Collaboration
  - Municipal Government officials
  - Environmental Advisory Committees
  - DVRPC
  - Residents and businesses
  - Other key organizations and agencies
- ICLEI - Local Governments for Sustainability
  - Clean Air and Climate Protection (CACCP) Software
  - Cities for Climate Protection Program
  - Climate and Air Pollution Planning Assistant (CAPPA)

# Data sources

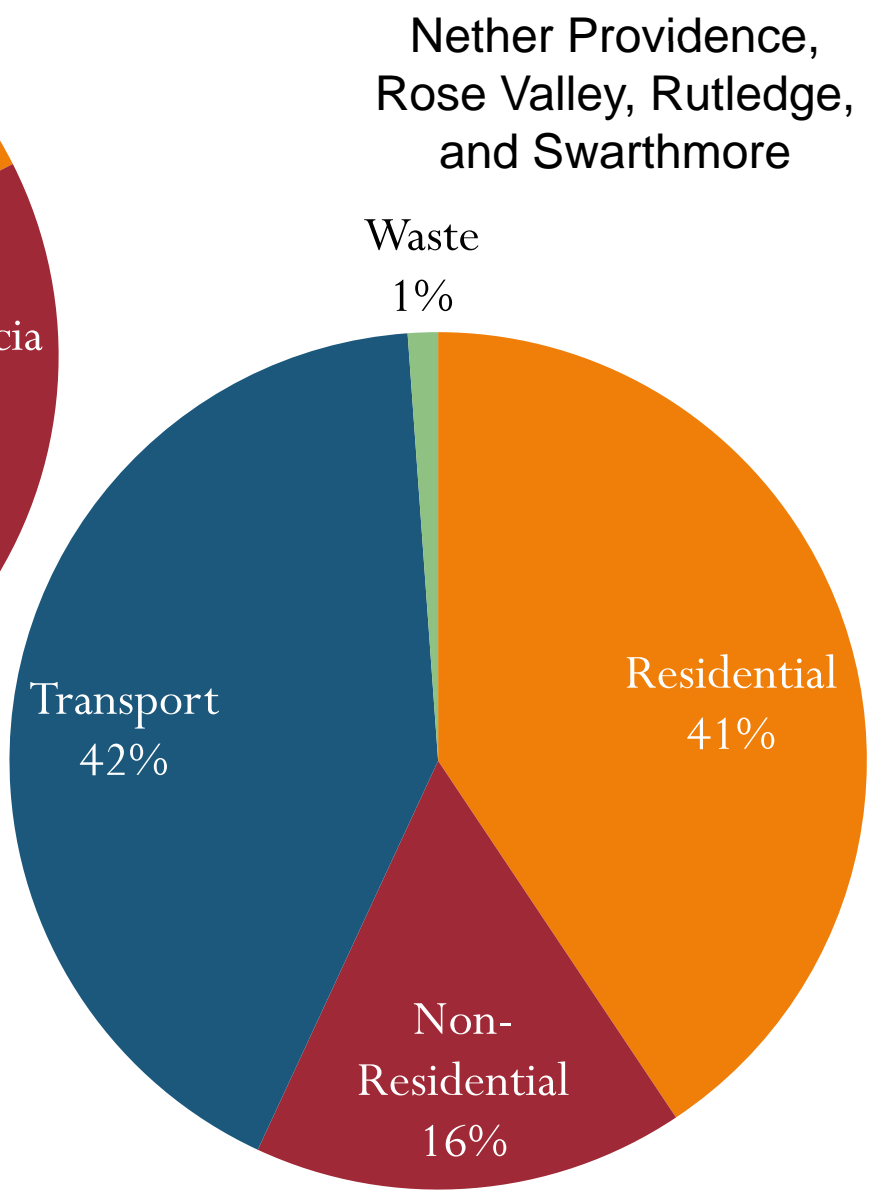
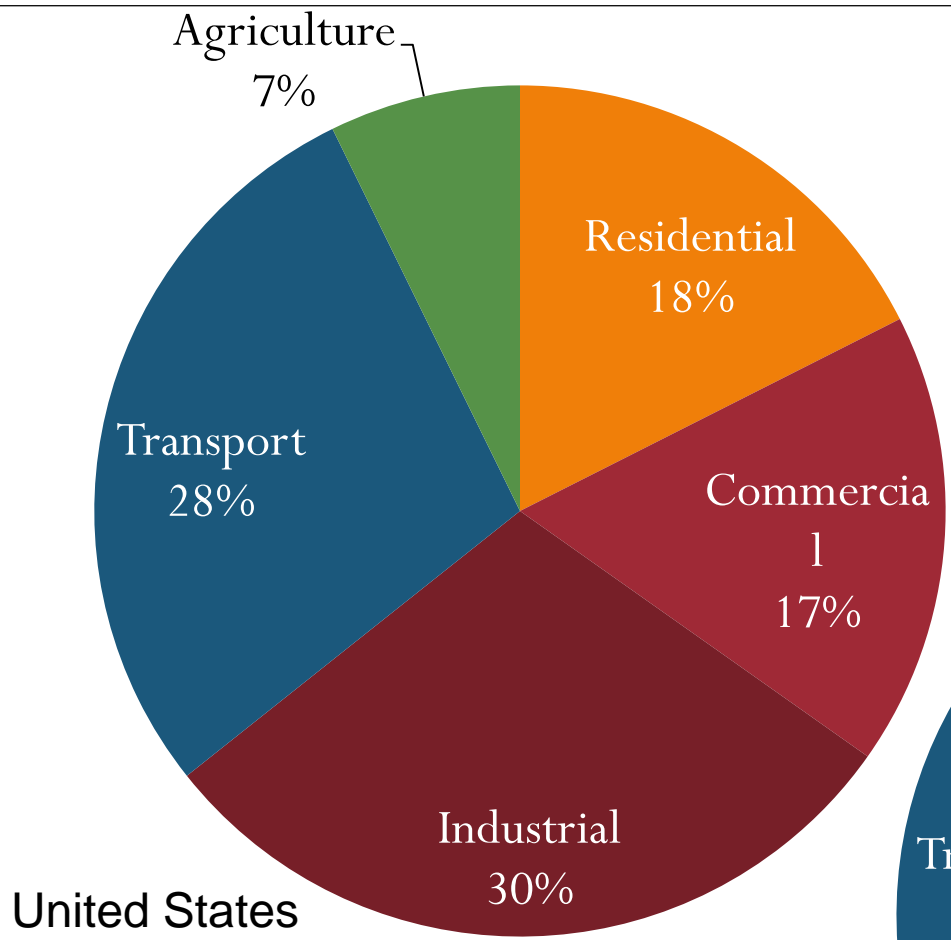
- National and state data sources
  - USEIA, USEPA, US Census Bureau
- DVRPC
  - Vehicle Miles Traveled
  - PECO data (electricity and natural gas)
  - Other data, calculations, methodologies
- Local Sources
  - Municipal governments; water, sewer, and solid waste; etc.
- Surveys and meetings
  - Employee commutes
  - Energy consumption patterns, air travel, small lawn equipment

# Community Emissions by Source, Metric Tons CO<sub>2</sub> Equivalents, 2005

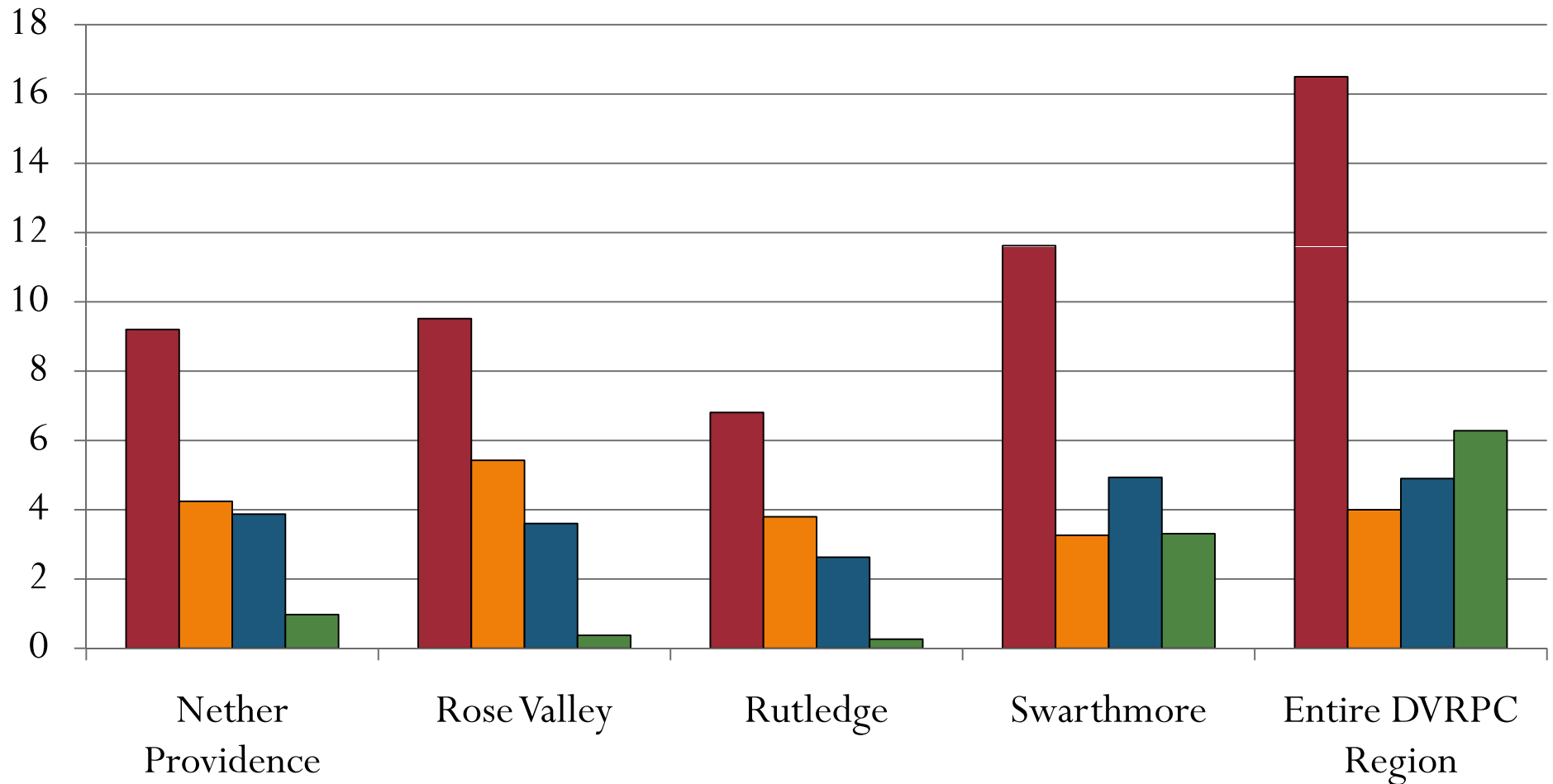


■ Nether Providence    ■ Swarthmore

*Preliminary results: April 2010*



# Per Capita Community Emissions by Sector, Metric Tons CO<sub>2</sub> Equivalents, 2005



■ Total ■ Residential ■ Transportation ■ Non-Residential

*Preliminary results: April 2010*



**MARCH 2009**

The background of the entire page is a photograph of a multi-lane highway completely clogged with cars, illustrating a traffic jam. A semi-transparent map of the Delaware Valley region is overlaid on the left side of the image, showing the geographic area covered by the report. The overall color scheme is a monochromatic blue and teal.

# **REGIONAL GREENHOUSE GAS EMISSIONS INVENTORY**

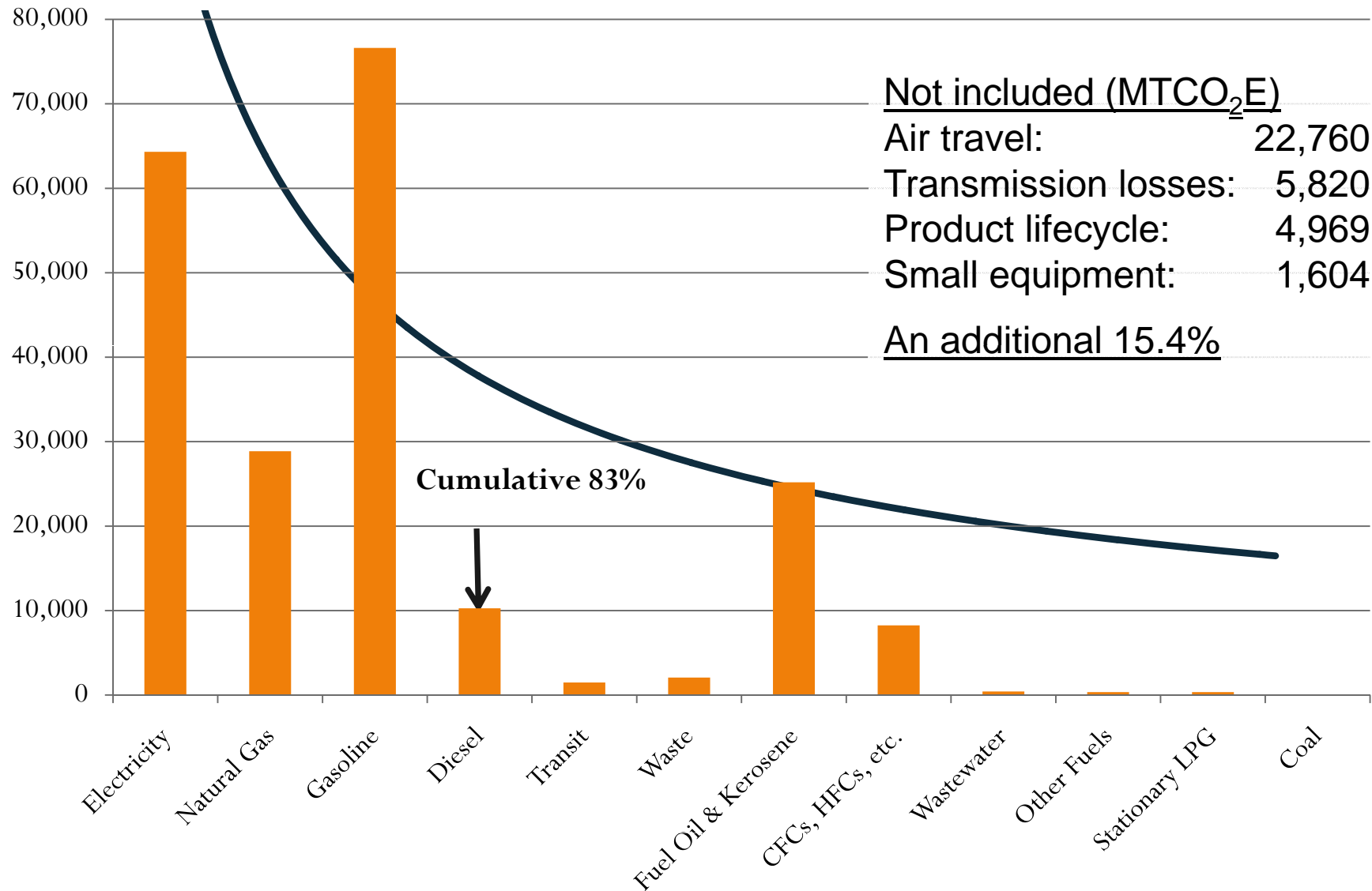


## Delaware County, PA – 2005 Greenhouse Gas Emissions Allocated to Municipality (MTCO<sub>2</sub>E)

Municipality	Stationary Energy					Agri- culture	Waste			Fugitive Methane	Gross Emissions	LULUCF	Net Emissions
	Residential	Commercial	Industrial Gas	Industrial Electricity	Mobile Energy		Landfill	Waste- water	Industrial Processes				
Aldan Borough	17,554	2,064	0	2,408	9,685	-	1,389	539	1,528	367	35,511	(331)	35,181
Aston Township	69,991	30,336	1,530	25,119	65,756	16	5,440	2,111	5,984	1,148	207,430	3,757	211,187
Bethel Township	37,937	4,696	0	14,809	80,222	66	2,947	1,143	3,242	523	145,587	5,859	151,446
Brookhaven Borough	34,571	10,048	160	4,037	28,692	530	2,539	985	2,793	622	84,978	1,845	86,824
Chadds Ford Township	25,288	23,642	0	5,844	44,873	-	1,038	403	1,142	359	102,385	(722)	101,663
Chester City	113,027	54,787	122,907	90,413	100,401	-	11,989	4,652	13,188	2,960	514,323	(2,115)	512,208
Chester Township	16,188	13,591	12,650	8,708	16,198	-	1,457	565	1,803	440	71,397	16,015	87,411
Chester Heights Borough	12,092	5,439	0	1,344	14,172	50	802	311	882	107	35,199	(12,816)	22,383
Clifton Heights Borough	25,068	7,961	0	1,477	17,573	-	2,144	832	2,358	516	57,829	(364)	57,465
Collingdale Borough	29,740	10,552	0	262	14,977	-	2,750	1,067	3,026	715	63,089	(478)	62,611
Colwyn Borough	7,749	1,578	0	0	4,421	-	774	300	852	200	15,875	(135)	15,740
Concord Township	61,246	57,724	4,450	27,237	87,091	346	4,924	1,911	5,416	1,251	251,596	4,582	256,178
Darby Borough	30,968	10,217	3,591	11,841	18,726	-	3,250	1,261	3,575	789	84,218	(32)	84,186
Darby Township	30,480	10,329	0	9,609	21,550	-	3,122	1,211	3,434	741	80,479	(309)	80,170
East Lansdowne Borough	9,464	2,102	0	0	4,047	-	814	316	896	219	17,857	(118)	17,739
Eddystone Borough	8,949	16,165	10,232	16,629	13,203	-	770	299	847	332	67,426	(329)	67,098
Edgmont Township	19,174	13,349	0	678	19,901	348	1,343	521	1,477	96	56,888	1,159	58,047
Folcroft Borough	21,269	16,408	235	3,832	20,700	-	2,234	867	2,458	650	68,653	(499)	68,155
Glenolden Borough	24,009	14,407	1,422	10,245	21,036	-	2,365	917	2,601	684	77,685	(454)	77,231
Haverford Township	199,482	56,063	684	17,064	133,828	15	15,777	6,121	17,354	4,769	451,157	(4,629)	446,528
Lansdowne Borough	40,120	13,747	508	12,428	27,067	-	3,490	1,354	3,839	1,085	103,639	(668)	102,971
Lower Chichester Township	12,793	6,943	0	3,311	33,731	-	1,131	439	1,244	236	59,828	(475)	59,354
Marcus Hook Borough	8,742	10,374	0	399,247	32,198	-	733	284	806	175	452,559	(617)	451,942
Marple Township	99,171	56,262	646	22,196	93,520	27	7,625	2,959	8,388	2,267	293,060	(1,566)	291,494
Media Borough	21,558	34,174	2,703	15,650	36,732	-	1,764	684	1,940	614	115,818	(369)	115,449
Middletown Township	59,030	29,534	6,154	72,520	83,134	327	5,215	2,023	5,736	735	264,407	(1,087)	263,320
Millbourne Borough	2,235	1,145	0	0	1,866	-	297	115	327	68	6,053	(152)	5,901
Morton Borough	10,220	7,292	0	775	10,111	-	862	335	948	248	30,792	(207)	30,585
Nether Providence Township	62,321	10,961	261	3,492	41,883	5	4,303	1,670	4,734	951	130,581	(1,408)	129,173
Newtown Township	59,391	42,617	6,553	37,584	64,274	321	3,834	1,488	4,218	900	221,177	3,572	224,750
Norwood Borough	21,928	4,908	0	0	13,644	-	1,893	735	2,082	449	45,639	(357)	45,283
Parkside Borough	8,779	1,357	0	0	6,286	-	716	278	787	139	18,342	(108)	18,234
Prospect Park Borough	22,650	11,167	3	0	18,695	-	2,086	810	2,295	537	58,242	(379)	57,863
Radnor Township	129,485	(18,807)	16,562	109,501	155,744	271	10,029	3,891	11,032	3,603	421,311	(6,251)	415,060
Ridley Township	111,885	46,156	465	73,337	100,261	-	9,780	3,794	10,757	2,450	358,887	(7,324)	351,563
Ridley Park Borough	27,532	10,351	1,215	6,191	22,823	-	2,285	886	2,513	614	74,410	5,217	79,627
Rose Valley Borough	5,489	(143)	0	0	2,709	-	300	116	330	53	8,854	(292)	8,562
Rutledge Borough	3,435	233	0	0	1,777	-	271	105	296	57	6,176	(89)	6,087
Sharon Hill Borough	19,298	15,162	0	1,466	14,749	-	1,733	672	1,906	591	55,579	(379)	55,201
Sorinfield Township	97,803	50,451	3,899	32,053	93,716	-	7,471	2,899	8,218	2,558	298,855	(2,020)	296,835
Swarthmore Borough	21,850	8,457	0	11,572	24,840	-	1,988	771	2,187	562	72,228	(176)	72,051
Thornbury Township	29,704	4,462	0	0	24,613	342	2,229	865	2,452	344	65,001	105	65,105
Tinicum Township	17,339	34,232	3,284	25,834	86,958	16	1,376	534	1,514	604	171,692	(2,834)	168,858
Trainer Borough	7,532	4,850	13,979	279,945	10,773	-	602	234	662	108	318,666	(296)	318,390
Upland Borough	10,932	6,245	0	21,093	15,834	-	942	365	1,036	226	56,673	(257)	56,416

## Emissions (in MTCO<sub>2</sub>E)

(Four Delaware County PA communities, 2006)



# Uncertainty, an example

- Coal, LPG, Fuel Oil or Kerosene, and Wood
- Best calculations based on
  - Average per household usage for state of Pennsylvania *multiplied by*
  - Estimates of # households in each community using each fuel, based on
  - 2000 census data (long form) and 2005 through 2008 American Community Survey data *at the county level* applied to community population % of county population

# Uncertainty, an example (continued)

## B25040. HOUSE HEATING FUEL - Universe: OCCUPIED HOUSING UNITS

Data Set: [2006 American Community Survey](#)

Survey: American Community Survey

NOTE. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see [Survey Methodology](#).

	<b>Delaware County, Pennsylvania</b>	
	Estimate	Margin of Error
Total:	204,568	+/-1,920
Utility gas	126,266	+/-3,703
Bottled, tank, or LP gas	3,525	+/-813
Electricity	25,477	+/-2,064
Fuel oil, kerosene, etc.	47,750	+/-2,865
Coal or coke	50	+/-83
Wood	370	+/-295
Solar energy	0	+/-240
Other fuel	664	+/-417
No fuel used	466	+/-299

Source: U.S. Census Bureau, 2006 American Community Survey

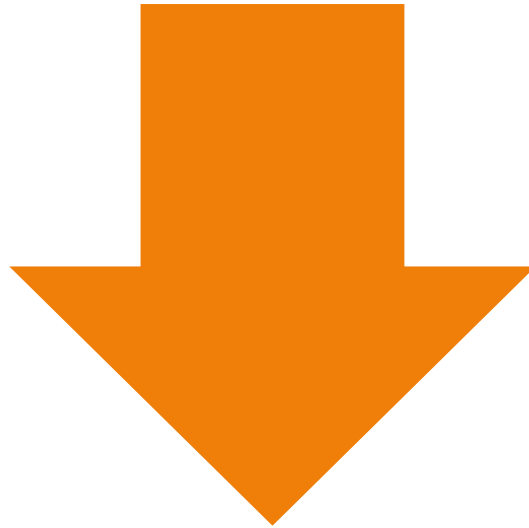
### Solid Waste Data Availability for Montgomery Township

	ChestMont Disposal	G&C Waste	J.P. Mascaro & Sons	Republic Services (Allied Waste)	Waste Management
Tons of total township waste	unknown	2008	unknown	2008	2006, 2007, 2008
Tons of total township trash	unknown	2008	unknown	2008	2005, 2006, 2007, 2008
Tons of total township recycling	2004, 2006, 2007, 2008	2008	2005, 2006, 2007, 2008	2008	2006, 2007, 2008
Number of residential customers	unknown	unknown	unknown	unknown	2007, 2008
Tons of residential trash	unknown	unknown	unknown	2008	2007, 2008
Tons of residential recycling	2004, 2006, 2007, 2008	unknown	2005, 2006, 2007, 2008	2008	2006, 2007, 2008
Number of commercial customers	unknown	unknown	unknown	unknown	unknown
Square yards of commercial trash	unknown	unknown	unknown	unknown	2007, 2008
Square yards of commercial recycling	unknown	unknown	unknown	unknown	2006, 2007, 2008
Tons of commercial trash	unknown	unknown	unknown	2008	2007, 2008
Tons of commercial recycling	2004, 2006, 2007, 2008	unknown	2005, 2006, 2007, 2008	2008	2006, 2007, 2008
Disposal technology (incineration or landfill)	estimated	known	unknown	unknown	known
Government trash	n/a	n/a	n/a	2008	n/a
Government recycling	n/a	n/a	n/a	2008	n/a

**Table 5 - Solid Waste Data Availability for Montgomery Township**

Sources: Solid waste hauler data provided to Temple University Center for Sustainable Communities, Spring 2009

Regional  
Approach



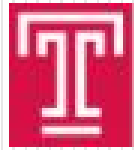
DVRPC:  
Resources (\$\$ and expertise),  
Consistency,  
Updates

Municipal Greenhouse Gas Emissions  
Inventories / Climate Action Plans

Local Approach



Municipal Governments:  
Local Expertise / History,  
Municipal Government Data,  
Wastewater, Solid Waste, &  
Other Local Data



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## Contact Information

Prof. Bradley Flamm

E-mail: [bflamm@temple.edu](mailto:bflamm@temple.edu)

Telephone: 267-468-8305

Address: West Hall, 580 Meetinghouse Road, Ambler,  
PA 19002