

**Lehigh University Facilities Services GHG Inventory of Scope 1 and 2 Emissions**

**CH&R Annual Consumption (Packer & MTC) | source: annual DEP reports**

Scope 1	nat gas		(epa.gov)		#6 Oil	convert	(epa.gov)		total	total	% of
	mmcf	ft3	kg CO <sub>2</sub> / ft3	kg CO <sub>2</sub>			kgals	to bbl			
2007	143.66	143,660,000	0.05460	7,843,836	1,270.00	30,238	495.4	14,979,952	22,823,788	22,824	38.8%
2008	311.55	311,550,000	0.05460	17,010,630	5.19	124	495.4	61,217	17,071,847	17,072	30.9%
2009	308.28	308,280,000	0.05460	16,832,088	19.71	469	495.4	232,484	17,064,572	17,065	31.6%
2010	296.53	296,530,000	0.05460	16,190,538	0.00	0	495.4	0	16,190,538	16,191	31.5%
2011	263.78	263,780,000	0.05460	14,402,388	116.49	2,774	495.4	1,374,027	15,776,415	15,776	30.2%
2012	283.81	283,810,000	0.05460	15,496,026	0.00	0	495.4	0	15,496,026	15,496	31.2%
2013	321.28	321,280,000	0.05460	17,541,888	0.00	0	495.4	0	17,541,888	17,542	32.2%
2014	343.13	343,130,000	0.05460	18,734,898	1.63	39	495.4	19,226	18,754,124	18,754	33.1%
2015	332.63	332,630,000	0.05460	18,161,598	0.00	0	495.4	0	18,161,598	18,162	33.8%
2016	312.53	312,530,000	0.05460	17,064,138	0.00	0	495.4	0	17,064,138	17,064	31.9%
FY2017	312.88	313,374,000	0.05460	17,110,220	0.00	0	495.4	0	17,110,220	17,110	35.2%
<b>Stationary sources (nat gas)</b> (source = UGI bills)											
2007	62,951,000		0.05460	3,437,125	6.54	156	426.1	66,309	3,503,434	3,503	6.0%
2008	64,509,000		0.05460	3,522,191	4.34	103	426.1	43,990	3,566,181	3,566	6.5%
2009	61,073,800		0.05460	3,334,629	2.97	71	426.1	30,253	3,364,883	3,365	6.2%
2010	60,180,000		0.05460	3,285,828	2.81	67	426.1	28,508	3,314,336	3,314	6.4%
2011	61,466,800		0.05460	3,356,087	2.60	62	426.1	26,378	3,382,465	3,382	6.5%
2012	54,385,000		0.05460	2,969,421	2.53	60	426.1	25,667	2,995,088	2,995	6.0%
2013	58,636,000		0.05460	3,201,526	3.10	74	426.1	31,450	3,232,976	3,233	5.9%
2014	68,856,000		0.05460	3,759,538	2.53	60	426.1	25,667	3,785,205	3,785	6.7%
2015	66,446,000		0.05460	3,627,952	1.50	36	426.1	15,218	3,643,169	3,643	6.8%
2016	72,503,000		0.05460	3,958,664	1.70	40	426.1	17,247	3,975,911	3,976	7.4%
FY2017	58,032,000		0.05460	3,168,547	1.03	25	426.1	10,490	3,179,037	3,179	6.5%
<b>Stationary sources (propane; Bldgs 81 &amp; 87 only)</b> (source = Eastern Propane)											
FY2017	176.9	mmBTU	kg CO <sub>2</sub> /mmBTU	kg CO <sub>2</sub>					993	0.99	0.0%
<b>Motor Gasoline</b> (unleaded gas) (source = Transportation Services)											
2007					73.05	1,739	369.8	643,153	643,153	643	1.1%
2008					73.73	1,755	369.8	649,157	649,157	649	1.2%
2009					84.04	2,001	369.8	739,970	739,970	740	1.4%
2010					83.03	1,977	369.8	731,059	731,059	731	1.4%
2011					84.39	2,009	369.8	743,025	743,025	743	1.4%
2012					92.26	2,197	369.8	812,327	812,327	812	1.6%
2013					83.69	1,993	369.8	736,888	736,888	737	1.4%
2014					71.93	1,713	369.8	633,353	633,353	633	1.1%
2015					74.74	1,780	369.8	658,059	658,059	658	1.2%
2016					77.07	1,835	369.8	678,601	678,601	679	1.3%
FY2017					76.79	1,828	369.8	676,144	676,144	676	1.4%
<b>Distillate Fuel Oil</b> (diesel fuel) (source = Transportation Services)											
2007					27.92	665	426.1	283,245	283,245	283	0.5%
2008					28.51	679	426.1	289,241	289,241	289	0.5%
2009					35.39	843	426.1	359,202	359,202	359	0.7%
2010					33.40	795	426.1	338,851	338,851	339	0.7%
2011					35.77	852	426.1	362,855	362,855	363	0.7%
2012					33.94	808	426.1	344,329	344,329	344	0.7%
2013					38.53	917	426.1	390,876	390,876	391	0.7%
2014					43.76	1,042	426.1	443,915	443,915	444	0.8%
2015					43.10	1,026	426.1	437,290	437,290	437	0.8%
2016					39.71	945	426.1	402,817	402,817	403	0.8%
FY2017					38.03	906	426.1	385,864	385,864	386	0.8%

Scope 2	Purchased electricity (1 lb=0.454 kg)		(source = PPL bills)				
2007	56,069,815	x 0.562 kg/kWh =	(PJM average emissions converted from lbs/MWh)	31,511,236	31,511	53.6%	
2008	60,775,542	x 0.553 kg/kWh =		33,608,875	33,609	60.9%	
2009	62,648,800	x 0.517 kg/kWh =		32,389,430	32,389	60.1%	
2010	58,658,714	x 0.526 kg/kWh =		30,854,484	30,854	60.0%	
2011	61,271,817	x 0.522 kg/kWh =		31,983,888	31,984	61.2%	
2012	60,698,221	x 0.495 kg/kWh =		30,045,619	30,046	60.5%	
2013	64,476,474	x 0.504 kg/kWh =		32,496,143	32,496	59.7%	
2014	65,774,479	x 0.503 kg/kWh =		33,084,563	33,085	58.3%	
2015	67,124,931	x 0.460 kg/kWh =		30,877,468	30,877	57.4%	
2016	68,280,529	x 0.460 kg/kWh =		31,409,043	31,409	58.7%	
FY2017	69,946,249	x 0.389 kg/kWh =		27,239,867	27,240	56.1%	

	Totals (Scope 1 + Scope 2)		% Reduction from CY2007	GSF	% Increase to CY2007	MT CO <sub>2</sub> /GSF
2007	58,765	MT CO <sub>2</sub>		4,171,377		0.0141
2008	55,185	MT CO <sub>2</sub>	6.1%	4,171,377	0.0%	0.0132
2009	53,918	MT CO <sub>2</sub>	8.2%	4,179,015	0.2%	0.0129
2010	51,429	MT CO <sub>2</sub>	12.5%	4,316,348	3.5%	0.0119
2011	52,249	MT CO <sub>2</sub>	11.1%	4,340,209	4.0%	0.0120
2012	49,693	MT CO <sub>2</sub>	15.4%	4,340,209	4.0%	0.0114
2013	54,399	MT CO <sub>2</sub>	7.4%	4,565,164	9.4%	0.0119
2014	56,701	MT CO <sub>2</sub>	3.5%	4,566,228	9.5%	0.0124
2015	53,778	MT CO <sub>2</sub>	8.5%	4,568,633	9.5%	0.0118
2016	53,531	MT CO <sub>2</sub>	8.9%	4,575,023	9.7%	0.0117
FY2017	48,592	MT CO <sub>2</sub>	17.3%	4,572,279	9.6%	0.0106

Natural gas: 1,034 BTU / ft<sup>3</sup> (per UGI tests)  
 Electricity: 3,413 BTU/kWh  
 1 metric ton (MT) = 1,000 kg