

## **Appendix 4D**

### **Documentation of Growth Factors Used to Project Emissions for 2008, 2009 and 2012**

Table 4D-1

## CT CURRENT and PROJECTED EMPLOYMENT by MAJOR INDUSTRY GROUPS

Source: "Connecticut's Industries and Occupations: Forecast 2014"; CT Employment Projections; CTDOL; Summer 2006  
 These values will be used for 8-hour ozone ROP calculations, since based on most recent CTDOL data.

Industry Title	Employment		10 Year Change		%year growth	Growth Factor from 2002		
	2004	2014	150,180	8.5%		2008	2009	2012
<b>Total, All Occupations</b>	<b>1,760,690</b>	<b>1,910,870</b>	<b>150,180</b>	<b>8.5%</b>	0.853%	<b>1.051</b>	<b>1.060</b>	<b>1.085</b>
<b>Self-Employed and Unpaid Workers, Primary Job</b>	<b>122,800</b>	<b>130,440</b>	<b>7,640</b>	<b>6.2%</b>	0.622%	<b>1.037</b>	<b>1.044</b>	<b>1.062</b>
<b>Agriculture, Forestry, Fishing and Hunting</b>	<b>5,540</b>	<b>5,680</b>	<b>140</b>	<b>2.5%</b>	0.253%	<b>1.015</b>	<b>1.018</b>	<b>1.025</b>
<b>Utilities</b>	<b>8,660</b>	<b>8,410</b>	<b>-250</b>	<b>-2.9%</b>	-0.289%	<b>0.983</b>	<b>0.980</b>	<b>0.971</b>
<b>Construction</b>	<b>65,810</b>	<b>70,210</b>	<b>4,400</b>	<b>6.7%</b>	0.669%	1.040	1.047	1.067
Construction of Buildings	14,060	14,460	400	2.8%	0.284%	1.017	1.020	1.028
Heavy and Civil Engineering Construction	6,340	6,160	-180	-2.8%	-0.284%	0.983	0.980	0.972
Specialty Trade Contractors	45,410	49,590	4,180	9.2%	0.921%	1.055	1.064	1.092
<b>Manufacturing</b>	<b>197,190</b>	<b>186,730</b>	<b>-10,460</b>	<b>-5.3%</b>	-0.530%	<b>0.968</b>	<b>0.963</b>	<b>0.947</b>
Food Manufacturing	7,200	6,780	-420	-5.8%	-0.583%	0.965	0.959	0.942
Beverage and Tobacco Product Manufacturing	1,090	1,450	360	33.0%	3.303%	1.198	1.231	1.330
Textile Mills	1,050	570	-480	-45.7%	-4.571%	0.726	0.680	0.543
Textile Product Mills	1,300	1,230	-70	-5.4%	-0.538%	0.968	0.962	0.946
Wood Product Manufacturing	1,810	1,940	130	7.2%	0.718%	1.043	1.050	1.072
Paper Manufacturing	5,620	4,700	-920	-16.4%	-1.637%	0.902	0.885	0.836
Printing and Related Support Activities	8,410	7,180	-1,230	-14.6%	-1.463%	0.912	0.898	0.854
Chemical Manufacturing	17,290	18,030	740	4.3%	0.428%	1.026	1.030	1.043
Plastics and Rubber Products Manufacturing	7,630	7,280	-350	-4.6%	-0.459%	0.972	0.968	0.954
Nonmetallic Mineral Product Manufacturing	2,690	2,750	60	2.2%	0.223%	1.013	1.016	1.022
Primary Metal Manufacturing	4,560	4,350	-210	-4.6%	-0.461%	0.972	0.968	0.954
Fabricated Metal Product Manufacturing	33,730	33,200	-530	-1.6%	-0.157%	0.991	0.989	0.984
Machinery Manufacturing	18,690	16,540	-2,150	-11.5%	-1.150%	0.931	0.919	0.885
Computer and Electronic Product Manufacturing	15,370	13,860	-1,510	-9.8%	-0.982%	0.941	0.931	0.902
Electrical Equipment, Appliances and Component Mfg	10,410	9,190	-1,220	-11.7%	-1.172%	0.930	0.918	0.883
Transportation Equipment Manufacturing	43,130	41,300	-1,830	-4.2%	-0.424%	0.975	0.970	0.958
Furniture and Related Product Manufacturing	3,460	3,740	280	8.1%	0.809%	1.049	1.057	1.081
Miscellaneous Manufacturing	12,570	11,540	-1,030	-8.2%	-0.819%	0.951	0.943	0.918
<b>Wholesale Trade</b>	<b>65,790</b>	<b>71,380</b>	<b>5,590</b>	<b>8.5%</b>	0.850%	<b>1.051</b>	<b>1.059</b>	<b>1.085</b>
Merchant Wholesalers, Durable Goods	31,570	33,690	2,120	6.7%	0.672%	1.040	1.047	1.067
Merchant Wholesalers, Nondurable Goods	21,370	22,680	1,310	6.1%	0.613%	1.037	1.043	1.061
Wholesale Electronic Markets and Agents and Brokers	12,850	15,010	2,160	16.8%	1.681%	1.101	1.118	1.168
<b>Retail Trade</b>	<b>193,060</b>	<b>210,450</b>	<b>17,390</b>	<b>9.0%</b>	0.901%	<b>1.054</b>	<b>1.063</b>	<b>1.090</b>
Motor Vehicle and Parts Dealers	22,900	27,020	4,120	18.0%	1.799%	1.108	1.126	1.180
Furniture and Home Furnishings Stores	8,410	9,640	1,230	14.6%	1.463%	1.088	1.102	1.146
Electronics and Appliance Stores	6,100	6,620	520	8.5%	0.852%	1.051	1.060	1.085
Building Material, Garden Equipment and Supplies Dealers	16,010	18,670	2,660	16.6%	1.661%	1.100	1.116	1.166
Food and Beverage Stores	43,890	46,170	2,280	5.2%	0.519%	1.031	1.036	1.052
Health and Personal Care Stores	14,470	15,190	720	5.0%	0.498%	1.030	1.035	1.050
Gasoline Stations	6,310	6,430	120	1.9%	0.190%	1.011	1.013	1.019
Clothing and Clothing Accessories Stores	20,170	22,640	2,470	12.2%	1.225%	1.073	1.086	1.122
Sporting Goods, Hobby, Book, and Music Stores	9,250	9,830	580	6.3%	0.627%	1.038	1.044	1.063
General Merchandise Stores	24,940	28,080	3,140	12.6%	1.259%	1.076	1.088	1.126
Miscellaneous Store Retailers	11,330	10,900	-430	-3.8%	-0.380%	0.977	0.973	0.962
Nonstore Retailers	9,290	9,260	-30	-0.3%	-0.032%	0.998	0.998	0.997
<b>Transportation and Warehousing</b>	<b>40,790</b>	<b>43,970</b>	<b>3,180</b>	<b>7.8%</b>	0.780%	<b>1.047</b>	<b>1.055</b>	<b>1.078</b>
Air Transportation	1,850	2,400	550	29.7%	2.973%	1.178	1.208	1.297
Rail Transportation	1,960	1,880	-80	-4.1%	-0.408%	0.976	0.971	0.959
Truck Transportation	7,090	7,280	190	2.7%	0.268%	1.016	1.019	1.027
Transit and Ground Passenger Transport	11,590	12,740	1,150	9.9%	0.992%	1.060	1.069	1.099
Support Activities for Transportation	3,700	4,290	590	15.9%	1.595%	1.096	1.112	1.159
Couriers and Messengers	7,250	6,990	-260	-3.6%	-0.359%	0.978	0.975	0.964
Warehousing and Storage	6,040	7,050	1,010	16.7%	1.672%	1.100	1.117	1.167
<b>Information</b>	<b>38,970</b>	<b>44,100</b>	<b>5,130</b>	<b>13.2%</b>	1.316%	<b>1.079</b>	<b>1.092</b>	<b>1.132</b>
Publishing Industries	12,470	13,960	1,490	11.9%	1.195%	1.072	1.084	1.119
Motion Picture and Sound Recording Industries	2,220	2,980	760	34.2%	3.423%	1.205	1.240	1.342
Broadcasting (except Internet)	4,510	5,490	980	21.7%	2.173%	1.130	1.152	1.217
Telecommunications	13,770	14,410	640	4.6%	0.465%	1.028	1.033	1.046
Internet Service Providers, Web Search, and Data Processing	4,190	5,030	840	20.0%	2.005%	1.120	1.140	1.200
Other Information Services	1,190	1,420	230	19.3%	1.933%	1.116	1.135	1.193
<b>Finance and Insurance</b>	<b>120,550</b>	<b>131,130</b>	<b>10,580</b>	<b>8.8%</b>	0.878%	<b>1.053</b>	<b>1.061</b>	<b>1.088</b>
Credit Intermediation and Related Activities	31,660	33,320	1,660	5.2%	0.524%	1.031	1.037	1.052
Securities, Commodity Contracts, Other Financial	18,400	23,850	5,450	29.6%	2.962%	1.178	1.207	1.296
Insurance Carriers and Related Activities	65,640	68,310	2,670	4.1%	0.407%	1.024	1.028	1.041
Funds, Trusts, and Other Financial Vehicles	4,750	5,550	800	16.8%	1.684%	1.101	1.118	1.168
<b>Real Estate and Rental and Leasing</b>	<b>20,260</b>	<b>22,230</b>	<b>1,970</b>	<b>9.7%</b>	0.972%	<b>1.058</b>	<b>1.068</b>	<b>1.097</b>
Real Estate	13,500	15,080	1,580	11.7%	1.170%	1.070	1.082	1.117
Rental and Leasing Services	6,070	6,190	120	2.0%	0.198%	1.012	1.014	1.020
<b>Professional, Scientific, and Technical Services</b>	<b>87,760</b>	<b>100,780</b>	<b>13,020</b>	<b>14.8%</b>	1.484%	<b>1.089</b>	<b>1.104</b>	<b>1.148</b>
<b>Management of Companies and Enterprises</b>	<b>25,490</b>	<b>26,640</b>	<b>1,150</b>	<b>4.5%</b>	0.451%	<b>1.027</b>	<b>1.032</b>	<b>1.045</b>
<b>Administrative and Support and Waste Management and Remediation Services</b>	<b>84,250</b>	<b>95,500</b>	<b>11,250</b>	<b>13.4%</b>	1.335%	<b>1.080</b>	<b>1.093</b>	<b>1.134</b>
Administrative and Support Services	78,210	88,470	10,260	13.1%	1.312%	1.079	1.092	1.131
Waste Management and Remediation Services	6,040	7,030	990	16.4%	1.639%	1.098	1.115	1.164
<b>Educational Services</b>	<b>152,290</b>	<b>165,260</b>	<b>12,970</b>	<b>8.5%</b>	0.852%	<b>1.051</b>	<b>1.060</b>	<b>1.085</b>
<b>Health Care and Social Assistance</b>	<b>221,660</b>	<b>260,370</b>	<b>38,710</b>	<b>17.5%</b>	1.746%	<b>1.105</b>	<b>1.122</b>	<b>1.175</b>
Ambulatory Health Care Services	71,710	87,000	15,290	21.3%	2.132%	1.128	1.149	1.213
Hospitals	59,150	64,590	5,440	9.2%	0.920%	1.055	1.064	1.092
Nursing and Residential Care Facilities	57,200	64,360	7,160	12.5%	1.252%	1.075	1.088	1.125
Social Assistance	33,600	44,420	10,820	32.2%	3.220%	1.193	1.225	1.322
<b>Arts, Entertainment, and Recreation</b>	<b>45,670</b>	<b>53,110</b>	<b>7,440</b>	<b>16.3%</b>	1.629%	<b>1.098</b>	<b>1.114</b>	<b>1.163</b>
Performing Arts, Spectator Sports, and Related Industries	4,770	5,520	750	15.7%	1.572%	1.084	1.110	1.157
Museums, Historical Sites, and Similar Institution	2,000	2,330	330	16.5%	1.650%	1.099	1.116	1.165
Amusement, Gambling, and Recreation Industries	38,900	45,260	6,360	16.3%	1.635%	1.098	1.114	1.163
<b>Accommodation and Food Services</b>	<b>103,030</b>	<b>116,230</b>	<b>13,200</b>	<b>12.8%</b>	1.281%	<b>1.077</b>	<b>1.090</b>	<b>1.128</b>
Accommodation	11,220	13,990	2,770	24.7%	2.469%	1.148	1.173	1.247
Food Services and Drinking Places	91,810	102,240	10,430	11.4%	1.136%	1.068	1.080	1.114
<b>Other Services (Except Government)</b>	<b>56,150</b>	<b>61,380</b>	<b>5,230</b>	<b>9.3%</b>	0.931%	<b>1.056</b>	<b>1.065</b>	<b>1.093</b>
Repair and Maintenance	14,500	15,610	1,110	7.7%	0.766%	1.046	1.054	1.077
Personal and Laundry Services	18,980	21,260	2,280	12.0%	1.201%	1.072	1.084	1.120
Religious, Grantmaking, Civic, Professional, and Similar Organizations	15,610	17,140	1,530	9.8%	0.980%	1.059	1.069	1.098
Private Households	7,050	7,370	320	4.5%	0.454%	1.027	1.032	1.045
<b>Government</b>	<b>104,270</b>	<b>106,150</b>	<b>1,880</b>	<b>1.8%</b>	0.180%	<b>1.011</b>	<b>1.013</b>	<b>1.018</b>
Federal Government	20,190	19,080	-1,110	-5.5%	-0.550%	0.967	0.962	0.945
State Government, Excluding Education and Hospitals	38,600	39,000	400	1.0%	0.104%	1.006	1.007	1.010
Local Government, Excluding Education and Hospitals	45,480	48,080	2,600	5.7%	0.572%	1.034	1.040	1.057
<b>Non-Manufacturing Employment (all but manufacturing)</b>	<b>1,563,500</b>	<b>1,724,140</b>	<b>160,640</b>	<b>10.3%</b>	1.027%	<b>1.062</b>	<b>1.072</b>	<b>1.103</b>

Table 4D-2

CT  
MOTOR-FUEL USE 1996 - 2005

OCTOBER 2006

(THOUSANDS OF GALLONS)

TABLE MF-21

YEAR	COMBINED GASOLINE AND GASOHOL										SPECIAL FUEL	SUMMARY OF TOTAL USE					
	HIGHWAY USE					NONHIGHWAY USE						PRIVATE AND COMMERCIAL HIGHWAY USE	HIGHWAY		NON-HIGHWAY (GASOLINE ONLY)	TOTAL	
	PRIVATE AND COMMERCIAL	PUBLIC USE			TOTAL	PRIVATE AND COMMERCIAL	STATE, COUNTY, AND MUNICIPAL	TOTAL	TOTAL USE	LOSSES ALLOWED FOR EVAPORATION, HANDLING, ETC. 2/			TOTAL CONSUMPTION	AMOUNT			PERCENT CHANGE FROM PRIOR YEAR
		FEDERAL CIVILIAN	STATE, COUNTY, AND MUNICIPAL	TOTAL													
2005	1,538,648	2,348	25,908	28,256	1,566,904	53,512	1,000	54,512	1,621,416	(6,719)	1,614,697	307,303	1,874,207	(10.0)	54,512	1,928,719	
2004	1,774,969	2,348	19,265	21,613	1,796,582	54,373	1,004	55,377	1,851,959	8,949	1,860,908	285,813	2,082,395	18.9	55,377	2,137,772	
2003	1,588,790	2,348	19,353	21,701	1,610,491	42,008	1,009	43,017	1,653,508	1,745	1,655,253	267,048	1,877,539	4.6	43,017	1,920,556	
2002	1,498,140	2,348	19,442	21,790	1,519,930	68,859	1,014	69,873	1,589,803	(223)	1,589,580	229,112	1,749,042	0.8	69,873	1,818,915	
2001	1,436,555	2,348	19,376	21,724	1,458,279	48,755	1,010	49,765	1,508,044	(11,575)	1,496,469	273,178	1,731,457	2.0	49,765	1,781,222	
2000	1,401,857	2,401	18,706	21,107	1,422,964	59,777	996	60,773	1,483,737	(7,397)	1,476,340	274,914	1,697,878	1.0	60,773	1,758,651	
1999	1,470,716	2,302	18,642	20,944	1,491,660	56,993	992	57,985	1,549,645	1,801	1,551,446	237,293	1,728,953	7.9	57,985	1,786,938	
1998	1,352,487	2,215	18,578	20,793	1,373,280	50,909	989	51,898	1,425,178	896	1,426,074	223,417	1,596,697	1.3	51,898	1,648,595	
1997	1,309,058	3,203	18,514	21,717	1,330,775	64,796	986	65,782	1,396,557	3,459	1,400,016	244,903	1,575,678	1.7	65,782	1,641,460	
1996	1,304,135	2,914	19,169	22,083	1,326,218	58,291	999	59,290	1,385,508	4,877	1,390,385	177,626	1,503,844	3.2	59,290	1,563,134	

Source: FHWA Highway Statistic Series; Tables MF-2; See <http://www.fhwa.dot.gov/policy/ohpi/qffuel.htm>

% Increase from 1996 to 2005: 17.0%  
Average Annual % Increase from 1996 to 2005: 1.89%

(Use for annual growth rate in gasoline usage from 2002 to 2008, 2009, and 2012)

**Table 4D-3**

**File 1. Interim State Projections of Population by Sex: July 1, 2004 to 2030**

**Source: U.S.Census Bureau, Population Division, Interim State Population Projections, 2005.**

FIPS	Region	Division	State	Sex	Age	Census 2000	Projection 2004	Projection 2005	Projection 2006	Projection 2007	Projection 2008	Projection 2009	Projection 2010	Projection 2011	Projection 2012
0	0	0	US	T	Total	281421906	292800571	2.96E+08	2.98E+08	3.01E+08	3.04E+08	3.06E+08	3.09E+08	3.12E+08	3.14E+08
9	1	1	CT	T	Total	3405565	3485593	3503185	3519930	3535579	3550416	3564393	3577490	3590023	3602158
2002 CT Interpolation Using 2000 & 2004:						3,445,579									
								<b>Growth Factor vs 2002:</b>		<b>1.030</b>	<b>1.034</b>	<b>1.045443</b>			

Source: All of the above from US Census Bureau; <http://www.census.gov/population/www/projections/projectionsagesex.html>

**Table 4D-4**  
**Summer Average Daily Traffic (ADT) in Connecticut**  
**CTDOT Series 28D Projected Vehicle Miles Traveled (VMT)**  
**for 2002, 2008, 2009 and 2012**

<b>2002</b>	<b>Greater CT Summer ADT (Series 28D VMT)</b>	<b>Southwest CT Summer ADT (Series 28D VMT)</b>	<b>State Total Summer ADT (Series 28D VMT)</b>
<b>Expressway</b>	17,094,099	23,662,020	40,756,119
<b>Arterial/Collector</b>	22,966,798	19,913,353	42,880,151
<b>Local</b>	3,725,559	3,921,396	7,646,955
<b>Ramp</b>	639,190	922,716	1,561,906
<b>Totals</b>	<b>44,425,646</b>	<b>48,419,485</b>	<b>92,845,131</b>

<b>2008</b>	<b>Greater CT Summer ADT (Series 28D VMT)</b>	<b>Southwest CT Summer ADT (Series 28D VMT)</b>	<b>State Total Summer ADT (Series 28D VMT)</b>
<b>Expressway</b>	18,842,822	25,188,877	44,031,699
<b>Arterial/Collector</b>	24,807,626	21,129,160	45,936,786
<b>Local</b>	4,003,072	4,115,585	8,118,657
<b>Ramp</b>	705,347	982,693	1,688,040
<b>Totals</b>	<b>48,358,867</b>	<b>51,416,315</b>	<b>99,775,182</b>

<b>2009</b>	<b>Greater CT Summer ADT (Series 28D VMT)</b>	<b>Southwest CT Summer ADT (Series 28D VMT)</b>	<b>State Total Summer ADT (Series 28D VMT)</b>
<b>Expressway</b>	19,153,677	25,600,392	44,754,069
<b>Arterial/Collector</b>	25,115,712	21,358,145	46,473,857
<b>Local</b>	4,052,234	4,154,809	8,207,043
<b>Ramp</b>	639,203	791,765	1,430,968
<b>Totals</b>	<b>48,960,826</b>	<b>51,905,111</b>	<b>100,865,937</b>

<b>2012</b>	<b>Greater CT Summer ADT (Series 28D VMT)</b>	<b>Southwest CT Summer ADT (Series 28D VMT)</b>	<b>State Total Summer ADT (Series 28D VMT)</b>
<b>Expressway</b>	20,056,817	26,320,096	46,376,913
<b>Arterial/Collector</b>	25,675,553	21,825,479	47,501,032
<b>Local</b>	4,173,086	4,262,344	8,435,430
<b>Ramp</b>	665,712	814,024	1,479,736
<b>Totals</b>	<b>50,571,168</b>	<b>53,221,943</b>	<b>103,793,111</b>