

Appendix E: Mobile 6.2 Emission Factor Summary

Appendix E

Emission factor summaries are provided in the following tables

E-01	Gaston County – Baseline and Budget Tests (2002 and 2005), NO _x and VOC
E-02	Gaston County – Build Interim Test (2010 Build, 2020 build, 2030 build), NO _x and VOC
E-03	Gaston County – No-Build Interim Test (2010 No-Build, 2020 No-build, 2030 No-build), NO _x and VOC
E-04	Mecklenburg County – CO tests (2005, 2010, 2020, 2030)
E-05	Mecklenburg County – Baseline and Budget Tests (2002 and 2005), NO _x and VOC
E-06	Mecklenburg County – Build Interim Test (2010 Build, 2020 build, 2030 build), NO _x and VOC
E-07	Mecklenburg County – No-Build Interim Test (2010 No-Build, 2020 No-build, 2030 No-build), NO _x and VOC
E-08	5-county – Baseline and Budget Tests (2002 and 2005), NO _x and VOC (Cabarrus, Iredell (pt), Lincoln, Rowan, Union)
E-09	5-county – Build Interim Test (2010 Build, 2020 build, 2030 build), NO _x and VOC (Cabarrus, Iredell (pt), Lincoln, Rowan, Union)
E-10	5-county – No-Build Interim Test (2010 No-Build, 2020 No-build, 2030 No-build), NO _x and VOC (Cabarrus, Iredell (pt), Lincoln, Rowan, Union)

2002 Baseline Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	5.032	0.942	5.043	0.968	53
Rural Other Principal Arterial	2.745	1.055	2.756	1.088	47
Rural Minor Arterial	1.771	1.097	1.783	1.133	44
Rural Major Collector	1.623	1.109	1.635	1.145	43
Rural Minor Collector	1.706	1.096	1.718	1.132	45
Rural Local	1.644	1.210	1.656	1.254	30
Urban Interstate	3.041	1.044	3.052	1.076	46
Freeway & Expressway	2.245	1.077	2.256	1.111	47
Urban Other Principle Arterial	1.338	1.178	1.349	1.219	34
Urban Minor Arterial	1.341	1.167	1.353	1.207	35
Urban Collector	1.333	1.226	1.344	1.271	30
Urban Local	1.334	1.226	1.345	1.271	30

2005 Budget Year Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	3.126	0.684	3.173	0.731	47
Rural Other Principal Arterial	1.876	0.730	1.933	0.787	47
Rural Minor Arterial	1.297	0.762	1.357	0.825	43
Rural Major Collector	1.205	0.766	1.266	0.829	43
Rural Minor Collector	1.267	0.757	1.327	0.818	45
Rural Local	1.214	0.844	1.276	0.918	30
Urban Interstate	2.044	0.730	2.099	0.786	45
Freeway & Expressway	1.555	0.742	1.615	0.802	47
Urban Other Principle Arterial	0.998	0.833	1.062	0.907	32
Urban Minor Arterial	0.998	0.810	1.061	0.880	35
Urban Collector	1.002	0.861	1.066	0.938	29
Urban Local	0.993	0.852	1.057	0.928	30

2010 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	1.474	0.470	1.531	0.515	43
Rural Other Principal Arterial	0.922	0.502	0.993	0.559	43
Rural Minor Arterial	0.685	0.520	0.760	0.582	40
Rural Major Collector	0.645	0.520	0.721	0.581	41
Rural Minor Collector	0.681	0.511	0.756	0.570	44
Rural Local	0.659	0.564	0.735	0.633	30
Urban Interstate	1.003	0.502	1.071	0.557	41
Freeway & Expressway	0.811	0.500	0.886	0.557	47
Urban Other Principle Arterial	0.554	0.563	0.633	0.634	31
Urban Minor Arterial	0.557	0.558	0.636	0.627	32
Urban Collector	0.558	0.581	0.638	0.654	28
Urban Local	0.550	0.569	0.630	0.641	30

2020 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	0.342	0.264	0.418	0.328	40
Rural Other Principal Arterial	0.257	0.271	0.352	0.349	41
Rural Minor Arterial	0.218	0.281	0.318	0.366	36
Rural Major Collector	0.211	0.281	0.312	0.368	36
Rural Minor Collector	0.220	0.273	0.320	0.356	41
Rural Local	0.218	0.296	0.319	0.387	30
Urban Interstate	0.277	0.266	0.369	0.341	43
Freeway & Expressway	0.243	0.267	0.343	0.346	46
Urban Other Principle Arterial	0.200	0.293	0.305	0.388	31
Urban Minor Arterial	0.202	0.296	0.307	0.392	30
Urban Collector	0.205	0.306	0.312	0.405	27
Urban Local	0.200	0.296	0.305	0.392	30

2030 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	0.208	0.221	0.285	0.287	38
Rural Other Principal Arterial	0.171	0.219	0.267	0.301	40
Rural Minor Arterial	0.153	0.229	0.253	0.318	34
Rural Major Collector	0.150	0.231	0.252	0.322	33
Rural Minor Collector	0.151	0.231	0.253	0.321	33
Rural Local	0.153	0.238	0.256	0.332	30
Urban Interstate	0.176	0.222	0.268	0.301	38
Freeway & Expressway	0.168	0.213	0.269	0.295	46
Urban Other Principle Arterial	0.148	0.244	0.257	0.344	28
Urban Minor Arterial	0.147	0.241	0.254	0.339	29
Urban Collector	0.152	0.254	0.263	0.357	25
Urban Local	0.145	0.238	0.251	0.335	30

2010 No Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	1.460	0.473	1.517	0.518	42
Rural Other Principal Arterial	0.922	0.502	0.993	0.559	43
Rural Minor Arterial	0.680	0.526	0.755	0.588	38
Rural Major Collector	0.640	0.523	0.716	0.585	40
Rural Minor Collector	0.677	0.513	0.752	0.573	43
Rural Local	0.659	0.564	0.735	0.633	30
Urban Interstate	1.003	0.502	1.071	0.557	41
Freeway & Expressway	0.802	0.502	0.876	0.560	46
Urban Other Principle Arterial	0.556	0.569	0.635	0.641	30
Urban Minor Arterial	0.559	0.563	0.638	0.634	31
Urban Collector	0.562	0.588	0.643	0.662	27
Urban Local	0.550	0.569	0.630	0.641	30

2020 No Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	0.341	0.267	0.416	0.330	39
Rural Other Principal Arterial	0.254	0.274	0.349	0.354	39
Rural Minor Arterial	0.218	0.285	0.318	0.372	34
Rural Major Collector	0.211	0.285	0.312	0.373	34
Rural Minor Collector	0.217	0.278	0.316	0.362	38
Rural Local	0.218	0.296	0.319	0.388	30
Urban Interstate	0.270	0.273	0.361	0.349	39
Freeway & Expressway	0.241	0.268	0.341	0.348	45
Urban Other Principle Arterial	0.212	0.319	0.323	0.422	24
Urban Minor Arterial	0.213	0.319	0.323	0.422	24
Urban Collector	0.211	0.319	0.322	0.421	24
Urban Local	0.200	0.296	0.305	0.392	30

2030 No Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	0.207	0.223	0.284	0.289	37
Rural Other Principal Arterial	0.167	0.230	0.263	0.315	34
Rural Minor Arterial	0.160	0.249	0.264	0.345	27
Rural Major Collector	0.156	0.248	0.261	0.345	27
Rural Minor Collector	0.155	0.241	0.258	0.336	29
Rural Local	0.154	0.238	0.256	0.332	30
Urban Interstate	0.176	0.224	0.268	0.303	37
Freeway & Expressway	0.162	0.219	0.262	0.303	41
Urban Other Principle Arterial	0.155	0.259	0.267	0.364	24
Urban Minor Arterial	0.164	0.279	0.281	0.392	20
Urban Collector	0.160	0.273	0.276	0.384	21
Urban Local	0.145	0.238	0.252	0.335	30

2005 Budget Year

Road Type	I&M CO	NON I&M CO	Speeds
Rural principle arterial-Meck County	12.546	14.496	31
Rural minor arterial-Meck County	13.202	15.334	27
Rural major collector-Meck County	13.578	15.679	39
Rural minor collector-Meck County	13.413	15.488	38
Rural local-Meck County	13.082	15.158	30
Urban interstate-Meck County	13.303	15.299	47
Urban freeway-Meck County	14.246	16.416	48
Urban principle arterial-Meck County	13.469	15.647	29
Urban minor arterial-Meck County	13.441	15.609	29
Urban collector-Meck County	13.567	15.785	27
Urban local-Meck County	13.416	15.567	30
Urban interstate (HOV)	14.723	17.039	43

2010 Interim Year

Road Type	I&M CO	NON I&M CO	Speeds
Rural principle arterial-Meck County	9.007	10.721	28
Rural minor arterial-Meck County	9.428	11.269	27
Rural major collector-Meck County	9.475	11.293	36
Rural minor collector-Meck County	9.353	11.144	34
Rural local-Meck County	9.347	11.149	30
Urban interstate-Meck County	9.350	11.114	46
Urban freeway-Meck County	10.153	12.113	49
Urban principle arterial-Meck County	9.662	11.575	28
Urban minor arterial-Meck County	9.646	11.548	28
Urban collector-Meck County	9.745	11.685	26
Urban local-Meck County	9.592	11.467	30
Urban interstate (HOV)	10.729	12.868	47

2020 Interim Year

Road Type	I&M CO	NON I&M CO	Speeds
Rural principle arterial-Meck County	6.216	8.190	24
Rural minor arterial-Meck County	6.468	8.580	25
Rural major collector-Meck County	6.406	8.448	32
Rural minor collector-Meck County	6.372	8.398	32
Rural local-Meck County	6.371	8.403	30
Urban interstate-Meck County	6.300	8.263	44
Urban freeway-Meck County	6.796	8.961	46
Urban principle arterial-Meck County	6.592	8.764	27
Urban minor arterial-Meck County	6.588	8.749	27
Urban collector-Meck County	6.654	8.858	25
Urban local-Meck County	6.537	8.650	30
Urban interstate (HOV)	7.182	9.558	45

2030 Interim Year

Road Type	I&M CO	NON I&M CO	Speeds
Rural principle arterial-Meck County	5.824	7.681	27
Rural minor arterial-Meck County	6.142	8.162	25
Rural major collector-Meck County	6.084	8.044	30
Rural minor collector-Meck County	6.097	8.071	28
Rural local-Meck County	6.052	7.995	30
Urban interstate-Meck County	5.856	7.695	41
Urban freeway-Meck County	6.398	8.455	45
Urban principle arterial-Meck County	6.306	8.423	25
Urban minor arterial-Meck County	6.306	8.411	25
Urban collector-Meck County	6.419	8.580	23
Urban local-Meck County	6.209	8.230	30
Urban interstate (HOV)	6.604	8.815	41

2002 Baseline Test Road Type	I&M		NON I&M		Speeds
	VOC	NOx	VOC	NOx	
Rural principle arterial-Meck County	1.153	2.617	1.191	2.629	35
Rural minor arterial-Meck County	1.268	1.801	1.314	1.813	28
Rural major collector-Meck County	1.168	1.644	1.207	1.656	38
Rural minor collector-Meck County	1.148	1.727	1.186	1.739	41
Rural local-Meck County	1.243	1.707	1.288	1.719	30
Urban interstate-Meck County	1.088	3.027	1.122	3.038	43
Urban freeway-Meck County	1.127	2.239	1.164	2.251	43
Urban principle arterial-Meck County	1.273	1.432	1.320	1.444	29
Urban minor arterial-Meck County	1.272	1.438	1.319	1.451	29
Urban collector-Meck County	1.288	1.418	1.335	1.430	28
Urban local-Meck County	1.260	1.399	1.306	1.411	30

2005 Budget Test Road Type	I&M		NON I&M		Speeds
	VOC	NOx	VOC	NOx	
Rural principle arterial-Meck County	0.836	1.767	0.906	1.829	31
Rural minor arterial-Meck County	0.892	1.328	0.970	1.395	27
Rural major collector-Meck County	0.802	1.218	0.870	1.283	39
Rural minor collector-Meck County	0.805	1.256	0.873	1.321	38
Rural local-Meck County	0.863	1.258	0.939	1.324	30
Urban interstate-Meck County	0.739	2.140	0.796	2.198	47
Urban freeway-Meck County	0.756	1.616	0.818	1.680	48
Urban principle arterial-Meck County	0.879	1.059	0.959	1.127	29
Urban minor arterial-Meck County	0.880	1.067	0.959	1.136	29
Urban collector-Meck County	0.901	1.064	0.982	1.133	27
Urban local-Meck County	0.871	1.039	0.950	1.106	30
Urban interstate (HOV)	0.788	1.034	0.859	1.104	43

2010 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Other Principal Arterial	0.911	0.569	0.987	0.636	28
Rural Minor Arterial	0.719	0.586	0.801	0.658	27
Rural Major Collector	0.654	0.539	0.734	0.604	36
Rural Minor Collector	0.673	0.546	0.753	0.612	34
Rural Local	0.682	0.568	0.763	0.637	30
Urban Interstate	1.073	0.492	1.145	0.545	46
Freeway & Expressway	0.852	0.499	0.931	0.556	49
Urban Other Principle Arterial	0.588	0.586	0.674	0.660	28
Urban Minor Arterial	0.593	0.585	0.679	0.659	28
Urban Collector	0.592	0.599	0.678	0.675	26
Urban Local	0.574	0.573	0.659	0.646	30
Urban HOV	0.612	0.511	0.700	0.575	47

2020 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Other Principal Arterial	0.262	0.311	0.362	0.401	24
Rural Minor Arterial	0.238	0.309	0.348	0.404	25
Rural Major Collector	0.220	0.285	0.326	0.372	32
Rural Minor Collector	0.224	0.284	0.329	0.371	32
Rural Local	0.225	0.290	0.331	0.380	30
Urban Interstate	0.286	0.260	0.382	0.332	44
Freeway & Expressway	0.251	0.261	0.356	0.338	46
Urban Other Principle Arterial	0.214	0.300	0.327	0.397	27
Urban Minor Arterial	0.214	0.301	0.327	0.397	27
Urban Collector	0.217	0.308	0.332	0.407	25
Urban Local	0.208	0.290	0.318	0.383	30
Urban HOV	0.211	0.257	0.327	0.342	45

2030 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Other Principal Arterial	0.173	0.239	0.273	0.324	27
Rural Minor Arterial	0.167	0.246	0.277	0.338	25
Rural Major Collector	0.156	0.228	0.263	0.317	30
Rural Minor Collector	0.160	0.234	0.268	0.324	28
Rural Local	0.158	0.228	0.264	0.316	30
Urban Interstate	0.183	0.208	0.279	0.280	41
Freeway & Expressway	0.170	0.204	0.275	0.280	45
Urban Other Principle Arterial	0.158	0.244	0.273	0.341	25
Urban Minor Arterial	0.158	0.244	0.272	0.340	25
Urban Collector	0.160	0.252	0.277	0.352	23
Urban Local	0.149	0.227	0.260	0.318	30
Urban HOV	0.146	0.198	0.261	0.285	41

2010 No Build Interim test		I&M		No I&M		Speeds
Road Type	NOX	VOC	NOX	VOC		
Rural Other Principal Arterial	0.911	0.569	0.987	0.637	28	
Rural Minor Arterial	0.725	0.594	0.808	0.667	26	
Rural Major Collector	0.651	0.543	0.731	0.608	35	
Rural Minor Collector	0.674	0.551	0.755	0.618	33	
Rural Local	0.682	0.568	0.763	0.638	30	
Urban Interstate	1.058	0.495	1.131	0.549	45	
Freeway & Expressway	0.843	0.502	0.922	0.559	48	
Urban Other Principle Arterial	0.598	0.600	0.685	0.676	26	
Urban Minor Arterial	0.609	0.608	0.696	0.684	25	
Urban Collector	0.625	0.648	0.716	0.732	21	
Urban Local	0.575	0.574	0.659	0.646	30	
Urban HOV	0.594	0.520	0.682	0.586	43	

2020 No Build Interim test		I&M		No I&M		Speeds
Road Type	NOX	VOC	NOX	VOC		
Rural Other Principal Arterial	0.265	0.325	0.365	0.419	21	
Rural Minor Arterial	0.241	0.314	0.352	0.411	24	
Rural Major Collector	0.236	0.319	0.350	0.418	23	
Rural Minor Collector	0.235	0.309	0.345	0.404	25	
Rural Local	0.225	0.291	0.332	0.380	30	
Urban Interstate	0.282	0.263	0.378	0.336	42	
Freeway & Expressway	0.247	0.264	0.352	0.342	44	
Urban Other Principle Arterial	0.226	0.324	0.345	0.429	22	
Urban Minor Arterial	0.232	0.336	0.354	0.445	20	
Urban Collector	0.243	0.370	0.370	0.489	17	
Urban Local	0.208	0.291	0.318	0.384	30	
Urban HOV	0.210	0.258	0.326	0.345	44	

2030 No Build Interim test		I&M		No I&M		Speeds
Road Type	NOX	VOC	NOX	VOC		
Rural Other Principal Arterial	0.177	0.269	0.277	0.361	20	
Rural Minor Arterial	0.174	0.260	0.287	0.358	22	
Rural Major Collector	0.175	0.271	0.293	0.375	20	
Rural Minor Collector	0.169	0.254	0.282	0.351	23	
Rural Local	0.158	0.228	0.264	0.316	30	
Urban Interstate	0.183	0.208	0.279	0.281	41	
Freeway & Expressway	0.164	0.211	0.268	0.291	39	
Urban Other Principle Arterial	0.169	0.268	0.291	0.376	20	
Urban Minor Arterial	0.171	0.278	0.295	0.388	19	
Urban Collector	0.181	0.313	0.311	0.433	16	
Urban Local	0.150	0.227	0.260	0.319	30	
Urban HOV	0.143	0.204	0.258	0.294	36	

2002 Baseline Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	5.882	1.247	5.900	1.285	57
Rural Other Principal Arterial	3.086	1.388	3.104	1.438	48
Rural Minor Arterial	1.984	1.502	2.002	1.559	39
Rural Major Collector	1.951	1.431	1.970	1.484	48
Rural Minor Collector	1.989	1.444	2.007	1.498	46
Rural Local	1.899	1.645	1.918	1.711	30
Urban Interstate	3.466	1.367	3.484	1.415	49
Freeway & Expressway	2.382	1.520	2.400	1.578	36
Urban Other Principle Arterial	1.579	1.551	1.598	1.612	36
Urban Minor Arterial	1.592	1.541	1.610	1.601	37
Urban Collector	1.553	1.554	1.572	1.615	36
Urban Local	1.568	1.659	1.587	1.727	30

2010 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	2.225	0.654	2.296	0.702	51
Rural Other Principal Arterial	1.359	0.698	1.447	0.758	50
Rural Minor Arterial	0.935	0.769	1.027	0.840	38
Rural Major Collector	0.912	0.740	1.006	0.808	45
Rural Minor Collector	0.930	0.747	1.023	0.815	43
Rural Local	0.905	0.833	1.000	0.913	30
Urban Interstate	1.420	0.712	1.504	0.773	45
Freeway & Expressway	1.040	0.774	1.132	0.846	36
Urban Other Principle Arterial	0.763	0.803	0.860	0.881	34
Urban Minor Arterial	0.770	0.803	0.867	0.882	34
Urban Collector	0.756	0.804	0.852	0.883	34
Urban Local	0.764	0.840	0.862	0.923	30

2020 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	0.618	0.326	0.725	0.402	48
Rural Other Principal Arterial	0.444	0.329	0.578	0.421	51
Rural Minor Arterial	0.333	0.358	0.471	0.467	37
Rural Major Collector	0.328	0.349	0.468	0.455	42
Rural Minor Collector	0.333	0.350	0.472	0.457	41
Rural Local	0.328	0.381	0.468	0.502	30
Urban Interstate	0.488	0.327	0.616	0.415	52
Freeway & Expressway	0.363	0.347	0.500	0.453	41
Urban Other Principle Arterial	0.293	0.369	0.438	0.490	33
Urban Minor Arterial	0.296	0.374	0.440	0.495	32
Urban Collector	0.295	0.381	0.441	0.506	30
Urban Local	0.296	0.381	0.441	0.506	30

2030 Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	0.288	0.234	0.396	0.310	50
Rural Other Principal Arterial	0.222	0.243	0.356	0.341	46
Rural Minor Arterial	0.191	0.270	0.330	0.384	33
Rural Major Collector	0.189	0.256	0.329	0.365	39
Rural Minor Collector	0.189	0.260	0.328	0.370	37
Rural Local	0.191	0.280	0.332	0.399	30
Urban Interstate	0.234	0.241	0.363	0.334	47
Freeway & Expressway	0.203	0.250	0.342	0.355	42
Urban Other Principle Arterial	0.181	0.275	0.327	0.398	31
Urban Minor Arterial	0.181	0.275	0.327	0.398	31
Urban Collector	0.180	0.275	0.326	0.398	31
Urban Local	0.181	0.279	0.327	0.403	30

2010 No Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	2.225	0.654	2.296	0.702	51
Rural Other Principal Arterial	1.332	0.706	1.420	0.767	48
Rural Minor Arterial	0.923	0.786	1.016	0.860	35
Rural Major Collector	0.907	0.744	1.001	0.813	44
Rural Minor Collector	0.924	0.751	1.017	0.821	42
Rural Local	0.905	0.833	1.000	0.913	30
Urban Interstate	1.420	0.712	1.504	0.773	45
Freeway & Expressway	1.038	0.813	1.130	0.891	31
Urban Other Principle Arterial	0.781	0.858	0.881	0.944	28
Urban Minor Arterial	0.778	0.839	0.876	0.922	30
Urban Collector	0.759	0.821	0.857	0.902	32
Urban Local	0.764	0.840	0.862	0.923	30

2020 No Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	0.604	0.333	0.710	0.412	46
Rural Other Principal Arterial	0.431	0.338	0.565	0.434	48
Rural Minor Arterial	0.334	0.378	0.474	0.496	32
Rural Major Collector	0.322	0.364	0.462	0.476	37
Rural Minor Collector	0.326	0.368	0.465	0.482	35
Rural Local	0.330	0.386	0.471	0.508	30
Urban Interstate	0.444	0.345	0.571	0.442	43
Freeway & Expressway	0.357	0.390	0.495	0.514	28
Urban Other Principle Arterial	0.309	0.409	0.462	0.546	25
Urban Minor Arterial	0.308	0.405	0.459	0.538	26
Urban Collector	0.303	0.400	0.453	0.532	27
Urban Local	0.297	0.386	0.443	0.513	30

2030 No Build Interim test Road Type	I&M		No I&M		Speeds
	NOX	VOC	NOX	VOC	
Rural Interstate	0.281	0.237	0.389	0.314	48
Rural Other Principal Arterial	0.225	0.242	0.358	0.338	47
Rural Minor Arterial	0.193	0.276	0.332	0.394	31
Rural Major Collector	0.187	0.262	0.326	0.374	36
Rural Minor Collector	0.188	0.267	0.327	0.380	34
Rural Local	0.191	0.280	0.332	0.399	30
Urban Interstate	0.234	0.241	0.363	0.334	47
Freeway & Expressway	0.197	0.266	0.334	0.378	34
Urban Other Principle Arterial	0.188	0.295	0.339	0.426	26
Urban Minor Arterial	0.190	0.300	0.342	0.433	25
Urban Collector	0.187	0.295	0.337	0.426	26
Urban Local	0.181	0.279	0.327	0.403	30

**Appendix F: MPO and Non-MPO Funded and Exempt FY 2004-2010
Transportation Improvement Program Lists**

Appendix F, Part 1 – CRMPO

CABARRUS-ROWAN URBAN AREA METROPOLITAN PLANNING ORGANIZATION

ID NO.	COUNTY	ROUTE/CITY	LOCATION AND DESCRIPTION	LENGTH (MI) (KM)	TOTAL EST. COST (THOU.)	PRIOR YRS. COST (THOU.)	WORK TYPE	FUNDING SOURCE	COST ESTIMATES (THOU.)	SCHEDULE (FISCAL YEARS)
I-2304	ROWAN DAVIDSON	I-85	NORTH OF SR 2120 (EXIT 81) IN ROWAN COUNTY TO US 29-52-70/I-85 BUSINESS (EXIT 87). ADDITIONAL LANES AND BRIDGE RECONSTRUCTION. (PROJECT INCLUDES B-3833)	6.8	147816	7216	DESIGN RIGHT-OF-WAY RIGHT-OF-WAY CONSTRUCTION CONSTRUCTION DESIGN-BUILD PROJECT	NHS IM NHS	3300 61784 75516	IN PROGRESS PART IN ACQUISITION FFY 04 FFY 06 FFY 06
I-2511	ROWAN	I-85	US 29-801 CONNECTOR (EXIT 68) TO NORTH OF SR 2120 (EXIT 81). REHABILITATE BRIDGES AND WIDEN TO EIGHT LANES. (COORDINATE WITH R-2903)	13.2	236805	160471	RIGHT-OF-WAY CONSTRUCTION CONSTRUCTION PART COMPLETE - PART UNDER CONSTRUCTION	IM NHS	48884 27460	PART IN ACQUISITION FFY 04 FFY 04
I-3610	ROWAN	I-85/US 601	US 29 AND NC 152 (EXIT 68). INTERCHANGE REVISION.		7600		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	NHS NHS	1700 5900	POST YEARS POST YEARS
I-3802	CABARRUS ROWAN	I-85	NC 73 IN CABARRUS COUNTY TO US 29-601 CONNECTOR IN ROWAN COUNTY. ADD ADDITIONAL LANES.	13.6	100800	500	RIGHT-OF-WAY CONSTRUCTION CONSTRUCTION PROGRAMMED FOR PLANNING AND ENVIRONMENTAL STUDY ONLY - COORDINATE WITH I-3804	NHS IM NHS	300 40000 60000	POST YEARS POST YEARS POST YEARS
I-3803	MECKLENBURG CABARRUS	I-85	US 29-NC 49 CONNECTOR IN MECKLENBURG COUNTY TO NC 73 IN CABARRUS COUNTY. ADD ADDITIONAL LANES. (COORDINATE WITH U-3415)	12.8	174900	2500	CONSTRUCTION CONSTRUCTION RIGHT-OF-WAY CONSTRUCTION CONSTRUCTION PART UNDER CONSTRUCTION AS DESIGN BUILD PROJECT - PART UNFUNDED	HP NHS NHS IM NHS	24276 41224 100 42720 64080	FFY 04 FFY 04 POST YEARS POST YEARS POST YEARS
I-3804	ROWAN	I-85	SR 1221 (OLD BEATTY FORD ROAD). CONSTRUCT AN INTERCHANGE.		8750		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT - COORDINATE WITH I-3802	IM IM	550 8200	POST YEARS POST YEARS
I-4718	ROWAN	I-85	CABARRUS COUNTY LINE TO NC 152. REPAIR PAVEMENT AND OVERLAY WITH NOVACHIP.	5.0	960		CONSTRUCTION	IM	960	FFY 06
I-4736	CABARRUS	I-85	US 601 TO ROWAN COUNTY LINE. PAVEMENT REHABILITATION		1700		CONSTRUCTION	IM	1700	FFY 04
R-2903	STANLY CABARRUS ROWAN	US 52	MULTI-LANES SOUTH OF NC 49 AT RICHFIELD TO I-85 NORTH OF SALISBURY. FOUR LANES DIVIDED ON NEW LOCATION. (COORDINATE WITH I-2511)	19.2	114550	1500	PLANNING RIGHT-OF-WAY CONSTRUCTION PROGRAMMED FOR PLANNING AND ENVIRONMENTAL STUDY ONLY	NHS NHS	10100 102950	IN PROGRESS POST YEARS POST YEARS

* INDICATES INTRASTATE PROJECT

ALL SCHEDULES SUBJECT TO AVAILABILITY OF FUNDS

CABARRUS-ROWAN URBAN AREA METROPOLITAN PLANNING ORGANIZATION

ID NO.	COUNTY	ROUTE/CITY	LOCATION AND DESCRIPTION	LENGTH (MI) (KM)	TOTAL EST. COST (THOU.)	PRIOR YRS. COST (THOU.)	WORK TYPE	FUNDING SOURCE	COST ESTIMATES (THOU.)	SCHEDULE (FISCAL YEARS)
R-4413	CABARRUS STANLY MECKLENBURG UNION ANSON	US 52, US 74, NC 49	NATIONAL HIGHWAY SYSTEM GUARDRAIL REHABILITATION. UPGRADE SUBSTANDARD GUARDRAIL, END TREATMENTS AND BRIDGE ANCHOR UNITS.		340		DESIGN CONSTRUCTION	NHS	340	FFY 05 FFY 07
R-4414	FORSYTH DAVIDSON ROWAN SURRY WATAUGA WILKES YADKIN AVERY CATAWBA GASTON CLEVELAND	US 52, US 74, US 311, US 321, US 421, NC 49, NC 105	NATIONAL HIGHWAY SYSTEM GUARDRAIL REHABILITATION. UPGRADE SUBSTANDARD GUARDRAIL, END TREATMENTS AND BRIDGE ANCHOR UNITS.		800		DESIGN CONSTRUCTION	NHS	800	FFY 04 FFY 05
R-4469	RANDOLPH CHATHAM WAKE DAVIDSON DAVIE STANLY CABARRUS MECKLENBURG	US 64	US 64, I-40 AT RALEIGH TO I-40 NEAR STATESVILLE AND NC 49. US 64 AT ASHEBORO TO CHARLOTTE. PILOT STUDY TO IDENTIFY MEASURES FOR CONTROLLING ACCESS AND OPTIMIZING INTERSECTION EFFICIENCY TO PROTECT TRAFFIC- CARRYING CAPACITY OF ROADWAY.				SCHEDULED FOR CORRIDOR PLANNING STUDY ONLY. (PRE-TIP PROJECT)			
R-2911	IREDELL ROWAN	US 70	SR 2318 IN STATESVILLE TO US 601 IN SALISBURY WIDEN TO MULT-LANES, PART ON NEW LOCATION.	19.7	108506	17606	DESIGN RIGHT-OF-WAY RIGHT-OF-WAY CONSTRUCTION CONSTRUCTION			IN PROGRESS PART IN ACQUISITION FFY 05 81667 FFY 04 05 09 4633 POST YEARS
R-2533	CABARRUS STANLY	NC 49	HARRISBURG TO YADKIN RIVER. WIDEN TO MULT-LANES.	29.3	166561	67517	DESIGN RIGHT-OF-WAY RIGHT-OF-WAY CONSTRUCTION CONSTRUCTION CONSTRUCTION PART UNDER CONSTRUCTION	NHS NHS NHS	1000 26644 71400	IN PROGRESS PART IN ACQUISITION FFY 09 10 FFY 04 10 POST YEARS
R-2410	CABARRUS STANLY	NC 73	WEST OF SR 2408 IN CONCORD TO ALBEMARLE. UPGRADE TWO LANE ROADWAY.	19.2	61506	6	RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	STP STP	15600 45600	POST YEARS POST YEARS

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CABARRUS-ROWAN URBAN AREA METROPOLITAN PLANNING ORGANIZATION

ID NO.	COUNTY	ROUTE/CITY	LOCATION AND DESCRIPTION	LENGTH (MI) (KM)	TOTAL EST. COST (THOU.)	PRIOR YRS. COST (THOU.)	WORK TYPE	FUNDING SOURCE	COST ESTIMATES (THOU.)	SCHEDULE (FISCAL YEARS)
R-4706	LINCOLN MECKLENBURG CABARRUS	NC 73	ACCESS MANAGEMENT STUDY.		280	280	STUDY IN PROGRESS			
R-4062	ROWAN	NC 152	I-85/US 601 INTERCHANGE TO RELOCATED US 52 (R-2903) NEAR ROCKWELL. UPGRADE FACILITY.	9.2	17730		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	STP STP	9530 8200	POST YEARS POST YEARS
R-2246	CABARRUS	NEW ROUTE	CONCORD-KANNAPOLIS, WESTSIDE BYPASS EXTENSION NC 49 TO SOUTH OF I-85. WIDEN TO FOUR LANES DIVIDED, SOME NEW LOCATION.	6.5	41374	11774	DESIGN RIGHT-OF-WAY RIGHT-OF-WAY CONSTRUCTION PART UNDER CONSTRUCTION	STP STP STP	4000 4400 21200	FFY 07 FFY 09 POST YEARS POST YEARS
U-3115AA	MECKLENBURG CABARRUS	CHARLOTTE CONCORD	INSTALL FIBER OPTIC COMMUNICATION CABLE, METROLINA REGIONAL TRANSPORTATION MANAGEMENT CENTER IN MECKLENBURG COUNTY TO THE SPEEDWAY CENTRAL CONTROL CENTER IN CABARRUS COUNTY.		1164	1164	UNDER CONSTRUCTION			
U-3803	ROWAN	CHINA GROVE	US 28A, REALIGN INTERSECTION OF NC 152 AND SR 1337.		800	200	DESIGN CONSTRUCTION	RR	600	IN PROGRESS FFY 04
U-3415	CABARRUS	CONCORD	SR 1384 (POPLAR TENT ROAD), SR 1445 (DERITA ROAD) TO US 29-601 BYPASS. WIDEN TO MULTI- LANES, REALIGN SR 1305 (PITTS SCHOOL ROAD) AND INSTALL TRAFFIC SIGNAL AT SR 1445. (COORDINATE WITH I-3803)	6.1	21580	1780	PLANNING DESIGN RIGHT-OF-WAY CONSTRUCTION CONSTRUCTION	STP STP STP	2000 7200 10800	IN PROGRESS FFY 04 FFY 06 09 FFY 08 POST YEARS
U-3828	CABARRUS	CONCORD	US 29-601, SR 1002 (CABARRUS AVENUE) TO SR 2000 (JACKSON PARK ROAD). SIGNAL COORDINATION.		1650		CONSTRUCTION UNFUNDED PROJECT	STP	1650	POST YEARS
U-2009	CABARRUS	KANNAPOLIS	WESTSIDE BYPASS, SOUTH OF I-85 TO SR 1616 (TUCKASEEGEE ROAD). MULTI-LANES ON NEW LOCATION.	6.8	53456	29656	CONSTRUCTION RIGHT-OF-WAY CONSTRUCTION PART COMPLETE	S S S	18000 1500 4300	SFY 04 POST YEARS POST YEARS
U-3440	CABARRUS	KANNAPOLIS	NC 3, PROPOSED WEST SIDE BYPASS (U-2009) TO SR 1691 (LOOP ROAD). WIDEN TO MULTI-LANES.	2.5	7000		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	STP STP	1800 5200	POST YEARS POST YEARS
U-4701	CABARRUS	KANNAPOLIS	REPLACEMENT OF AT-GRADE RAILROAD CROSSING AT WINECOFF SCHOOL ROAD WITH AN AT-GRADE CROSSING AT MOUNT OLIVET ROAD.		2230		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT - COORDINATE WITH U-4702	STP STP	330 1900	POST YEARS POST YEARS
U-4702	CABARRUS	KANNAPOLIS	SR 1766 (UNIVERSAL STREET)/SR 1625 (ROGERS LAKE ROAD). CONSTRUCT RAILROAD GRADE SEPARATION.		6800		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT - COORDINATE WITH U-4701	STP STP	1500 5300	POST YEARS POST YEARS

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ALL SCHEDULES SUBJECT TO AVAILABILITY OF FUNDS

CABARRUS-ROWAN URBAN AREA METROPOLITAN PLANNING ORGANIZATION

ID NO.	COUNTY	ROUTE/CITY	LOCATION AND DESCRIPTION	LENGTH (M) (KM)	TOTAL EST. COST (THOU.)	PRIOR YRS. COST (THOU.)	WORK TYPE	FUNDING SOURCE	COST ESTIMATES (THOU.)	SCHEDULE (FISCAL YEARS)
U-4416	ROWAN	LANDIS	CONSTRUCT GRADE SEPARATION AT RICE STREET OVER PIEDMONT HIGH SPEED RAIL CORRIDOR.		6970		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	STP STP	2670 4300	POST YEARS POST YEARS
U-3459	ROWAN	SALISBURY	SR 2541 (KLUMAC ROAD), CONSTRUCT A GRADE SEPARATION WITH THE NORTH CAROLINA RAILROAD.	0.4	11600	400	RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	RR RR	1500 9700	POST YEARS POST YEARS
U-3460	ROWAN	SALISBURY	SR 1002 (BRINGLE FERRY ROAD)/US 29-70 (MAIN STREET), FIVE LANE URBAN SECTION, GRADE SEPARATION OVER NORTH CAROLINA AND NORFOLK SOUTHERN RAILROADS AND AN ACCESS ROAD TO LONG STREET.	0.8	16700		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	STP STP	2600 14100	POST YEARS POST YEARS
U-3623	ROWAN	SALISBURY	NC 150, SR 1516 TO WEST OF GRANTS CREEK, WIDEN TO MULT-LANES.	3.0	9700		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	STP STP	900 8800	POST YEARS POST YEARS
U-3821	ROWAN	SALISBURY	JAKE ALEXANDER BOULEVARD AT HARRISON ROAD TO PEACH ORCHARD ROAD AT I-85, TWO LANES ON MULTI-LANE RIGHT OF WAY, NEW LOCATION.		12200		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	STP STP	800 11400	POST YEARS POST YEARS
U-3822	ROWAN	SPENCER	SR 2120 (LONG FERRY ROAD), GRADE SEPARATION AT SOUTHERN RAILWAY.		7500		RIGHT-OF-WAY CONSTRUCTION UNFUNDED PROJECT	STP STP	2100 5400	POST YEARS POST YEARS
B-4626	ROWAN DAVIDSON	NC 49 EBL	YADKIN RIVER AND WSSB RAILROAD, REHABILITATE DECK BRIDGE NO. 3		2200		CONSTRUCTION	FA	2200	FFY 08
B-4718	CABARRUS	NC 49	DUTCH BUFFALO CREEK, REPLACE BRIDGE NO. 103		1650		RIGHT-OF-WAY CONSTRUCTION	FA FA	150 1500	FFY 08 FFY 09
B-4255	ROWAN	NC 801	WITHROW CREEK, REPLACE BRIDGE NO. 28		1190	200	RIGHT-OF-WAY CONSTRUCTION	FA FA	90 900	FFY 05 FFY 06
B-4256	ROWAN DAVIE	NC 801	SOUTH YADKIN RIVER, REPLACE BRIDGE NO. 80		2970	300	RIGHT-OF-WAY CONSTRUCTION	FA FA	70 2600	FFY 04 FFY 05
B-3421	CABARRUS	SR 1002	SOUTHERN RAILWAY, REPLACE BRIDGE NO. 266		1650	220	RIGHT-OF-WAY CONSTRUCTION	FA FA	110 1320	FFY 04 FFY 05
B-3422	CABARRUS	SR 1002	THREE MILE BRANCH, REPLACE BRIDGE NO. 47		1805	1805	UNDER CONSTRUCTION			
B-4627	ROWAN	SR 1003	THIRD CREEK, REPLACE BRIDGE NO. 26		1240	250	RIGHT-OF-WAY CONSTRUCTION	NFA NFA	90 900	FFY 06 FFY 07
B-4257	ROWAN	SR 1004	CHURCH CREEK, REPLACE BRIDGE NO. 143		970	200	RIGHT-OF-WAY CONSTRUCTION	FA FA	70 700	FFY 05 FFY 06

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ALL SCHEDULES SUBJECT TO AVAILABILITY OF FUNDS

CABARRUS-ROWAN URBAN AREA METROPOLITAN PLANNING ORGANIZATION

ID NO.	COUNTY	ROUTE/CITY	LOCATION AND DESCRIPTION	LENGTH (MI) (KM)	TOTAL EST. COST (THOU.)	PRIOR YRS. COST (THOU.)	WORK TYPE	FUNDING SOURCE	COST ESTIMATES (THOU.)	SCHEDULE (FISCAL YEARS)
B-4808	ROWAN	SR 1004	SOUTH SECOND CREEK. REPLACE BRIDGE NO. 141		2750		RIGHT-OF-WAY CONSTRUCTION	NFA NFA	250 2500	FFY 08 FFY 08
B-4048	CABARRUS	SR 1121	CLEUR CREEK. REPLACE BRIDGE NO. 145 WITH CULVERT.		370	100	RIGHT-OF-WAY CONSTRUCTION	NFA NFA	20 250	FFY 05 FFY 08
B-3623	CABARRUS	SR 1136	REEDY CREEK. REPLACE BRIDGE NO. 176		1535	235	RIGHT-OF-WAY CONSTRUCTION	NFA	1300	IN ACQUISITION FFY 04
B-4049	CABARRUS	SR 1138	BLACK CREEK. REPLACE BRIDGE NO. 165		595	100	RIGHT-OF-WAY CONSTRUCTION	NFA NFA	45 450	FFY 05 FFY 08
B-4719	CABARRUS	SR 1138	REEDY CREEK. REPLACE BRIDGE NO. 163		660		RIGHT-OF-WAY CONSTRUCTION	NFA NFA	60 600	FFY 08 FFY 09
B-4809	ROWAN	SR 1308	LAKE FISHER. REPLACE BRIDGE NO. 221		2200		RIGHT-OF-WAY CONSTRUCTION	NFA NFA	200 2000	FFY 08 FFY 10
B-4449	CABARRUS	SR 1394	CODDLE CREEK. REPLACE BRIDGE NO. 2		1240	250	RIGHT-OF-WAY CONSTRUCTION	FA FA	90 900	FFY 08 FFY 07
B-4810	ROWAN	SR 1547	BACK CREEK. REPLACE BRIDGE NO. 12		825		RIGHT-OF-WAY CONSTRUCTION	NFA NFA	75 750	FFY 08 FFY 10
B-3424	CABARRUS	SR 1745	BRANCH IRISH BUFFALO CREEK. REPLACE BRIDGE NO. 264		705	180	CONSTRUCTION	FA	525	FFY 04
B-4628	ROWAN	SR 1759	BACK CREEK. REPLACE BRIDGE NO. 6		700	150	RIGHT-OF-WAY CONSTRUCTION	NFA NFA	50 500	FFY 06 FFY 07
B-4050	CABARRUS	SR 1778	IRISH BUFFALO CREEK. REPLACE BRIDGE NO. 30		1080	200	RIGHT-OF-WAY CONSTRUCTION	FA FA	80 800	FFY 05 FFY 08
B-3234	ROWAN	SR 1949	CREEK. REPLACE BRIDGE NO. 78.		465	135	RIGHT-OF-WAY CONSTRUCTION	NFA NFA	30 300	FFY 08 FFY 07
B-4629	ROWAN	SR 2048	SECOND CREEK. REPLACE BRIDGE NO. 25		1950	300	RIGHT-OF-WAY CONSTRUCTION	FA FA	150 1500	FFY 05 FFY 08
B-3236	ROWAN	SR 2200	SOUTHERN RAILWAY. REPLACE BRIDGE NO. 381		2840	2840	UNDER CONSTRUCTION			
B-4051	CABARRUS	SR 2408	BLACK RUN CREEK. REPLACE BRIDGE NO. 90 WITH CULVERT.		375	100	RIGHT-OF-WAY CONSTRUCTION	NFA NFA	25 250	FFY 05 FFY 08
B-4630	ROWAN	SR 2538	I-85/US 601. REPLACE BRIDGE NO. 111		880		RIGHT-OF-WAY CONSTRUCTION	FA FA	80 800	FFY 07 FFY 08
B-4720	CABARRUS	SR 2610	DUTCH BUFFALO CREEK. REPLACE BRIDGE NO. 113		550		RIGHT-OF-WAY CONSTRUCTION	NFA NFA	50 500	FFY 08 FFY 09

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CABARRUS-ROWAN URBAN AREA METROPOLITAN PLANNING ORGANIZATION

ID NO.	COUNTY	ROUTE/CITY	LOCATION AND DESCRIPTION	LENGTH (MI) (KM)	TOTAL EST. COST (THOU.)	PRIOR YRS. COST (THOU.)	WORK TYPE	FUNDING SOURCE	COST ESTIMATES (THOU.)	SCHEDULE (FISCAL YEARS)
B-3425	CABARRUS	SR 2635	LITTLE COLDWATER CREEK. REPLACE BRIDGE NO. 128		460	460	UNDER CONSTRUCTION			
B-3540	CABARRUS	KANNAPOLIS	MOUNT OLIVET ROAD OVER THREE MILE BRANCH. REPLACE BRIDGE NO. 44		885	555	CONSTRUCTION	NFAM	330	FFY 04
B-3541	CABARRUS	KANNAPOLIS	FAIRVIEW STREET OVER CHAMBERS BRANCH. REPLACE BRIDGE NO. 234		550	225	CONSTRUCTION	NFAM	325	FFY 04
B-3542	ROWAN	KANNAPOLIS	PUMP STATION ROAD OVER BAKERS CREEK BRANCH. REPLACE BRIDGE NO. 277		393	78	RIGHT-OF-WAY CONSTRUCTION	NFAM	315	IN ACQUISITION FFY 04
B-2085	ROWAN	SALISBURY	NORTH ELLIS STREET OVER SOUTHERN RAILWAY. REPLACE BRIDGE NO. 393		1537	112	RIGHT-OF-WAY CONSTRUCTION	NFAM NFAM	425 1000	FFY 04 FFY 05
B-2086	ROWAN	SALISBURY	EAST FISHER STREET OVER SOUTHERN RAILWAY. REPLACE BRIDGE NO. 138		1200		RIGHT-OF-WAY CONSTRUCTION	NFAM NFAM	300 900	FFY 06 FFY 07
W-4079	ROWAN	US 52	US 52 AND SR 2344 (SIDES ROAD)/SR 2383 (EASTVILLE DRIVE). WIDEN US 52 TO PROVIDE LEFT TURNS FOR BOTH DIRECTIONS OF TRAVEL.		82	82	UNDER CONSTRUCTION			
SI-4722	ROWAN	US 70	US 70 AND SR 1591 (PARK ROAD/MERIDIAN PLANT ENTRANCE). WIDEN US 70 TO PROVIDE LEFT TURN LANES ON BOTH APPROACHES AND RIGHT TURN LANE ON WEST APPROACH.		195	195	UNDER CONSTRUCTION			
P-3814	STATEWIDE	VARIOUS	CROSSING CONSOLIDATION PROJECTS AS IDENTIFIED IN SOUTH END SEHSRC TRAFFIC SEPARATION STUDY. RIGHT OF WAY TO BE ACQUIRED BY MUNICIPALITIES.		597	597	UNDER CONSTRUCTION			
P-2908	WAKE MECKLENBURG GUILFORD DURHAM NASH EDGECOMBE ROWAN CABARRUS WILSON ALAMANCE JOHNSTON	AMTRAK	CAPITAL AND OPERATIONS COST OF TRAIN 79/80 BETWEEN CHARLOTTE AND ROCKY MOUNT.		39857	17049	OPERATIONS IN PROGRESS	S(5)	22608	SFY 04 05 06 07 08 09 10

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CABARRUS-ROWAN URBAN AREA METROPOLITAN PLANNING ORGANIZATION

ID NO.	COUNTY	ROUTE/CITY	LOCATION AND DESCRIPTION	LENGTH (MI) (KM)	TOTAL EST. COST (THOU.)	PRIOR YRS. COST (THOU.)	WORK TYPE	FUNDING SOURCE	COST ESTIMATES (THOU.)	SCHEDULE (FISCAL YEARS)
P-2918	WAKE DURHAM ALAMANCE GUILFORD ROWAN CABARRUS MECKLENBURG	AMTRAK	TRAIN 73/74 OPERATIONS BETWEEN CHARLOTTE AND RALEIGH AND CAPITAL YARD MAINTENANCE FACILITY.		57940	25182	OPERATIONS OPERATIONS IN PROGRESS	S(5) T2001	12392 20366	SFY 04 05 06 07 08 09 10 FFY 04 05 06 07 08 09 10
E-4560	CABARRUS	CONCORD	CONSTRUCTION OF ROUNDABOUT LOCATED AT CABARRUS AVENUE/CASCADE DRIVE/OLD CHARLOTTE INTERSECTION.		158	158	UNDER CONSTRUCTION			
E-4560A	CABARRUS	CONCORD	CABARRUS AVENUE, "GATEWAY TO CENTER CITY". PHASE A-1, RIUNDAABOUT AT INTERSECTION OF CABARRUS AVENUE, OLD CHARLOTTE ROAD AND THE REALIGNED CASCADE DRIVE (PROJECT E-4560) TO WHITE STREET. PHASE A-2, WHITE STREET TO US 29 (CONCORD PARKWAY). STREETScape IMPROVEMENTS		2800	2800	UNDER CONSTRUCTION - TRANSPORTATION AND COMMUNITY AND SYSTEMS PRESERVATION GRANT			
E-3132	ROWAN	COUNTYWIDE	BICYCLE ROUTE MAPPING AND SIGNING.		30	30	IN PROGRESS			
E-3410	MONTGOMERY DAVIDSON ROWAN ANSON STANLY RANDOLPH RICHMOND	COUNTYWIDE	UWHARRIE LAKES REGION BICYCLE ROUTE MAPPING AND SIGNING.		94	94	IN PROGRESS			
E-4557	ROWAN	GRANITE QUARRY	CONSTRUCT SIDEWALK AND CURB AND GUTTER AND INSTALL LANDSCAPING AND BIKE RACK ON BROWN STREET.		67	67	UNDER CONSTRUCTION			
E-4563	CABARRUS	KANNAPOLIS	INSTALL SIDEWALK, PEDESTRIAN FEATURES AND LANDSCAPING ALONG OAKWOOD AVENUE.		206	206	UNDER CONSTRUCTION			
E-4792	ROWAN	KANNAPOLIS	CONSTRUCT A TEN-FOOT GREENWAY AND PEDESTRIAN WALKWAY LINKING BAKER'S CREEK PARK TO THE CBD.		67		CONSTRUCTION CONSTRUCTION	STP O	54 13	FFY 04 FFY 04
P-4010	CABARRUS	KANNAPOLIS	STATION CONSTRUCTION.		2400	2400	UNDER CONSTRUCTION			
FS-0309A	ROWAN	LANDIS	EXTENSION OF SR 1211 (KIMBALL ROAD), SR 2739 (MAIN STREET) TO SR 1221 (BOSTIAN ROAD). CONSTRUCT CONNECTOR ON NEW LOCATION.	0.7			SCHEDULED FOR FEASIBILITY STUDY			

* INDICATES INTRASTATE PROJECT

ALL SCHEDULES SUBJECT TO AVAILABILITY OF FUNDS

CABARRUS-ROWAN URBAN AREA METROPOLITAN PLANNING ORGANIZATION

ID NO.	COUNTY	ROUTE/CITY	LOCATION AND DESCRIPTION	LENGTH (MI) (KM)	TOTAL EST. COST (THOU.)	PRIOR YRS. COST (THOU.)	WORK TYPE	FUNDING SOURCE	COST ESTIMATES (THOU.)	SCHEDULE (FISCAL YEARS)
E-4564	CABARRUS	MOUNT PLEASANT	CONSTRUCT SIDEWALKS ALONG SOUTH MAIN STREET FROM LEE STREET TO OLDENBURG DRIVE.		50	50	UNDER CONSTRUCTION			
E-3308	ROWAN	SALISBURY	GRANTS CREEK GREENWAY BICYCLE TRAIL, PHASE 2. ALONG PRESCOT DRIVE TO WEST INNIS STREET AND FROM WEST INNIS STREET TO STATESVILLE BOULEVARD.	1.2	300	300	IN PROGRESS			
E-3822	ROWAN	SALISBURY	NORTH CAROLINA TRANSPORTATION MUSEUM BACK SHOP PROJECT.		2756	2756	IN PROGRESS			
E-4403	ROWAN	SALISBURY	KELSEY-SCOTT PARK/YMCA CONNECTOR.		400		CONSTRUCTION	STP	400	FFY 04
E-4713	ROWAN	SALISBURY	KELSEY-SCOTT PARK - CATAWBA COLLEGE GREENWAY CONNECTOR		400		CONSTRUCTION	STP	400	FFY 05
P-2925	ROWAN	SALISBURY	STATION REHABILITATION.		2287	2287	PHASE 1 - COMPLETE, PHASE 2 - PENDING			
E-4791	ROWAN	SPENCER	RELOCATION OF DIESEL LOCOMOTIVE #8133 AT THE NORTH CAROLINA TRANSPORTATION MUSEUM.		102		CONSTRUCTION CONSTRUCTION	STP O	85 17	FFY 04 FFY 04

Exempt projects from CR MPO 2004-2010 TIP

TIP - #	PROJECT	PROJECT DESCRIPTION	TOTAL COST (THOUSANDS)	FUNDING SOURCE	EXEMPT	REASON FOR EXEMPTION (40 CFR 93.126 Table 2 & 40 CFR 93.127 Table 3)
I-4736	I-85	Pavement Rehabilitation	1700.0	IM	Yes	Pavement rehabilitation (Table 2)
I-4718	I-85	Pavement Rehabilitation	950.0	IM	Yes	Pavement rehabilitation (Table 2)
R-4413	US 52, US 74, NC 49	National highway system guardrail	340.0	NHS	Yes	Guardrail project (Table 2)
R-4414	US 52, US 74, NC 49	National highway system guardrail	800.0	NHS	Yes	Guardrail project (Table 2)
R-4706	NC 73	Access Management Study	280.0		Yes	Planning study (Table 2)
U-3115AA	Fiber optic communication cable	Fiber to the Speedway Central Control Center	1164.0		Yes	Traffic Control Devices (Table 2)
B-4718	NC 49	Dutch Buffalo Creek Bridge	1650.0	FA	Yes	Bridge replacement (Table 2)
B-3421	Southern Railway	Bridge no. 266	1650.0	FA	Yes	Bridge replacement (Table 2)
B-3422	Three Mile Branch	Bridge no. 47	1805.0		Yes	Bridge replacement (Table 2)
B-4048	Cleur Creek	Bridge no. 145	370.0	NFA	Yes	Bridge replacement (Table 2)
B-3623	Reedy Creek	Bridge no. 176	1535.0	NFA	Yes	Bridge replacement (Table 2)
B-4049	Black Creek	Bridge no. 165	595.0	NFA	Yes	Bridge replacement (Table 2)
B-4719	Reedy Creek	Bridge no. 163	660.0	NFA	Yes	Bridge replacement (Table 2)
B-4449	Coddle Creek	Bridge no. 2	1240.0	FA	Yes	Bridge replacement (Table 2)
B-3424	Branch Irish Buffalo Creek	Bridge no. 264	705.0	FA	Yes	Bridge replacement (Table 2)
B-4050	Irish Buffalo Creek	Bridge no. 30	1080.0	FA	Yes	Bridge replacement (Table 2)
B-4051	Black Run Creek	Bridge no. 90	375.0	NFA	Yes	Bridge replacement (Table 2)
B-4720	Dutch Buffalo Creek	Bridge no. 113	550.0	NFA	Yes	Bridge replacement (Table 2)
B-3425	Little Coldwater Creek	Bridge no. 128	460.0		Yes	Bridge replacement (Table 2)
B-3540	Mount Olivet Road	Bridge no. 44	885.0	NFAM	Yes	Bridge replacement (Table 2)
B-3541	Fairview Street	Bridge no. 234	550.0	NFAM	Yes	Bridge replacement (Table 2)
E-4560	Cabarrus Avenue	Roundabout at intersection of Old Charlotte Road	158.0		Yes	Transportation Enhancement (Table 2)
E-4560A	Cabarrus Avenue	Streetscape improvements	2800.0	TCSP	Yes	Transportation Enhancement (Table 2)
E-4563	Oakwood Avenue	Sidewalk and landscaping	206.0		Yes	Transportation Enhancement (Table 2)
E-4564	South Main Street and Lee Street	Sidewalks	50.0		Yes	Transportation Enhancement (Table 2)

P-4010	Kannapolis Train Station	Station construction	2400.0		Yes	Mass Transit (Table 2)
P-2925	Salisbury Train Station	Station rehabilitation	2267.0		Yes	Mass Transit (Table 2)
TG-4807	FTA Section 5307 Funds - City of Concord	Routine Capital Items - Passenger amenities, computers, office equipment	108.0	FTA 5307	Yes	Mass Transit (Table 2)
TG-4808	FTA Section 5307 Funds - City of Concord	Routine Capital Items - Passenger amenities	37.0	FTA 5307	Yes	Mass Transit (Table 2)
TO-4754	FTA Section 5307 Funds - City of Concord	Operating Assistance	1506.0	FTA 5307	Yes	Mass Transit (Table 2)
TO-4755	FTA Section 5307 Funds - City of Concord	Operating Assistance	1578.0	FTA 5307	Yes	Mass Transit (Table 2)
TO-4756	FTA Section 5307 Funds - City of Concord	Operating Assistance	1652.0	FTA 5307	Yes	Mass Transit (Table 2)
TO-4757	FTA Section 5307 Funds - City of Concord	Operating Assistance	1731.0	FTA 5307	Yes	Mass Transit (Table 2)
TO-4758	FTA Section 5307 Funds - City of Concord	Operating Assistance	1813.0	FTA 5307	Yes	Mass Transit (Table 2)
TO-4759	FTA Section 5307 Funds - City of Concord	Operating Assistance	1899.0	FTA 5307	Yes	Mass Transit (Table 2)
TO-4760	FTA Section 5307 Funds - City of Concord	Operating Assistance	1989.0	FTA 5307	Yes	Mass Transit (Table 2)
TP-4746	Section 5303 - City of Concord	MPO Planning Program	24.0	FTA 5303	Yes	Planning Activities (Table 2)
	FTA Section 5307 - City of Concord	Transit Planning	50.0	FTA 5307	Yes	Planning Activities (Table 2)
U-3803	US 29A	Intersection improvement with NC 152	800.0	RR	Yes	Safety improvement (Table 2)
B-4626	Yadkin River	Deck Bridge No. 3	2200.0	FA	Yes	Bridge replacement (Table 2)
B-4255	Withrow Creek	Bridge No. 28	1190.0	FA	Yes	Bridge replacement (Table 2)
B-4256	South Yadkin River	Bridge No. 80	2970.0	FA	Yes	Bridge replacement (Table 2)
B-4627	Third Creek	Bridge No. 26	1240.0	NFA	Yes	Bridge replacement (Table 2)
B-4257	Church Creek	Bridge No. 143	970.0	FA	Yes	Bridge replacement (Table 2)
B-4808	South Second Creek	Bridge No. 141	2750.0	NFA	Yes	Bridge replacement (Table 2)
B-4809	Lake Fisher	Bridge No. 221	2200.0	NFA	Yes	Bridge replacement (Table 2)
B-4810	Back Creek	Bridge No. 12	825.0	NFA	Yes	Bridge replacement (Table 2)
B-4628	Back Creek	Bridge No. 6	700.0	NFA	Yes	Bridge replacement (Table 2)
B-3234	Creek	Bridge No. 78	465.0	NFA	Yes	Bridge replacement (Table 2)
B-4629	Second Creek	Bridge No. 25	1950.0	FA	Yes	Bridge replacement (Table 2)
B-3236	Southern Railway	Bridge No. 381	2840.0		Yes	Bridge replacement (Table 2)

B-4630	I-85/US 601	Bridge No. 111	880.0	FA	Yes	Bridge replacement (Table 2)
B-3542	Pump Station Road	Bridge No. 277	393.0	NFAM	Yes	Bridge replacement (Table 2)
B-2085	North Ellis Street	Bridge No. 393	1537.0	NFAM	Yes	Bridge replacement (Table 2)
B-2086	East Fisher Street	Bridge No. 138	1200.0	NFAM	Yes	Bridge replacement (Table 2)
E-3132	Bicycle Route Mapping and Signs		30.0		Yes	Transportation Enhancement (Table 2)
E-3410	Uwharrie Lakes Region	Bicycle Route Mapping and Signs	94.0		Yes	Transportation Enhancement (Table 2)
E-4557	Brown Street	Sidewalk, landscaping, and bike rack	67.0		Yes	Transportation Enhancement (Table 2)
E-4792	Baker's Creek Park	Greenway and pedestrian walkway	67.0	STP	Yes	Transportation Enhancement (Table 2)
E-3308	Grant's Creek Greenway	Bicycle Trail Phase 2	300.0		Yes	Transportation Enhancement (Table 2)
E-4403	Kelsey-Scott Park/YMCA connector		400.0	STP	Yes	Transportation Enhancement (Table 2)
E-4713	Kelsey-Scott Park-Catawba College	Greenway connector	400.0	STP	Yes	Transportation Enhancement (Table 2)
W-4079	US 52	Left Turn Lanes	82.0		Yes	Hazard elimination (Table 2)
SI-4722	US 70	Left and Right Turn Lanes	195.0		Yes	Hazard elimination (Table 2)
TO-4768	FTA Section 5311 Funds - City of Salisbury	Operating Assistance for less than 50k population	505.0	FTA 5311	Yes	Mass Transit (Table 2)
TO-4769	FTA Section 5311 Funds - City of Salisbury	Operating Assistance for less than 50k population	505.0	FTA 5311	Yes	Mass Transit (Table 2)
TO-4770	FTA Section 5311 Funds - City of Salisbury	Operating Assistance for less than 50k population	505.0	FTA 5311	Yes	Mass Transit (Table 2)
TO-4771	FTA Section 5311 Funds - City of Salisbury	Operating Assistance for less than 50k population	505.0	FTA 5311	Yes	Mass Transit (Table 2)
TO-4772	FTA Section 5311 Funds - City of Salisbury	Operating Assistance for less than 50k population	505.0	FTA 5311	Yes	Mass Transit (Table 2)
TO-4773	FTA Section 5311 Funds - City of Salisbury	Operating Assistance for less than 50k population	505.0	FTA 5311	Yes	Mass Transit (Table 2)
TO-4774	FTA Section 5311 Funds - City of Salisbury	Operating Assistance for less than 50k population	505.0	FTA 5311	Yes	Mass Transit (Table 2)
04-CT-037	FTA Section 5311 Funds - Rowan County	Administrative Assistance	124.8	FTA 5311	Yes	Mass Transit (Table 2)
05-CT-037	FTA Section 5311 Funds - Rowan County	Administrative Assistance	131.8	FTA 5311	Yes	Mass Transit (Table 2)
05-CT-037	FTA Section 5311 Funds - Rowan County	5 Replacement Vehicles	187.1	FTA 5311	Yes	Mass Transit (Table 2)

Total \$ 70,335.7

Appendix F, Part 2 -- GUAMPO

Table of 2004-2010 TIP.

Map Listing	Facility Name	Segment From	Segment To	Length (miles)	2004 Number of Lanes	Future Number of Lanes	2030 LRTP Completion Year	Funded Completion Year	2004 Cost Estimates	TIP ID	Regionally Sig.	Functional Class	Exempt? **	Funding Source	Seg. ID	
A-1	NC 274 Widening (Phase 2)	Maine Avenue (Bessemer City)	NC 275 (Dallas-Bessemer City Hwy)	1.4	2	5	2010	2005	\$3,950,000	U-3405	Y	3	N	F/S	F-1	
A-2	NC 274 Widening (Phase 1)	NC 275 (Dallas-Bessemer City Hwy)	US 29/74 (Franklin Blvd)	2.8	2	5	2010	2005	\$11,200,000	U-2408	Y	3	N	F/S	F-2	
A-3	NC 273 (Planning, Design, ROW)	Catawba Drive	Highland Street	1	2	5	2010	2010	\$3,650,000	U-3633	Y	3	N	F/S	F-3	
A-4	*NC 16 (New Alignment)	NC 16 (south of Lucia)	SR 1895 (Catawba County)	1.7	0	4	2010	2007	\$6,461,000	R-2206	Y	3	N	F/S	F-5	
2010 Totals				6.9					\$25,261,000							

* NC 16 project, 7% of the entire project is within the Gaston Urban Area MPO, the total project mileage is 16.9 and cost is \$144,183,000

Funding Source:	
F/S refers to federal and state funding sources	
L/B refers to local funding and bond referendums	

Functional Classification:	
1	Interstate
2	Freeway
3	Principal Arterial
4	Minor Arterial
5	Collector

Appendix F, Part 3 -- MUMPO

Conformity Analysis and Determination Report:
Demonstrating conformance of the
Mecklenburg-Union Metropolitan Planning
Organization
FY 2004-2010 Transportation Improvement Program
with the provisions of the
North Carolina State Implementation Plan
and the
Transportation Equity Act for the 21st Century

D R A F T
April, 2005

Prepared by:

The Charlotte Department of Transportation as an agent of the
Mecklenburg-Union Metropolitan Planning Organization

In cooperation with:

The North Carolina Department of Environment and Natural Resources
Division of Air Quality

The North Carolina Department of Transportation
Statewide Planning Branch

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1.0 Introduction

The purpose of this report is to comply with the provisions of the Clean Air Act Amendments of 1990 (CAAA) and the Transportation Equity Act for the 21st Century (TEA-21). It demonstrates that the financially constrained LRTP for the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) eliminates or reduces violation of the national ambient air quality standards (NAAQS) in Mecklenburg County and accomplishes the intent of the North Carolina State Implementation Plan (SIP). This conformity determination is based on a regional emissions analysis that uses the roadway and transit transportation networks approved by the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) for the 2030 Long Range Transportation Plan (LRTP) and the emissions factors developed by the North Carolina Department of Environment and Natural Resources (NCDENR).

All Federally funded projects in areas designated by the United States Environmental Protection Agency (USEPA) as air quality nonattainment or maintenance areas must come from a conforming LRTP and metropolitan transportation improvement program (MTIP). The MUMPO is required by 23 CFR 450 and 40 CFR 51 and 93 to make a conformity determination on any newly adopted or amended fiscally-constrained LRTP and MTIP. In addition, the United States Department of Transportation (USDOT), specifically, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), must make a conformity determination on the MPO LRTP and the MTIP in all nonattainment and maintenance areas.

The Mecklenburg-Union MPO presents this report as a demonstration that the 2030 LRTP is consistent with Section 176(c) of the Clean Air Act, the SIP, the Transportation Equity Act for the 21st Century (TEA-21), and 40 CFR Parts 51 and 93. This conformity demonstration is documented by MUMPO in the report entitled: *Conformity Analysis and Determination Report: Demonstrating Conformance of the Mecklenburg-Union Metropolitan Planning Organization 2030 Long Range Transportation Plan with the provisions of the North Carolina State Implementation Plan and the Transportation Equity Act for the 21st Century*. This report includes a regional emissions budget test comparison prepared for the *MUMPO 2030 LRTP* which demonstrated that emissions in each of the analysis years of the Long Range Plan (2010, 2020 and 2030) are less than the motor vehicle emissions budgets established by the SIP and approved by USEPA for the corresponding year.

The project list in the MTIP for Fiscal Years 2004 - 2010 was developed by the North Carolina Department of Transportation (NCDOT) and MUMPO and is a subset of the conforming 2030 LRTP.

2.0 Relationship of the Long Range Plan and TIP

In accordance with 40 CFR Parts 51 and 93, no further regional emissions analysis is required for the MTIP if the MTIP is a subset of LRTP and if the following conditions are met:

- The MTIP is consistent with the conforming LRTP such that regional emissions analysis performed on the LRTP applies to the TIP;
- The MTIP contains all projects which must be started in the MTIP's time frame to implement the highway and transit system envisioned by the LRTP in each of the horizon years;
- All Federally funded MTIP projects which are regionally significant are part of the specific highway or transit system envisioned in the LRTP's horizon years; and
- The design concept and scope of each regionally significant project identified in the MTIP is not significantly different from that described in the LRTP.

This report documents that the MTIP for Fiscal Years 2004-2006 (the first three years of the MTIP is all that is recognized by USDOT) is a subset of the *MUMPO 2030 LRTP*. The *MUMPO 2030 LRTP* is financially constrained pursuant to 23 CFR Part 450 Subpart C. This conformity determination is based on the most recent estimates of emissions and the most recent planning assumptions available (including population, employment, travel, and congestion estimates) as determined by MUMPO. It has been demonstrated in the *Conformity Analysis and Determination Report: Demonstrating Conformance of the Mecklenburg-Union Metropolitan Planning Organization 2030 Long Range Transportation Plan with the provisions of the North Carolina State Implementation Plan and the Transportation Equity Act for the 21st Century* that this LRTP conforms to the purpose of the SIP for Mecklenburg County. As a subset of this LRTP, no further regional emissions analysis is required for this TIP.

2.1 Project timing in Long Range Plan

The MUMPO 2030 LRTP project list was approved in 2005. This list is shown in Appendix D of the *Conformity Analysis and Determination Report: Demonstrating Conformance of the Mecklenburg-Union Metropolitan Planning Organization 2030 Long Range Transportation Plan with the provisions of the North Carolina State Implementation Plan and the Transportation Equity Act for the 21st Century* dated March 14, 2005 and approved by USDOT on April, 2005.

3.0 Public Involvement

Public review of this report was handled in accordance with the MUMPO public participation policy for Transportation Plans. It was available for public comment for a period of 30 days between March 14, 2005 and April 12, 2005. Comments from the public participation process are incorporated in the final *Conformity Analysis and Determination Report: Demonstrating conformance of the Mecklenburg-Union Metropolitan Planning Organization FY 2004-2010 Transportation Improvement Program with the provisions of the North Carolina State Implementation Plan and the Transportation Equity Act for the 21st Century*. The final report including comments was presented for a conformity determination by MUMPO and USDOT. Comments received from the public participation process are found in Appendix B.

4.0 Interagency Consultation

An interagency consultation meeting via email was initiated on February 20, 2003 to assist in the development of the *Conformity Analysis and Determination Report: Demonstrating conformance of the Mecklenburg-Union Metropolitan Planning Organization FY 2004-2010 Transportation Improvement Program with the provisions of the North Carolina State Implementation Plan and the Transportation Equity Act for the 21st Century*. Additionally, an interagency consultation meeting with the agencies was held on April 7, 2003 in the Board Room at the NCDOT Building in Raleigh, NC to review the State and Federal Comments received via email. The summary of the responses to these questions are listed in Appendix A and C.

The draft FY 2004-2010 MTIP and Conformity Determination Report was reviewed by NCDENR as specified in the North Carolina Administrative Code (*North Carolina Administrative Code Title 15A Subchapter 2D Sections .2001 - .2003*). DENR's comments on the draft report are included in Appendix A. A review copy was also provided to FHWA, FTA, USEPA, NCDOT and Mecklenburg County Air Quality via email. The Federal Agency comments are listed in Appendix N and the other parties' comments are listed in Appendix J with responses that have been incorporated into the final report.

5.0 Finding of Conformity

The Mecklenburg-Union Metropolitan Planning Organization finds that the FY 2004-2010 MTIP is a subset of the MUMPO 2030 LRTP. The MTIP meets the following conditions and conforms to the purpose of the State Implementation Plan for maintenance of the National Ambient Air Quality Standards (NAAQS):

- The MTIP is consistent with the conforming LRTP such that regional emissions analysis performed on the LRTP applies to the MTIP;
- The MTIP contains all projects which must be started in the MTIP's time frame to implement the highway and transit system envisioned by the LRTP in each of the horizon years;
- All Federally funded MTIP projects which are regionally significant are part of the specific highway or transit system envisioned in the LRTP's horizon years; and
- The design concept and scope of each regionally significant project identified in the MTIP are not significantly different from those described in the LRTP.

Appendix O contains the MUMPO finding of conformity.

Table 1: Table of projects included in the FY 2004-2010 MTIP. (FY 2004-2006 are the only years that the USDOT conformity finding applies to.)

Index	NCDOT PROJECT ID	Project Phase Programmed FY 2005-2007	PROJECT	PROJECT DESCRIPTION	TOTAL COST (MILLIONS)	FUNDING SOURCE	REGIONALLY SIGNIFICANT	FUNCTIONAL CLASSIFICATION
7		Pln, Dsn, ROW	Beatties Ford Rd.	Widen to 4 lanes, median, wosl (Median Capps Hill Mine Rd. to Sunset Rd.)	5.5	CI	No	Minor Arterial
9		Dsn, ROW, Const	US 521 (Billy Graham Parkway)	Reconstruct NE Interchange Quadrant with US 29-74, Wilkinson Blvd.	5.5	CI	No	Local
13		Dsn, ROW, Const	Cindy Lane Extension	New 2 lane Road w/ bike lanes (Statesville Ave. to Nevin Road)	5.8	CI	No	Local
31		Construction	Hickory Grove Road	Widen to 4 lanes (Shamrock Dr. to Highland Ave.)	8.9	CI	No	Local/Major Collector
47		Pln, Dsn, ROW, Const	Idlewild Rd.	Widen to 4 lanes, Median, wosl (Piney Grove Rd. to Drifter Drive)	8.7	CI	No	Minor Arterial
67	U-3411	Dsn, ROW, Const	NC 160 (West Blvd Relocation)	Widen to 4 lanes (US 521, Billy Graham Parkway to Steele Creek Rd.), median, bike lanes	4.0	City/State	Yes	Minor Arterial
71		Dsn, ROW, Const	NC 27 (Freedom Dr)	Widen to 4 lanes (Edgewood Drive to Fred D. Alexander Boulevard)	23.4	CI	Yes	Principal Arterial
74	R-2420C	Dsn, ROW, Const	City Blvd	4 lanes (US 29, University City Blvd - I-85)	25.5	CI	Yes	Minor Arterial
82		Planning & Design	Nevin Rd Ext	New 2 lane Road w/ Bike Lanes (Sugar Creek Rd. to Mallard Creek Rd.)	2.5	CI	No	Local
93		Planning & Design	Rea Rd.	Widen 4 lanes, median & Bike Lanes (Colony Rd. to NC 51 (Pineville-Matthews Rd.))	7.0	CI	No	Major Collector
115		Pln, Dsn, ROW	US 29-74 (Wilkinson Blvd.)	Widen to 6 lanes (Little Rock Rd - City Limits)	3.0	CI	Yes	Principal Arterial
131	U-3321	Planning	Garden Parkway	New Route, I-85 West of Gastonia to I-485 in Mecklenburg County. Multilanes on new location.	55.1	FEDERAL /STATE	Yes	Freeway/Expressway
202	I-3311A	Design Build, Const	I-77	Widening (6) + HOV accommodations (NC16, Brookshire Fwy to I-485)	19.3	STATE	Yes	Interstate
203	I-3803A	Design Build, Const	I-85	Widen to 6-8 lanes (US 29/NC 49 Connector - Cabarrus, Co)	33.4	STATE	Yes	Interstate
204	R-211	Design, ROW	I-485/Weddington Rd	Interchange	10.7	STATE	Yes	Freeway/Expressway

								y
206	R-2123	Dsn, Const	I-485	Eastern Outer Loop 4-6 lanes (US 74 East - I-85 North)	252.4	STATE	Yes	Freeway/Expressway
207	R-2248	Const	I-485	Western Outer Loop 6 lanes (Arrowood Road. - NC 115, Old Statesville Rd.)	415.3	STATE	Yes	Freeway/Expressway
314	R-2555	ROW, Const	Catawba Ave (SR 2697)	Widen to 5 lanes (NC 73 - SR 2195, Torrence Chapel Rd.)	14.9	STATE	Yes	Minor Arterial
271	R-3329	Pln, Dsn, ROW	US 74 (New Route)	Multi-Lane Freeway (Monroe Bypass, Union Co. - Charlotte Outer Loop) Part outside Maintenance Area.	101.7	STATE	Yes	Freeway/Expressway
212	U-203	Dsn, ROW, Const	Airport Entrance	Little Rock Rd. Ext. (I-85 - Charlotte/Douglas International Airport)	36.3	STATE	Yes	Freeway/Expressway
213	U-209	Const	US 74	Widen to Multi-Lane Expressway & HOV (I-277, Brookshire Freeway - NC 24-27, Albemarle Rd.) Part Complete	139.3	STATE	Yes	Freeway/Expressway
215	U-2506	Const	Rea Rd. Ext.	4 lanes (Southern Outer Loop, I-485 - NC 16, Union Co.) Part outside Maintenance Area.	15.3	STATE	No	Collector
217	U-2507	Dsn, ROW, Const	Mallard Creek Rd. Relocation	4 lane road part on new location, Mallard Crk.. Rd. to Graham St.	12.4	FEDERAL /STATE	Yes	Minor Arterial
218	U-2508C	Const	Mallard Ck. Ch. Rd.	4 lanes (US 29, N. Tryon St to NC 49, University City Blvd)	7.7	STATE	Yes	Minor Arterial
220	U-2510A	ROW, Const	NC 16 (Providence Rd.)	Widen to 4 lanes (Southern Outer Loop, I-485 - Rea Rd. Ext., Union Co.) Part outside Maintenance Area.	16.4	STATE	Yes	Minor Arterial
221	U-2704	Pln, Dsn	US 29-74 (Wilkinson Blvd.)	US 29-74 / US 521 Add NW Quadrant Ramps	6.1	STATE	No	Local
225	U-3411	Construction	NC 160 (West Blvd)	4 lane connector to I-485, Western Outer Loop	2.2	STATE/CI	Yes	Principal Arterial
228	U-3447	Pln, Dsn	NC 51	Widen to 4 lanes (South Carolina State Line - Downs Circle, SR 3645)	3.6	STATE	Yes	Minor Arterial
229	U-3603	Dsn, ROW	NC 24-27 (Albemarle Rd)	Add 1 Outbound Lane (Pierson Dr - Reddman Square Shopping Ctr)	1.8	STATE	Yes	Principal Arterial

236	B-3004	Const	Bridge Replacement & Widening	Widen Bridge # 23 on York Road (NC 49) to 4 lanes over the Catawba River (Joint Project with South Carolina)	14.3	STATE	Yes	Minor Arterial
236	U-2512	Const	NC 49 (York Rd.)	Widen to 5 lanes (Tyvola Rd. to Catawba River)	48.2	STATE	Yes	Principal/Minor Arterial
242	R-2248	Dsn, ROW, Const	I-485	Western Outer Loop 6 lanes (NC 16, Brookshire Blvd. to I-85 North)	252.4	STATE	Yes	Principal Arterial
307	U-4401	Dsn, ROW, Const	Reedy Creek Rd.	Realign intersection of Reedy Creek Road and Harrisburg Road to Improve I-485 Interchange efficiency and safety	3.0	STATE	Yes	Collector
317		Design, ROW, Const.	Lawyers Rd. Ext	Extend Lawyers Rd. Ext. (2 lanes) from Albermarle Rd. to Harris Blvd.	1.5	CI	No	Local
511	TD-4704	Pln, Dsn, ROW, Const	Park and Ride Lots	Implement improvements, expansions, and construction of new Park and Ride Lots as identified in the 2025 LRTP page 5-19.	17.1	MTC/ STATE/ FEDERAL	No	N/A
	TD-4736	Pln, Dsn, ROW, Const	Charlotte Multi-modal Center	Charlotte Multi-modal Center - Plan, design, right-of-way acquisition and construction.	3.0	MTC/ STATE/ FEDERAL	Yes	N/A
512	TE-4702	Pln, Dsn, ROW, Const	South Corridor Transitway	South Corridor Rapid Transit Line.	426.8	MTC/ STATE/ FEDERAL	Yes	N/A
513	TE-4701	Pln, Dsn, ROW	North Corridor Transitway	North Corridor Rapid Transit Line.	178.1	MTC/ STATE/ FEDERAL	Yes	N/A
514	TE-4710	Pln, Dsn, ROW	Northeast Corridor Transitway	Northeast Corridor Transitway (Ext. of South Corridor)	144.1	MTC/ STATE/ FEDERAL	Yes	N/A
	TE-4711	Pln, Dsn, ROW, Const	Streetcar and Center City Corridor	Streetcar and Center City Corridor - Plan, design, right-of-way acquisition and construction	171.7	MTC/ STATE/ FEDERAL	No	N/A
515 & 516	TE-4703	Pln, Dsn, ROW	US 74 Transitway (previously Southeast & West Corridors)	US 74 Corridor Rapid Transit Line.	138.6	MTC/ STATE/ FEDERAL	Yes	N/A

701	B-3003	Const	Bridge Replacement & Widening	Bridge # 108 on Graham Street (US 29-NC 49) over Norfolk Southern Railroad	3.9	STATE	Yes	Principal Arterial
702	I-4041	Const	I-485	Revise Interchange with NC 16 (Providence Road) to add Loops	3.0	STATE	Yes	Freeway/Expressway
703	P-3800	ROW	High Speed Rail	Track and Station ROW Acquisition	22.7	STATE	Yes	N/A
807	P-3819	Planning	Southeast High Speed Rail Corridor	This project funds the planning and design of the Southeast High Speed Rail Corridor between Charlotte and the Virginia state line.	6.3	STATE	Yes	N/A
124 & 126	U-209B	Pln, Dsn, ROW	US 74	Widen to Multi-Lane Expressway & HOV (NC 24-27, Albemarle Rd. to Idlewild Road)	108.4	STATE	Yes	Principal Arterial

Total 2786.6

Legend

Cr = Cornelius

Mt = Matthews

Cl = Charlotte

MH = Mint Hill

Dv =

Davidson

Pn = Pineville

Hn = Huntersville

Un = Union County

Table 2: Table of exempt projects in the FY 2004-2010 MTIP. (FY 2004-2006 are the only years that the USDOT conformity finding applies to.)

Index	NCDOT PROJE CT ID	PROJECT PHASE PROGRAMMED FY 2005-2007	PROJECT	PROJECT DESCRIPTION	TOTAL COST (MILLIONS)	FUNDING SOURCE	EXEMPT	REASON FOR EXEMPTION (40 CFR 93.126 Table 2 & 40 CFR 93.127 Table 3)
44		Dsn, ROW, Const	Morris Field Drive	Widen to add a Median and Bike Lanes (Billy Graham Parkway, US 521 to Railroad)	6.5	CI	Yes	Median Project (Table 2, Safety)
119		Dsn, ROW, Const	US 521 (South Blvd)	Widen to Add Median (Tyvola Rd - Archdale Rd)	3.3	CI	Yes	Median Project (Table 2, Safety)
214	U-2100	Dsn, ROW, Const	US 521	South Blvd (US 521) Woodlawn Rd. Intersection Revision	3.1	STATE/CI	Yes	Hazard elimination project (Table 2)
	R-4413	Const	NHS Guardrail	National Highway System Guardrail Rehabilitation on US 74, NC 49. Upgrade substandard guardrail, end treatments and bridge anchor units.	0.3	FEDERAL/ STATE	Yes	Safety Improvement Program (Table 2)
300	I-4048	Const	I-85 Weight Station (Mile Post 27)	Safety Improvements and Scale Replacement	0.6	FEDERAL/ STATE	Yes	Truck size and weight inspection stations (Table 3)
302	U-4426	Const	Mallard Creek Church Rd	Install Signal System from Senator Royal Place to Mallard Creek Church Rd.	0.1	STATE	Yes	§93 CFR 128
303	E-3809	Const	Greenway	Irwin Creek Greenway, Irwin Ave Elementary School to Wesley Heights Bikeway	0.1	FEDERAL/ STATE	Yes	Bicycle and pedestrian facilities (Table 2)
304	E-4404	Const	Weddington Road Bicycle Improvements	Siskey YMCA to Beatty Park	0.3	FEDERAL/ STATE	Yes	Bicycle and pedestrian facilities (Table 2)
305	E-4562	Const	Matthews-Mint Hill Rd	Streetscaping Improvements	0.4	FEDERAL/ Mint Hill	Yes	Transportation enhancement activities (Table 2)
306	E-4559	Const	Bike Lanes	Construct paved shoulders along Davidson-Concord Rd to the intersection of Rocky River Greenway, Phase I.	0.3	FEDERAL/ LOCAL	Yes	Bicycle and pedestrian facilities (Table 2)
438		Construction	Plaza Pedestrian Median	Widen to add a Pedestrian Refuge Median from 35th Street to Dade Street	2.9	CI	Yes	Median Project (Table 2, Safety)
451		ROW, Const	Third/Baldwin	Improve sight distance and add left turn lane on Third Street	1.5	CI	Yes	Increasing Sight Distance & Hazard elimination project (Table 2)

500	TA-4710	Purchase 123 Buses	Transit Buses	Purchase 261 Replacement and Expansion Buses through FY 10 (Cost reflects total cost. Certificate Of Parcipatton (COPs) are 10-year notes issued to pay for buses purchased in this TIP.)	43.5	MTC/ STATE/ FEDERAL	Yes	Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet. (Table 2, Mass Transit)
501	TA-4711	Purchase 57 Paratransit Vans	Paratransit Vans	Purchase 109 Replacement and New Paratransit Vans through FY 10	8.2	MTC/ STATE/ FEDERAL	Yes	Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet. (Table 2, Mass Transit)
502	TA-4716	Purchase 60 Vanpool Vans	Vanpool Vehicles	Purchase 120 Replacement and New Vanpool Vans through FY 10	2.9	MTC/ STATE/ FEDERAL	Yes	Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet. (Table 2, Mass Transit)
503	TG-4827	Purchase Transit Service Vehicles	Transit Service Vehicles	Purchase Transit Service Vehicles	0.8	MTC/ FEDERAL	Yes	Purchase of office, shop, and operating equipment for existing facilities. & Purchase of support vehicles. (Table 2, Mass Transit)
705	U-3862	Const	Morehead Street	Morehead St / US 29-74 (Wilkinson Blvd) Intersection - Add Turn Lanes (previously W-3611)	0.5	STATE	Yes	Hazard elimination project (Table 2)
758	C-3602	Const	Harris Blvd.	Install interconnected traffic signals on Harris Blvd, Mallard Creek Rd and US 29 in the University Research Park area.	0.3	FEDERAL/ STATE	Yes	§93 CFR 128
762	B-3677	ROW, Const	SR 3135	Greasy Creek. Replace Bridge No. 36	0.4	FEDERAL/ STATE	Yes	Widening narrow pavements or reconstructing bridges (Table 2)
763	B-2591	ROW, Const	Highland Avenue	Replace Bridge No. 56 over Norfolk Southern Railroad.	1.2	STATE/CI	Yes	Widening narrow pavements or reconstructing bridges (Table 2)
765	E-3810	Const	Greenway	Mallard Creek Greenway, Phase 4: UNCC to University Research Park with a spur to University Place.	0.4	FEDERAL/ STATE	Yes	Bicycle and pedestrian facilities (Table 2)

767	P-3814		Various	Crossing Consolidation projects as identified in south end SEHSRC traffic separation study of Landis, China Grove, Concord, Kannapolis, Harrisburg, and Charlotte.	0.6	STATE	Yes	Safety Improvement Program (Table 2)
768	W-4004	ROW, Const	US 521 (South Blvd)	300 ft North of Sharon Lakes Drive/Sweden Dr. to 250 South of Arrowood Dr./Starbrook Dr. Widen to provide a Two-Way Left Turn Lane.	0.9	STATE	Yes	Adding Medians (Table 2)
783	Z-3810C	Const	Granite Street	Southern Railway Crossing 716 057g. Safety Improvements	0.1	STATE	Yes	Railroad/highway crossing warning devices (Table 2)
800	P-2908	Operating	Amtrak	Operating expense of train between Charlotte and Rocky Mount	1.9	STATE	Yes	Operating Assistance (Table 2)
801	P-2918	Operating	Amtrak	Operating expense of train between Charlotte and Raleigh and Capital Yard Maintenance facility	5.2	STATE	Yes	Operating Assistance (Table 2)
802	P-3309	Pln, Dsn	At Grade Crossing Elimination and Improvements	The Rail Division regularly evaluates railroad crossings statewide through comprehensive Traffic Separation Studies and designs crossing and roadway improvements to eliminate hazards and improve safety.	4.3	STATE	Yes	Railroad/highway crossing. (Table 2, Safety)
803	P-3414	Construction	Charlotte to Raleigh Rail Corridor	Infrastructure Improvements to the Charlotte to Raleigh Rail Corridor to reduce travel time and improve schedule reliability.	61.5	STATE	Yes	Various from Table 2 and 3
804	P-3418	Planning	Planning, Management, and Research Studies	The Rail Division's Planning Branch undertakes a variety of environmental and planning studies as the department determines necessary.	5.6	STATE	Yes	Planning activities conducted pursuant to titles 23 and 49 U.S.C. (Table 2, Other)
805	P-3809	Inspections	Rail Safety Inspections	Inspectors check the condition of railroad tracks, cars, locomotives and signals and enforce federal safety rules.	3.2	STATE	Yes	Safety Improvement Program (Table 2)
		Construction	Toddville/Tuckaseegee	Add turn lanes to the intersection	0.125	CI	Yes	Hazard elimination project (Table 2)
	TJ-4859	Operating	Work First Grant	Provide operating assistance to counties and community transportation systems to meet work first and employment transportation needs.	0.1	MTC/ STATE/ FEDERAL	Yes	Operating Assistance (Table 2)
	TL-4859	Operating	Elderly & Disabled Grant	Provide operating assistance for additional transportation services to the elderly and disabled.	0.2	MTC/ STATE	Yes	Operating Assistance (Table 2)
	TR-4859	Operating	Rural General Public Grant	Provide maintenance assistance for community transportation systems to serve the rural general public.	0.1	MTC/ STATE	Yes	Operating Assistance (Table 2)

	TE-4704	ROW	Transit ROW Protection	Transit Right-Of-Way Protection	10.0	MTC	Yes	Emergency or hardship advance land acquisitions
	TD-4702	Pln, Dsn, ROW, Const	Transit Centers	Transit Centers - Plan, design, right-of-way acquisition and construction	22.4	MTC/ STATE/ FEDERAL	Yes	Bus terminal and transfer points (Table 3)
	TD-403	Pln, Dsn, ROW, Const	Paratransit Facility	New Paratransit Facility - Plan, design, right-of-way acquisition and construction	10.0	MTC/ STATE/ FEDERAL	Yes	Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR part 771. (Table 2, Mass Transit)
	TD-4731	Dsn, ROW, Const	Trolley Barn	Trolley Barn (Cost reflects total cost. Certificate Of Parcitipaton (COPs) are 10-year notes issued to pay for this facility.)	2.2	MTC/ STATE/ FEDERAL	Yes	Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR part 771. (Table 2, Mass Transit)
	TD-4732	Operating	Trolley Service	Historic Trolley Service	0.7	MTC	Yes	Operating Assistance (Table 2)
	B-4200	Dsn, ROW, Const	SR 2110	Replace Bridge No. 100 over Gar Creek	0.4	FEDERAL/ STATE	Yes	Widening narrow pavements or reconstructing bridges (Table 2)
	B-4201	Dsn, ROW, Const	SR 3186	Replace Bridge No. 36 with culvert over Greasy Creek	0.3	STATE	Yes	Widening narrow pavements or reconstructing bridges (Table 2)
	B-4580	Dsn, ROW	SR 2804 (Reedy Creek Road)	Replace Bridge No. 177 over Reedy Creek	0.7	STATE	Yes	Widening narrow pavements or reconstructing bridges (Table 2)
	I-4719	Construction	I-85 Repairs	I-77 TO EAST OF SUGAR CREEK ROAD. REPAIR LONGITUDINAL CRACK.	0.5	FEDERAL/ STATE	Yes	Pavement resurfacing and/or rehabilitation (Table 2)
	I-4721	Construction	I-485 Resurfacing	US 521 TO NC 51. RESURFACE.	0.7	FEDERAL/ STATE	Yes	Pavement resurfacing and/or rehabilitation (Table 2)
	R-4706	Planning	NC 73 (Sam Furr Road)	Access Management Study	0.1	STATE/ LOCAL	Yes	Planning and technical studies (Table 2)

	U-9999C	Planning	MUMPO PL Supplement	PL Supplement for Regional Planning	1.0	FEDERAL/ LOCAL	Yes	Planning activities conducted pursuant to titles 23 and 49 U.S.C. (Table 2, Other)
	U-4440	Const	ITS Integration	ITS, SYSTEMS INTEGRATION BETWEEN NCDOT MANAGEMENT CENTER, METROLINA TRAFFIC MANAGEMENT CENTER AND CITY OF CHAROTTE SIGNAL SYSTEM. SECTION A: I-77, I-85 TO I-277 AND ALONG I-277 TO US 74. SECTION B: I-85, I-77 TO NC 16 AND ALONG NC 16, I-77 TO I-85. SECTION C: NC 16, I-85 TO I-485. INSTALLATION OF CENTER, ROADSIDE AND COMMUNICATION EQUIPMENT.	2.7	FEDERAL	Yes	Traffic control devices and operating assistance other than signalization projects (Table 2)
	U-4441	Planning	Bike/Ped Connectivity	STUDY TO IDENTIFY NEIGHBORHOOD CONNECTIONS FOR NON-MOTORIZED TRANSPORTATION.	0.2	FEDERAL/ CI	Yes	Planning and technical studies (Table 2)
	U-4442	Planning	Transit Land Use Data	NORTH-SOUTH CORRIDOR TRANSITWAY PROJECT. STUDY TO REVIEW AREA'S LAND USE PATTERNS TO CONNCENTRATE DEVELOPMENT WITHIN MAJOR TRAVEL CORRIDORS TO ENHANCE HIGH CAPACITYTRANSIT SERVICE.	4.2	FEDERAL/ LOCAL	Yes	Planning and technical studies (Table 2)
	C-4405	Pln, Dsn, ROW, Const	US 74/Harris Blvd.	Intersection Improvements	0.8	CMAQ/CI	Yes	Safety Improvement Program (Table 2)
	C-4406	Pln, Dsn, ROW, Const	Sugar Creek Road/I-85 Service Road	Intersection Improvements	0.8	CMAQ/CI	Yes	Safety Improvement Program (Table 2)
	E-4714	Construction	Irwin Creek Bikeway	IRWIN CREEK BIKEWAY: IRWIN AVENUE ELEMENTARY SCHOOL TO CEDAR YARD (NEAR ERICSSON STADIUM)	0.6	FEDERAL/ LOCAL	Yes	Bicycle and pedestrian facilities (Table 2)
	E-4715	Construction	Little Sugar Creek Greenway	CORDELIA PARK TO BAXTER STREET	0.4	FEDERAL/ LOCAL	Yes	Bicycle and pedestrian facilities (Table 2)
	E-4793	ROW, Const	Heather Ln. Bikeway	CONSTRUCT A PATHWAY BETWEEN HEATHER LANE AND BELROSE LANE INCLUDING A BRIDGE REPLACEMENT AND RECONFIGURE THE PARK ROAD-HEATHER LANE INTERSECTION.	0.2	Federal/CI	Yes	Bicycle and pedestrian facilities (Table 2)
	E-4405	Const	SE Davidson Bikeway	Southeast Davidson Bikeway	0.6		Yes	Bicycle and pedestrian facilities (Table 2)

	E-4794	Const	Pedestrian Improvements	PEDESTRIAN IMPROVEMENTS AT THE INTERSECTION OF MAIN STREET AND CONCORD ROAD, MAIN STREET AND DEPOT STREET, CONCORD ROAD AT LORIMER ROAD AND COLLEGE STREET AND CONSTRUCTION OF A BIKE LANE ON CONCORD ROAD BETWEEN LORIMER AND KIMBERLY ROADS.	0.2	Federal/Local	Yes	Bicycle and pedestrian facilities (Table 2)
	B-4779	Planning	US 29 (N. Tryon St)	Replace Southbound Bridge No. 147 over Mallard Creek	3.3	FEDERAL/STATE	Yes	Widening narrow pavements or reconstructing bridges (Table 2)
	K-4701	Planning	I-77 Welcome Center	RENOVATE AND ENLARGE WELCOME CENTER TO INCLUDE DUAL RESTROOMS AND ADA COMPLIANT SINGLE RESTROOMS. RENOVATE COURTYARD AND LANDSCAPE.	0.7	FEDERAL/STATE	Yes	Safety roadside rest areas (Table 2)

Total 221.1

Legend

Cr = Cornelius
CL = Charlotte
Dv = Davidson
Hn = Huntersville
Mt = Matthews
MH = Mint Hill
Pn = Pineville
Un = Union County

Appendix F, Part 4 – Non-MPO Areas

Appendix G: VMT Normalization Methodology

Gaston County		MODEL	NCDOT	
		2000	Universe file	
			2000	
Rural	Interstate	90,467	124,830	
	Principal Arterial	187,459	159,160	
	Minor Arterial	346,466	261,330	
	Major Collector	451,126	415,260	
	Minor Collector	237,486	228,170	
Urban	Interstate	1,932,045	1,488,460	
	Oth. Freeway / Expressway	96,249	103,380	
	Principal Arterial	1,294,533	1,118,840	
	Minor Arterial	1,011,739	729,620	
	Collector	240,264	110,360	
Non Local	Total	<u>5,887,834</u>	<u>4,739,410</u>	Non-local Normalizaton Factor 0.80495
Rural	Local	254,263	132,940	
Urban	Local	492,216	251,200	
Local	Total	<u>746,480</u>	<u>384,140</u>	Local Normalizaton Factor 0.51460
Grand	Total	<u><u>6,634,314</u></u>	<u><u>5,123,550</u></u>	

Procedure:

1. Sum VMT into local, non-local categories
2. Divide NCDOT Universe file VMT by Model VMT to obtain factor
3. Factor is applied to future year Model VMT

Mecklenburg County		MODEL 2000	NCDOT Universe file 2000	
Rural	Interstate	0	1,221,240	
	Principal Arterial	137,271	172,110	
	Minor Arterial	129,462	579,450	
	Major Collector	6,080	424,290	
	Minor Collector	103,331	107,650	
Urban	Interstate	6,407,779	5,753,230	
	Oth. Freeway / Expressway	2,249,081	1,885,140	
	Principal Arterial	4,234,376	3,289,350	
	Minor Arterial	4,938,399	2,282,780	
	Collector	3,044,988	580,410	
Non Local	Total	<u>21,250,768</u>	<u>16,295,650</u>	Non-local Normalizaton Factor 0.76683
Rural	Local	116,516	453620	
Urban	Local	3,393,238	1193230	
Local	Total	<u>3,509,754</u>	<u>1,646,850</u>	Local Normalizaton Factor 0.46922
Grand	Total	<u><u>24,760,522</u></u>	<u><u>17,942,500</u></u>	

Procedure:

1. Sum VMT into local, non-local categories
2. Divide NCDOT Universe file VMT by Model VMT to obtain factor
3. Factor is applied to future year Model VMT

Notes:

Model VMT based 2000 Census Urban area boundaries
 HPMS VMT based on 1990 Census Urban area boundaries

Appendix H: Carbon Monoxide: emissions calculations, and interpolation.

CARBON MONOXIDE

Table H-1

Mecklenburg County Vehicle Miles traveled and Emissions Calculations Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, Local starts per day

2005		avg. speed	Model VMT	normal-ized VMT	Emission Factors (grams / mile)			CO (tons/day)
					I&M 90.0%	NO I&M 10.0%	composite	
Rural	Interstate	0	0	0				0.00
	Principal	31	151,923	116,499	12.546	14.496	12.741	1.64
	Minor	27	151,056	115,834	13.202	15.334	13.415	1.71
	Maj.Coll	39	10,664	8,178	13.578	15.679	13.788	0.12
	Min. Coll	38	145,174	111,323	13.413	15.488	13.621	1.67
	Local	30	193,923	90,993	13.082	15.158	13.290	1.33
Urban	Interstate	47	7,069,770	5,421,286	13.303	15.299	13.503	80.69
	Oth F/E	48	3,343,704	2,564,041	14.246	16.416	14.463	40.88
	Principal	29	4,418,847	3,388,489	13.469	15.647	13.687	51.12
	Minor	29	5,181,020	3,972,943	13.441	15.609	13.658	59.81
	Collector	27	3,278,813	2,514,281	13.567	15.785	13.789	38.22
	Local	30	3,755,937	1,762,364	13.416	15.567	13.631	26.48
	High Occ. Veh	43	22,594	22,594	14.723	17.039	14.955	0.37
Total			27,723,427	20,088,824	CO from Model			304.05
					Off-model CO reductions			(1.13)
					Total CO			302.92
					CO Budget			419.62
					BUDGET - Est. Emissions			116.70

VMT NORMALIZATION FACTORS LOCAL 0.46922 2000 Model VMT to 2000
NON-LOCAL 0.76683 NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOX reductions - see section 4.4 1,028 kg / day

Tons/day = norm. VMT * Vehicle Miles of Travel Metrolina Model March 29, 2005
 (gr/mi / 907184.7) Emission Factors NCDENR April 20, 2005

CARBON MONOXIDE

Table H-2

Mecklenburg County Vehicle Miles traveled and Emissions Calculations Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, Local starts per day

2010		avg. speed	Model VMT	normal- ized VMT	Emission Factors (grams / mile)			CO (tons/day)
					I&M 91.0%	NO I&M 9.0%	composite	
Rural	Interstate	0	0	0				0.00
	Principal	28	215,141	164,976	9.007	10.721	9.161	1.67
	Minor	27	176,422	135,285	9.428	11.269	9.594	1.43
	Maj.Coll	36	14,992	11,496	9.475	11.293	9.639	0.12
	Min. Coll	34	205,305	157,433	9.353	11.144	9.514	1.65
	Local	30	276,955	129,953	9.347	11.149	9.509	1.36
Urban	Interstate	46	7,788,712	5,972,590	9.350	11.114	9.509	62.60
	Oth F/E	49	4,689,078	3,595,709	10.153	12.113	10.329	40.94
	Principal	28	4,990,012	3,826,473	9.662	11.575	9.834	41.48
	Minor	28	5,841,850	4,479,685	9.646	11.548	9.817	48.48
	Collector	26	3,665,069	2,810,471	9.745	11.685	9.920	30.73
	Local	30	4,145,000	1,944,921	9.592	11.467	9.761	20.93
		47	75,762	75,762	10.729	12.868	10.922	0.91
Total			32,008,533	23,228,990	CO from Model			252.30
					Off-model CO reductions			(1.52)
					Total CO			250.79
					CO Budget			419.62
					BUDGET - Est. Emissions			168.83

VMT NORMALIZATION FACTORS LOCAL 0.46922 2000 Model VMT to 2000
NON-LOCAL 0.76683 NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOX reductions - see section 4.4 1,377 kg / day

Tons/day = norm. VMT * Vehicle Miles of Travel Metrolina Model March 28, 2005
 (gr/mi / 907184.7) Emission Factors NCDENR April 20, 2005

CARBON MONOXIDE

Table H-3

**Mecklenburg County
Vehicle Miles traveled and Emissions Calculations
Mobile 6.2**

FACTORS - April 20, 2005, Local vehicle mix, Local starts per day

2020		avg. speed	Model VMT	normal- ized VMT	Emission Factors (grams / mile)			CO (tons/day)
					I&M 91.0%	NO I&M 9.0%	composite	
Rural	Interstate	0	0	0				0.00
	Principal	24	282,604	216,708	6.216	8.190	6.394	1.53
	Minor	25	228,178	174,973	6.468	8.580	6.658	1.28
	Maj.Coll	32	20,041	15,368	6.406	8.448	6.590	0.11
	Min. Coll	32	266,250	204,167	6.372	8.398	6.554	1.48
	Local	30	512,415	240,436	6.371	8.403	6.554	1.74
Urban	Interstate	44	9,116,716	6,990,939	6.300	8.263	6.477	49.91
	Oth F/E	46	7,589,557	5,819,872	6.796	8.961	6.991	44.85
	Principal	27	6,071,672	4,655,918	6.592	8.764	6.787	34.84
	Minor	27	6,741,641	5,169,668	6.588	8.749	6.782	38.65
	Collector	25	4,670,861	3,581,740	6.654	8.858	6.852	27.05
	Local	30	4,982,678	2,337,977	6.537	8.650	6.727	17.34
High Occ. Veh		45	544,419	544,419	7.182	9.558	7.396	4.44
Total			41,027,031	29,952,185	CO from Model			223.21
					Off-model CO reductions			(1.97)
					Total CO			221.24
					CO Budget			419.62
					BUDGET - Est. Emissions			198.38

VMT NORMALIZATION FACTORS LOCAL 0.46922 2000 Model VMT to 2000
NON-LOCAL 0.76683 NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOX reductions - see section 4.4 1,791 kg / day

Tons/day = norm. VMT * Vehicle Miles of Travel Metrolina Model April 5, 2005
 (gr/mi / 907184.7) Emission Factors NCDENR April 20, 2005

CARBON MONOXIDE

Table H-4

Mecklenburg County Vehicle Miles traveled and Emissions Calculations Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, Local starts per day

2030		avg. speed	Model VMT	normal-ized VMT	Emission Factors (grams / mile)			CO (tons/day)
					I&M 91.0%	NO I&M 9.0%	composite	
Rural	Interstate	0	0	0				0.00
	Principal	27	480,653	368,578	5.824	7.681	5.991	2.43
	Minor	25	376,818	288,954	6.142	8.162	6.324	2.01
	Maj.Coll	30	53,416	40,961	6.084	8.044	6.260	0.28
	Min. Coll	28	328,692	252,050	6.097	8.071	6.275	1.74
	Local	30	727,654	341,431	6.052	7.995	6.227	2.34
Urban	Interstate	41	10,298,737	7,897,343	5.856	7.695	6.022	52.42
	Oth F/E	45	9,397,805	7,206,485	6.398	8.455	6.583	52.30
	Principal	25	7,142,049	5,476,712	6.306	8.423	6.497	39.22
	Minor	25	8,541,101	6,549,542	6.306	8.411	6.495	46.89
	Collector	23	5,710,389	4,378,877	6.419	8.580	6.613	31.92
	Local	30	5,703,608	2,676,252	6.209	8.230	6.391	18.85
	High Occ. Veh	41	767,061	767,061	6.604	8.815	6.803	5.75
Total			49,527,983	36,244,245	CO from Model Off-model CO reductions			256.18 (2.18)
					Total CO			253.99
					CO Budget			419.62
					BUDGET - Est. Emissions			165.63

VMT NORMALIZATION FACTORS LOCAL 0.46922 2000 Model VMT to 2000
NON-LOCAL 0.76683 NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOX reductions - see section 4.4 1,981 kg / day

Tons/day = norm. VMT * Vehicle Miles of Travel Metrolina Model April 5, 2005
 (gr/mi / 907184.7) Emission Factors NCDENR April 20, 2005

Appendix I: Ozone precursors: Oxides of Nitrogen and Volatile Organic Compounds: VMT, Normalized VMT and emissions calculations

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Appendix I

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NITROGEN OXIDES

Table I-01

Ozone Precursors

Gaston County

Vehicle Miles traveled and Emissions Calculations

Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, starts per day, and average hourly relative humidity

2005		avg. Speed	Model VMT	normal-ized VMT	Emission Factors (grams / mile)			NOx (tons/day)
					I&M 91.0%	NO I&M 9.0%	composite	
Rural	Interstate	47	97,562	78,532	3.126	3.173	3.130	0.3
	Principal	47	138,128	111,186	1.876	1.933	1.881	0.2
	Minor	43	383,118	308,390	1.297	1.357	1.302	0.4
	Maj.Coll	43	483,999	389,595	1.205	1.266	1.210	0.5
	Min. Coll	45	262,671	211,437	1.267	1.327	1.272	0.3
	Local	30	265,537	136,646	1.214	1.276	1.220	0.2
Urban	Interstate	45	2,053,714	1,653,137	2.044	2.099	2.049	3.7
	Oth F/E	47	70,384	56,656	1.555	1.615	1.560	0.1
	Principal	32	1,310,341	1,054,758	0.998	1.062	1.004	1.2
	Minor	35	1,081,744	870,750	0.998	1.061	1.004	1.0
	Collector	29	268,374	216,027	1.002	1.066	1.008	0.2
	Local	30	501,963	258,311	0.993	1.057	0.999	0.3
High Occ. Veh		0	0	0	0.000	0.000	0.000	0.0
Total			6,917,535	5,345,425	NOx from Model			8.4
					NOx SIP Budget			8.7
					BUDGET - Est. Emissions			0.3

VMT NORMALIZATION FACTORS

LOCAL

0.514602

2000 Model VMT to 2000

NON-LOCAL

0.80495

NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Tons/day = norm. VMT *
(gr/mi / 907184.7)

Vehicle Miles of Travel
Emission Factors

Metrolina Model
NCDENR

March 29, 2005
April 20, 2005

NITROGEN OXIDES

Table I-02

Ozone Precursors

Gaston County

Vehicle Miles traveled and Emissions Calculations

Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, starts per day, and average hourly relative humidity

2010		avg. Speed	Model VMT	normal-ized VMT	Emission Factors (grams / mile)			NOx (tons/day)
					I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	43	114,494	92,162	1.474	1.531	1.479	0.2
	Principal	43	178,950	144,046	0.922	0.993	0.928	0.1
	Minor	40	420,906	338,808	0.685	0.760	0.691	0.3
	Maj. Coll.	41	546,949	440,266	0.645	0.721	0.651	0.3
	Min. Coll.	44	305,025	245,530	0.681	0.756	0.687	0.2
	Local	30	333,699	171,722	0.659	0.735	0.665	0.1
Urban	Interstate	41	2,383,241	1,918,389	1.003	1.071	1.008	2.1
	Oth F/E	47	74,866	60,263	0.811	0.886	0.817	0.1
	Principal	31	1,526,943	1,229,112	0.554	0.633	0.560	0.8
	Minor	32	1,197,829	964,192	0.557	0.636	0.563	0.6
	Collector	28	291,021	234,258	0.558	0.638	0.564	0.1
	Local	30	561,549	288,974	0.550	0.630	0.556	0.2
		0	0	0	0.000	0.000	0.000	0.0
Total			7,935,473	6,127,722	NOx from Model NOx SIP Budget BUDGET - Est. Emissions			5.1 8.7 3.6

VMT NORMALIZATION FACTORS **LOCAL** **0.514602** 2000 Model VMT to 2000
NON-LOCAL **0.80495** NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Tons/day = norm. VMT * Vehicle Miles of Travel Metrolina Model March 28, 2005
 (gr/mi / 907184.7) Emission Factors NCDENR April 20, 2005

NITROGEN OXIDES

Table I-03

Ozone Precursors

Gaston County

Vehicle Miles traveled and Emissions Calculations

Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, starts per day, and average hourly relative humidity

2020		avg. Speed	Model VMT	normal-ized VMT	Emission Factors (grams / mile)			NOx (tons/day)
					I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	40	137,309	110,527	0.342	0.418	0.348	0.0
	Principal	41	239,546	192,822	0.257	0.352	0.265	0.1
	Minor	36	550,750	443,326	0.218	0.318	0.226	0.1
	Maj. Coll.	36	753,364	606,420	0.211	0.312	0.219	0.1
	Min. Coll.	41	410,358	330,317	0.220	0.320	0.228	0.1
	Local	30	447,378	230,222	0.218	0.319	0.226	0.1
Urban	Interstate	43	3,318,233	2,671,010	0.277	0.369	0.284	0.8
	Oth F/E	46	85,816	69,078	0.243	0.343	0.251	0.0
	Principal	31	1,986,331	1,598,896	0.200	0.305	0.208	0.4
	Minor	30	1,320,629	1,063,040	0.202	0.307	0.210	0.2
	Collector	27	372,856	300,130	0.205	0.312	0.214	0.1
	Local	30	644,844	331,838	0.200	0.305	0.208	0.1
High Occ. Veh		0	0	0	0.000	0.000	0.000	0.0
Total			10,267,414	7,947,627	NOx from Model			2.1
					NOx SIP Budget			8.7
					BUDGET - Est. Emissions			6.6

VMT NORMALIZATION FACTORS **LOCAL** **0.514602** 2000 Model VMT to 2000
NON-LOCAL **0.80495** NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Tons/day = norm. VMT * Vehicle Miles of Travel Metrolina Model April 5, 2005
 (gr/mi / 907184.7) Emission Factors NCDENR April 20, 2005

NITROGEN OXIDES

Table I-04

Ozone Precursors

Gaston County

Vehicle Miles traveled and Emissions Calculations

Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, starts per day, and average hourly relative humidity

2030		avg. Speed	Model VMT	normal- ized VMT	Emission Factors (grams / mile)			NOx (tons/day)
					I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	38	163,234	131,395	0.208	0.285	0.214	0.0
	Principal	40	265,641	213,828	0.171	0.267	0.179	0.0
	Minor	34	665,994	536,091	0.153	0.253	0.161	0.1
	Maj.Coll	33	985,340	793,149	0.150	0.252	0.158	0.1
	Min. Coll.	33	546,106	439,588	0.151	0.253	0.159	0.1
	Local	30	602,551	310,074	0.153	0.256	0.161	0.1
Urban	Interstate	38	3,980,506	3,204,107	0.176	0.268	0.183	0.6
	Oth F/E	46	79,673	64,133	0.168	0.269	0.176	0.0
	Principal	28	2,504,155	2,015,719	0.148	0.257	0.157	0.3
	Minor	29	1,526,367	1,228,649	0.147	0.254	0.156	0.2
	Collector	25	477,435	384,311	0.152	0.263	0.161	0.1
	Local	30	727,490	374,368	0.145	0.251	0.153	0.1
High Occ. Veh		0	0	0	0.000	0.000	0.000	0.0
Total			12,524,492	9,695,411	NOx from Model			1.8
					NOx SIP Budget			8.7
					BUDGET - Est. Emissions			6.9

VMT NORMALIZATION FACTORS

LOCAL

0.514602

2000 Model VMT to 2000

NON-LOCAL

0.80495

NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Tons/day = norm. VMT *
(gr/mi / 907184.7)

Vehicle Miles of Travel
Emission Factors

Metrolina Model
NCDENR

April 5, 2005
April 20, 2005

NITROGEN OXIDES

Table I-05

Ozone Precursors Mecklenburg County Vehicle Miles traveled and Emissions Calculations Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, starts per day, and average hourly relative humidity

2005		avg. Speed	Model VMT	normal-ized VMT	Emission Factors (grams / mile)			NOx (tons/day)
					I&M 90.0%	NO I&M 10.0%	composite	
Rural	Interstate	0	0	0				0.0
	Principal	31	151,923	116,499	1.767	1.829	1.773	0.2
	Minor	27	151,056	115,834	1.328	1.395	1.335	0.2
	Maj. Coll.	39	10,664	8,178	1.218	1.283	1.225	0.0
	Min. Coll.	38	145,174	111,323	1.256	1.321	1.263	0.2
	Local	30	193,923	90,993	1.258	1.324	1.265	0.1
Urban	Interstate	47	7,069,770	5,421,286	2.140	2.198	2.146	12.8
	Oth F/E	48	3,343,704	2,564,041	1.616	1.680	1.622	4.6
	Principal	29	4,418,847	3,388,489	1.059	1.127	1.066	4.0
	Minor	29	5,181,020	3,972,943	1.067	1.136	1.074	4.7
	Collector	27	3,278,813	2,514,281	1.064	1.133	1.071	3.0
	Local	30	3,755,937	1,762,364	1.039	1.106	1.046	2.0
High Occ. Veh		43	22,594	22,594	1.034	1.104	1.041	0.0
Total			27,723,427	20,088,824	NOx from Model Off-model NOX reductions Total NOx NOx SIP Budget BUDGET - Est. Emissions			31.8 (0.2) 31.6 33.0 1.4

VMT NORMALIZATION FACTORS **LOCAL** **0.469221** 2000 Model VMT to 2000
NON-LOCAL **0.766826** NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOX reductions - see section 4.4 147 kg / day

Tons/day = norm. VMT * Vehicle Miles of Travel Metrolina Model March 29, 2005
 (gr/mi / 907184.7) Emission Factors NCDENR April 20, 2005

NITROGEN OXIDES

Table I-06

Ozone Precursors
Mecklenburg County
Vehicle Miles traveled and Emissions Calculations
Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, starts per day, and average hourly relative humidity

2010		avg. Speed	Model VMT	normal- ized VMT	Emission Factors (grams / mile)			NOx (tons/day)
					I&M 91.0%	NO I&M 9.0%	composite	
Rural	Interstate	0	0	0				0.0
	Principal	28	215,141	164,976	0.911	0.987	0.918	0.2
	Minor	27	176,422	135,285	0.719	0.801	0.726	0.1
	Maj. Coll.	36	14,992	11,496	0.654	0.734	0.661	0.0
	Min. Coll.	34	205,305	157,433	0.673	0.753	0.680	0.1
	Local	30	276,955	129,953	0.682	0.763	0.689	0.1
Urban	Interstate	46	7,788,712	5,972,590	1.073	1.145	1.079	7.1
	Oth F/E	49	4,689,078	3,595,709	0.852	0.931	0.859	3.4
	Principal	28	4,990,012	3,826,473	0.588	0.674	0.596	2.5
	Minor	28	5,841,850	4,479,685	0.593	0.679	0.601	3.0
	Collector	26	3,665,069	2,810,471	0.592	0.678	0.600	1.9
	Local	30	4,145,000	1,944,921	0.574	0.659	0.582	1.2
		47	75,762	75,762	0.612	0.700	0.620	0.1
Total			32,008,533	23,228,990	NOx from Model Off-model NOx reductions Total NOx NOx SIP Budget BUDGET - Est. Emissions			19.6 (0.2) 19.5 33.0 13.5

VMT NORMALIZATION FACTORS **LOCAL** **0.469221** 2000 Model VMT to 2000
NON-LOCAL **0.766826** NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOx reductions - see section 4.4 140 kg / day

Tons/day = norm. VMT * Vehicle Miles of Travel Metrolina Model March 28, 2005
 (gr/mi / 907184.7) Emission Factors NCDENR April 20, 2005

NITROGEN OXIDES

Table I-07

Ozone Precursors Mecklenburg County Vehicle Miles traveled and Emissions Calculations Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, starts per day, and average hourly relative humidity

2020		avg. Speed	Model VMT	normal-ized VMT	Emission Factors (grams / mile)			NOx (tons/day)
					I&M 91.0%	NO I&M 9.0%	composite	
Rural	Interstate	0	0	0				0.0
	Principal	24	282,604	216,708	0.262	0.362	0.271	0.1
	Minor	25	228,178	174,973	0.238	0.348	0.248	0.0
	Maj. Coll.	32	20,041	15,368	0.220	0.326	0.230	0.0
	Min. Coll.	32	266,250	204,167	0.224	0.329	0.233	0.1
	Local	30	512,415	240,436	0.225	0.331	0.235	0.1
Urban	Interstate	44	9,116,716	6,990,939	0.286	0.382	0.295	2.3
	Oth F/E	46	7,589,557	5,819,872	0.251	0.356	0.260	1.7
	Principal	27	6,071,672	4,655,918	0.214	0.327	0.224	1.2
	Minor	27	6,741,641	5,169,668	0.214	0.327	0.224	1.3
	Collector	25	4,670,861	3,581,740	0.217	0.332	0.227	0.9
	Local	30	4,982,678	2,337,977	0.208	0.318	0.218	0.6
High Occ. Veh		45	544,419	544,419	0.211	0.327	0.221	0.1
Total			41,027,031	29,952,185	NOx from Model Off-model NOx reductions Total NOx NOx SIP Budget BUDGET - Est. Emissions			8.2 (0.1) 8.1 33.0 24.9

VMT NORMALIZATION FACTORS

LOCAL

0.469221

2000 Model VMT to 2000

NON-LOCAL

0.766826

NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOx reductions - see section 4.4 74 kg / day

Tons/day = norm. VMT *

(gr/mi / 907184.7)

Vehicle Miles of Travel

Emission Factors

Metrolina Model

NCDENR

April 5, 2005

April 20, 2005

NITROGEN OXIDES

Table I-09

Ozone Precursors

Metrolina Region, North Carolina Vehicle Miles Traveled and Emissions Calculations Mobile 6.2

2002			Emission Factors (grams / mile) ²				NOX (kg/day)
Gaston		avg. speed	VMT ¹	I&M 79.0%	NO I&M 21.0%	composite	
Rural	Interstate	53	92,818	5.032	5.043	5.034	467
	Principal	47	128,635	2.745	2.756	2.747	353
	Minor	44	372,082	1.771	1.783	1.774	660
	Maj.Coll.	43	478,440	1.623	1.635	1.626	778
	Min. Coll.	45	254,170	1.706	1.718	1.709	434
	Local	30	255,629	1.644	1.656	1.647	421
Urban	Interstate	46	1,968,148	3.041	3.052	3.043	5,990
	Oth F/E	47	73,801	2.245	2.256	2.247	166
	Principal	34	1,298,334	1.338	1.349	1.340	1,740
	Minor	35	1,045,243	1.341	1.353	1.344	1,404
	Collector	30	248,152	1.333	1.344	1.335	331
	Local	30	494,925	1.334	1.345	1.336	661
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			6,710,377	NOX			13,406

Mecklenburg			Emission Factors (grams / mile) ²				NOX (kg/day)
		avg. speed	VMT ¹	I&M 85.0%	NO I&M 15.0%	composite	
Rural	Interstate	0	0			0.000	0
	Principal	35	143,130	2.617	2.629	2.619	375
	Minor	28	135,077	1.801	1.813	1.803	244
	Maj.Coll.	38	7,996	1.644	1.656	1.646	13
	Min. Coll.	41	113,691	1.727	1.739	1.729	197
	Local	30	123,081	1.707	1.719	1.709	210
Urban	Interstate	43	6,571,980	3.027	3.038	3.029	19,904
	Oth F/E	43	2,354,678	2.239	2.251	2.241	5,276
	Principal	29	4,299,894	1.432	1.444	1.434	6,165
	Minor	29	5,128,228	1.438	1.451	1.440	7,384
	Collector	28	3,199,678	1.418	1.430	1.420	4,543
	Local	30	3,583,232	1.399	1.411	1.401	5,019
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			25,660,666	NOX			49,331

5-county ³			Emission Factors (grams / mile) ²				NOX (kg/day)
		avg. speed	VMT ¹	I&M 48.0%	NO I&M 52.0%	composite	
Rural	Interstate	57	925,200	5.882	5.900	5.891	5,451
	Principal	48	830,595	3.086	3.104	3.095	2,571
	Minor	39	1,239,089	1.984	2.002	1.993	2,470
	Maj.Coll.	48	2,285,118	1.951	1.970	1.961	4,481
	Min. Coll.	46	1,420,446	1.989	2.007	1.998	2,839
	Local	30	1,992,894	1.899	1.918	1.909	3,804
Urban	Interstate	49	2,494,780	3.466	3.484	3.475	8,670
	Oth F/E	36	80,655	2.382	2.400	2.391	193
	Principal	36	2,068,806	1.579	1.598	1.589	3,287
	Minor	37	2,436,637	1.592	1.610	1.601	3,902
	Collector	36	1,245,898	1.553	1.572	1.563	1,947
	Local	30	1,492,164	1.568	1.587	1.578	2,354
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			18,512,283	NOX			41,969

2002 Metrolina Region (N.C.) Modeled NOX (kg / day)	104,706
Off-model NOX reductions (kg / day)⁴	(141)
Total NOX (kg / day)	104,565

¹ Vehicle Miles of Travel Metrolina Model Team, March 30, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-county includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model NOX reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

NITROGEN OXIDES

Table I-10

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2010 Build			Emission Factors (grams / mile)²				NOX (kg/day)
Gaston BUILD		avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	43	114,494	1.474	1.531	1.479	169
	Principal	43	178,950	0.922	0.993	0.928	166
	Minor	40	420,906	0.685	0.760	0.691	291
	Maj.Coll	41	546,949	0.645	0.721	0.651	356
	Min. Coll.	44	305,025	0.681	0.756	0.687	210
	Local	30	333,699	0.659	0.735	0.665	222
Urban	Interstate	41	2,383,241	1.003	1.071	1.008	2,403
	Oth F/E	47	74,866	0.811	0.886	0.817	61
	Principal	31	1,526,943	0.554	0.633	0.560	856
	Minor	32	1,197,829	0.557	0.636	0.563	675
	Collector	28	291,021	0.558	0.638	0.564	164
	Local	30	561,549	0.550	0.630	0.556	312
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			7,935,473	NOX			5,885

Mecklenburg BUILD			avg. speed	VMT¹	I&M 91.0%	NO I&M 9.0%	composite	NOX (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	28	215,141	0.911	0.987	0.918		197
	Minor	27	176,422	0.719	0.801	0.726		128
	Maj.Coll	36	14,992	0.654	0.734	0.661		10
	Min. Coll.	34	205,305	0.673	0.753	0.680		140
	Local	30	276,955	0.682	0.763	0.689		191
Urban	Interstate	46	7,788,712	1.073	1.145	1.079		8,408
	Oth F/E	49	4,689,078	0.852	0.931	0.859		4,028
	Principal	28	4,990,012	0.588	0.674	0.596		2,973
	Minor	28	5,841,850	0.593	0.679	0.601		3,509
	Collector	26	3,665,069	0.592	0.678	0.600		2,198
	Local	30	4,145,000	0.574	0.659	0.582		2,411
High Occ. Veh		47	75,762	0.612	0.700	0.620		47
Total			32,084,295	NOX			24,240	

5-county BUILD³			avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	NOX (kg/day)
Rural	Interstate	51	1,099,606	2.225	2.296	2.231		2,453
	Principal	50	1,286,459	1.359	1.447	1.366		1,757
	Minor	38	1,373,514	0.935	1.027	0.942		1,294
	Maj.Coll	45	2,743,384	0.912	1.006	0.920		2,523
	Min. Coll.	43	1,832,129	0.930	1.023	0.937		1,718
	Local	30	2,750,966	0.905	1.000	0.913		2,511
Urban	Interstate	45	2,988,793	1.420	1.504	1.427		4,264
	Oth F/E	36	123,745	1.040	1.132	1.047		130
	Principal	34	2,540,699	0.763	0.860	0.771		1,958
	Minor	34	2,958,063	0.770	0.867	0.778		2,301
	Collector	34	1,620,457	0.756	0.852	0.764		1,238
	Local	30	1,729,711	0.764	0.862	0.772		1,335
High Occ. Veh		0	0	0.000	0.000	0.000		0
Total			23,047,527	NOX			23,480	

2010 Build Metrolina Region (N.C.) Modeled NOX (kg / day)	53,606
Off-model NOX reductions (kg / day)⁴	(182)
Total NOX (kg / day)	53,425

¹ Vehicle Miles of Travel Metrolina Model Team, March 29, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-county includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model NOX reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

NITROGEN OXIDES

Table I-11

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2010 NoBuild			Emission Factors (grams / mile)²				NOX (kg/day)
Gaston NOBUILD		avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	42	113,320	1.460	1.517	1.465	166
	Principal	43	159,581	0.922	0.993	0.928	148
	Minor	38	440,174	0.680	0.755	0.686	302
	Maj.Coll	40	574,778	0.640	0.716	0.646	371
	Min. Coll.	43	325,877	0.677	0.752	0.683	223
	Local	30	333,699	0.659	0.735	0.665	222
Urban	Interstate	41	2,349,197	1.003	1.071	1.008	2,369
	Oth F/E	46	84,138	0.802	0.876	0.808	68
	Principal	30	1,525,170	0.556	0.635	0.562	858
	Minor	31	1,227,579	0.559	0.638	0.565	694
	Collector	27	315,982	0.562	0.643	0.568	180
	Local	30	561,549	0.550	0.630	0.556	312
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			8,011,046	NOX			5,913

Mecklenburg NOBUILD			avg. speed	VMT¹	I&M 91.0%	NO I&M 9.0%	composite	NOX (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	28	205,959	0.911	0.987	0.918		189
	Minor	26	184,849	0.725	0.808	0.732		135
	Maj.Coll	35	15,759	0.651	0.731	0.658		10
	Min. Coll.	33	197,177	0.674	0.755	0.681		134
	Local	30	276,955	0.682	0.763	0.689		191
Urban	Interstate	45	8,046,630	1.058	1.131	1.065		8,566
	Oth F/E	48	4,014,499	0.843	0.922	0.850		3,413
	Principal	26	5,089,360	0.598	0.685	0.606		3,083
	Minor	25	5,973,507	0.609	0.696	0.617		3,685
	Collector	21	3,806,724	0.625	0.716	0.633		2,410
	Local	30	4,145,000	0.575	0.659	0.583		2,415
High Occ. Veh		43	31,838	0.594	0.682	0.602		19
Total			31,988,257	NOX			24,251	

5-county NOBUILD³			avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	NOX (kg/day)
Rural	Interstate	51	1,106,868	2.225	2.296	2.231		2,469
	Principal	48	963,516	1.332	1.420	1.339		1,290
	Minor	35	1,527,815	0.923	1.016	0.930		1,422
	Maj.Coll	44	2,884,577	0.907	1.001	0.915		2,638
	Min. Coll.	42	1,896,099	0.924	1.017	0.931		1,766
	Local	30	2,750,966	0.905	1.000	0.913		2,511
Urban	Interstate	45	3,024,224	1.420	1.504	1.427		4,315
	Oth F/E	31	98,269	1.038	1.130	1.045		103
	Principal	28	2,526,747	0.781	0.881	0.789		1,994
	Minor	30	2,954,865	0.778	0.876	0.786		2,322
	Collector	32	1,663,009	0.759	0.857	0.767		1,275
	Local	30	1,729,711	0.764	0.862	0.772		1,335
High Occ. Veh		0	0	0.000	0.000	0.000		0
Total			23,126,666	NOX			23,439	

2010 No-Build Metrolina Region (N.C.) Modeled NOX (kg / day)	53,603
Off-model NOX reductions (kg / day)⁴	(116)
Total NOX (kg / day)	53,487

¹ Vehicle Miles of Travel Metrolina Model Team, April 7, 2005
² Emissions Factors: NCDENR, April 20, 2005
³ 5-county includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties
⁴ Off model NOX reductions - see section 4.4
 Local vehicle mix, Local starts per day
 Average hourly relative humidity for Gaston and Mecklenburg counties
 56 year average hourly temperature for 5-county area

NITROGEN OXIDES

Table I-12

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2020 Build			Emission Factors (grams / mile) ²				NOX (kg/day)
Gaston BUILD		avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	40	137,309	0.342	0.418	0.348	48
	Principal	41	239,546	0.257	0.352	0.265	63
	Minor	36	550,750	0.218	0.318	0.226	124
	Maj.Coll	36	753,364	0.211	0.312	0.219	165
	Min. Coll.	41	410,358	0.220	0.320	0.228	94
	Local	30	447,378	0.218	0.319	0.226	101
Urban	Interstate	43	3,318,233	0.277	0.369	0.284	944
	Oth F/E	46	85,816	0.243	0.343	0.251	22
	Principal	31	1,986,331	0.200	0.305	0.208	414
	Minor	30	1,320,629	0.202	0.307	0.210	278
	Collector	27	372,856	0.205	0.312	0.214	80
	Local	30	644,844	0.200	0.305	0.208	134
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			10,267,414	NOX			2,466

Mecklenburg BUILD			avg. speed	VMT ¹	I&M 91.0%	NO I&M 9.0%	composite	NOX (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	24	282,604	0.262	0.362	0.271		77
	Minor	25	228,178	0.238	0.348	0.248		57
	Maj.Coll	32	20,041	0.220	0.326	0.230		5
	Min. Coll.	32	266,250	0.224	0.329	0.233		62
	Local	30	512,415	0.225	0.331	0.235		120
Urban	Interstate	44	9,116,716	0.286	0.382	0.295		2,686
	Oth F/E	46	7,589,557	0.251	0.356	0.260		1,977
	Principal	27	6,071,672	0.214	0.327	0.224		1,361
	Minor	27	6,741,641	0.214	0.327	0.224		1,511
	Collector	25	4,670,861	0.217	0.332	0.227		1,062
	Local	30	4,982,678	0.208	0.318	0.218		1,086
High Occ. Veh		45	544,419	0.211	0.327	0.221		121
Total			41,027,031	NOX				10,124

5-County BUILD ³			avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	NOX (kg/day)
Rural	Interstate	48	1,634,937	0.618	0.725	0.627		1,024
	Principal	51	2,107,898	0.444	0.578	0.455		959
	Minor	37	1,706,319	0.333	0.471	0.344		587
	Maj.Coll	42	3,530,683	0.328	0.468	0.339		1,198
	Min. Coll.	41	2,426,115	0.333	0.472	0.344		835
	Local	30	3,959,371	0.328	0.468	0.339		1,343
Urban	Interstate	52	4,184,171	0.488	0.616	0.498		2,085
	Oth F/E	41	302,553	0.363	0.500	0.374		113
	Principal	33	2,929,574	0.293	0.438	0.305		892
	Minor	32	3,589,665	0.296	0.440	0.308		1,104
	Collector	30	1,961,146	0.295	0.441	0.307		601
	Local	30	2,027,219	0.296	0.441	0.308		624
High Occ. Veh		0	0	0.000	0.000	0.000		0
Total			30,359,652	NOX				11,365

2020 Build Metrolina Region (N.C.) Modeled NOX (kg / day)	23,954
Off-model NOX reductions (kg / day)⁴	(96)
Total NOX (kg / day)	23,858

¹ Vehicle Miles of Travel Metrolina Model Team, April 5, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-County includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model NOX reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

NITROGEN OXIDES

Table I-13

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2020 NoBuild			Emission Factors (grams / mile)²				NOX (kg/day)
Gaston NOBUILD		avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	39	136,787	0.341	0.416	0.347	47
	Principal	39	236,754	0.254	0.349	0.262	62
	Minor	34	554,488	0.218	0.318	0.226	125
	Maj.Coll	34	758,743	0.211	0.312	0.219	166
	Min. Coll.	38	479,402	0.217	0.316	0.225	108
	Local	30	447,378	0.218	0.319	0.226	101
Urban	Interstate	39	2,794,514	0.270	0.361	0.277	775
	Oth F/E	45	94,579	0.241	0.341	0.249	24
	Principal	24	2,019,986	0.212	0.323	0.221	446
	Minor	24	1,580,578	0.213	0.323	0.222	351
	Collector	24	412,165	0.211	0.322	0.220	91
	Local	30	644,844	0.200	0.305	0.208	134
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			10,160,219	NOX			2,430

Mecklenburg NOBUILD			avg. speed	VMT¹	I&M 91.0%	NO I&M 9.0%	composite	NOX (kg/day)
Rural	Interstate	0	0			0.000		0
	Principal	21	325,902	0.265	0.365	0.274	89	
	Minor	24	245,263	0.241	0.352	0.251	62	
	Maj.Coll	23	25,734	0.236	0.350	0.246	6	
	Min. Coll.	25	342,592	0.235	0.345	0.245	84	
	Local	30	512,415	0.225	0.332	0.235	120	
Urban	Interstate	42	9,147,915	0.282	0.378	0.291	2,659	
	Oth F/E	44	6,533,333	0.247	0.352	0.256	1,675	
	Principal	22	6,215,179	0.226	0.345	0.237	1,471	
	Minor	20	7,298,515	0.232	0.354	0.243	1,773	
	Collector	17	4,731,460	0.243	0.370	0.254	1,204	
	Local	30	4,982,678	0.208	0.318	0.218	1,086	
High Occ. Veh		44	112,303	0.210	0.326	0.220	25	
Total			40,473,290	NOX			10,254	

5-County NOBUILD³			avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	NOX (kg/day)
Rural	Interstate	46	1,397,213	0.604	0.710	0.612	856	
	Principal	48	1,729,434	0.431	0.565	0.442	764	
	Minor	32	1,891,517	0.334	0.474	0.345	653	
	Maj.Coll	37	3,967,525	0.322	0.462	0.333	1,322	
	Min. Coll.	35	2,806,054	0.326	0.465	0.337	946	
	Local	30	3,959,371	0.330	0.471	0.341	1,351	
Urban	Interstate	43	3,511,400	0.444	0.571	0.454	1,595	
	Oth F/E	28	167,339	0.357	0.495	0.368	62	
	Principal	25	3,396,799	0.309	0.462	0.321	1,091	
	Minor	26	3,896,354	0.308	0.459	0.320	1,247	
	Collector	27	2,347,388	0.303	0.453	0.315	739	
	Local	30	2,027,219	0.297	0.443	0.309	626	
High Occ. Veh		0	0	0.000	0.000	0.000	0	
Total			31,097,615	NOX			11,252	

2020 No-Build Metrolina Region (N.C.) Modeled NOX (kg / day)	23,936
Off-model NOX reductions (kg / day)⁴	(61)
Total NOX (kg / day)	23,876

¹ Vehicle Miles of Travel Metrolina Model Team, April 5, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-County includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model NOX reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

NITROGEN OXIDES

Table I-14

Ozone Precursors Metrolina Region, North Carolina Vehicle Miles Traveled and Emissions Calculations Mobile 6.2

2030 Build			Emission Factors (grams / mile) ²				NOX (kg/day)
Gaston BUILD		avg. Speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	38	163,234	0.208	0.285	0.214	35
	Principal	40	265,641	0.171	0.267	0.179	47
	Minor	34	665,994	0.153	0.253	0.161	107
	Maj.Coll	33	985,340	0.150	0.252	0.158	156
	Min. Coll.	33	546,106	0.151	0.253	0.159	87
	Local	30	602,551	0.153	0.256	0.161	97
Urban	Interstate	38	3,980,506	0.176	0.268	0.183	730
	Oth F/E	46	79,673	0.168	0.269	0.176	14
	Principal	28	2,504,155	0.148	0.257	0.157	392
	Minor	29	1,526,367	0.147	0.254	0.156	237
	Collector	25	477,435	0.152	0.263	0.161	77
	Local	30	727,490	0.145	0.251	0.153	112
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			12,524,492	NOX			2,092

Mecklenburg BUILD			avg. Speed	VMT ¹	I&M 91.0%	NO I&M 9.0%	composite	NOX (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	27	480,653	0.173	0.273	0.182		87
	Minor	25	376,818	0.167	0.277	0.177		67
	Maj.Coll	30	53,416	0.156	0.263	0.166		9
	Min. Coll.	28	328,692	0.160	0.268	0.170		56
	Local	30	727,654	0.158	0.264	0.168		122
Urban	Interstate	41	10,298,737	0.183	0.279	0.192		1,974
	Oth F/E	45	9,397,805	0.170	0.275	0.179		1,686
	Principal	25	7,142,049	0.158	0.273	0.168		1,202
	Minor	25	8,541,101	0.158	0.272	0.168		1,437
	Collector	23	5,710,389	0.160	0.277	0.171		974
	Local	30	5,703,608	0.149	0.260	0.159		907
High Occ. Veh		41	767,061	0.146	0.261	0.156		120
Total			49,527,983	NOX			8,641	

5-county BUILD ³			avg. Speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	NOX (kg/day)
Rural	Interstate	50	2,106,905	0.288	0.396	0.297		625
	Principal	46	2,893,540	0.222	0.356	0.233		673
	Minor	33	2,736,027	0.191	0.330	0.202		553
	Maj.Coll	39	4,979,919	0.189	0.329	0.200		997
	Min. Coll.	37	3,284,150	0.189	0.328	0.200		657
	Local	30	5,557,275	0.191	0.332	0.202		1,124
Urban	Interstate	47	5,122,767	0.234	0.363	0.244		1,252
	Oth F/E	42	332,095	0.203	0.342	0.214		71
	Principal	31	3,596,272	0.181	0.327	0.193		693
	Minor	31	4,818,281	0.181	0.327	0.193		928
	Collector	31	2,453,842	0.180	0.326	0.192		470
	Local	30	2,321,806	0.181	0.327	0.193		447
High Occ. Veh		0	0	0.000	0.000	0.000		0
Total			40,202,880	NOX			8,491	

2030 Build Metrolina Region (N.C.) Modeled NOX (kg / day)	19,224
Off-model NOX reductions (kg / day)⁴	(76)
Total NOX (kg / day)	19,148

¹ Vehicle Miles of Travel Metrolina Model Team, April 5, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5 County includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model NOX reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

NITROGEN OXIDES

Table I-15

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2030 NoBuild			Emission Factors (grams / mile)²				NOX (kg/day)
Gaston NOBUILD		avg. Speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	37	162,944	0.207	0.284	0.213	35
	Principal	34	341,589	0.167	0.263	0.175	60
	Minor	27	740,324	0.160	0.264	0.168	125
	Maj.Coll	27	1,014,427	0.156	0.261	0.164	167
	Min. Coll.	29	651,407	0.155	0.258	0.163	106
	Local	30	602,551	0.154	0.256	0.162	98
Urban	Interstate	37	4,007,069	0.176	0.268	0.183	735
	Oth F/E	41	116,128	0.162	0.262	0.170	20
	Principal	24	2,646,378	0.155	0.267	0.164	434
	Minor	20	1,706,269	0.164	0.281	0.173	296
	Collector	21	534,805	0.160	0.276	0.169	91
	Local	30	727,490	0.145	0.252	0.154	112
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			13,251,383	NOX			2,276

Mecklenburg NOBUILD			avg. Speed	VMT¹	I&M 91.0%	NO I&M 9.0%	composite	NOX (kg/day)
Rural	Interstate	0	0			0.000		0
	Principal	20	393,657	0.177	0.277	0.186		73
	Minor	22	299,902	0.174	0.287	0.184		55
	Maj.Coll	20	30,041	0.175	0.293	0.186		6
	Min. Coll.	23	374,998	0.169	0.282	0.179		67
	Local	30	727,654	0.158	0.264	0.168		122
Urban	Interstate	41	10,926,329	0.183	0.279	0.192		2,094
	Oth F/E	39	9,597,371	0.164	0.268	0.173		1,664
	Principal	20	7,407,631	0.169	0.291	0.180		1,333
	Minor	19	8,276,378	0.171	0.295	0.182		1,508
	Collector	16	5,851,619	0.181	0.311	0.193		1,128
	Local	30	5,703,608	0.150	0.260	0.160		912
High Occ. Veh		36	728,876	0.143	0.258	0.153		112
Total			50,318,064	NOX			9,073	

5-county NOBUILD³			avg. Speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	NOX (kg/day)
Rural	Interstate	48	2,164,032	0.281	0.389	0.290		627
	Principal	47	2,862,525	0.225	0.358	0.236		675
	Minor	31	2,205,607	0.193	0.332	0.204		450
	Maj.Coll	36	4,758,365	0.187	0.326	0.198		943
	Min. Coll.	34	3,530,730	0.188	0.327	0.199		703
	Local	30	5,557,275	0.191	0.332	0.202		1,124
Urban	Interstate	47	5,460,561	0.234	0.363	0.244		1,334
	Oth F/E	34	393,237	0.197	0.334	0.208		82
	Principal	26	3,696,946	0.188	0.339	0.200		740
	Minor	25	4,455,980	0.190	0.342	0.202		901
	Collector	26	2,587,255	0.187	0.337	0.199		515
	Local	30	2,321,806	0.181	0.327	0.193		447
High Occ. Veh		0	0	0.000	0.000	0.000		0
Total			39,994,319	NOX			8,540	

2030 NoBuild Metrolina Region (N.C.) Modeled NOX (kg / day)	19,889
Off-model NOX reductions (kg / day)⁴	(79)
Total NOX (kg / day)	19,811

¹ Vehicle Miles of Travel Metrolina Model Team, April 5, 2005
² Emissions Factors: NCDENR, April 20, 2005
³ 5 county includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties
⁴ Off model NOX reductions - see section 4.4
 Local vehicle mix, Local starts per day
 Average hourly relative humidity for Gaston and Mecklenburg counties
 56 year average hourly temperature for 5-county area

VOLATILE ORGANIC COMPOUNDS

Table I-17

Ozone Precursors

Gaston County

Vehicle Miles traveled and Emissions Calculations

Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, Local starts per day, Local average hourly relative humidity

2010		avg. Speed	Model VMT	normal- ized VMT	Emission Factors (grams / mile)			VOC (tons/day)
					I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	43	114,494	92,162	0.470	0.515	0.474	0.0
	Principal	43	178,950	144,046	0.502	0.559	0.507	0.1
	Minor	40	420,906	338,808	0.520	0.582	0.525	0.2
	Maj. Coll.	41	546,949	440,266	0.520	0.581	0.525	0.3
	Min. Coll.	44	305,025	245,530	0.511	0.570	0.516	0.1
	Local	30	333,699	171,722	0.564	0.633	0.570	0.1
Urban	Interstate	41	2,383,241	1,918,389	0.502	0.557	0.506	1.1
	Oth F/E	47	74,866	60,263	0.500	0.557	0.505	0.0
	Principal	31	1,526,943	1,229,112	0.563	0.634	0.569	0.8
	Minor	32	1,197,829	964,192	0.558	0.627	0.564	0.6
	Collector	28	291,021	234,258	0.581	0.654	0.587	0.2
	Local	30	561,549	288,974	0.569	0.641	0.575	0.2
		0	0	0	0.000	0.000	0.000	0.0
Total			7,935,473	6,127,722	VOC from Model VOC SIP Budget BUDGET - MODEL			3.6 5.7 2.1

VMT NORMALIZATION FACTORS

LOCAL

0.5146

2000 Model VMT to 2000

NON-LOCAL

0.80495

NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Tons/day = norm. VMT *
(gr/mi / 907184.7)

Vehicle Miles of Travel
Emission Factors

Metrolina Model
NCDENR

March 28, 2005
April 20, 2005

VOLATILE ORGANIC COMPOUNDS

Table I-19

Ozone Precursors

Gaston County

Vehicle Miles traveled and Emissions Calculations

Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, Local starts per day, Local average hourly relative humidity

2030		avg. Speed	Model VMT	normal- ized VMT	Emission Factors (grams / mile)			VOC (tons/day)
					I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	38	163,234	131,395	0.221	0.287	0.226	0.0
	Principal	40	265,641	213,828	0.219	0.301	0.226	0.1
	Minor	34	665,994	536,091	0.229	0.318	0.236	0.1
	Maj. Coll.	33	985,340	793,149	0.231	0.322	0.238	0.2
	Min. Coll.	33	546,106	439,588	0.231	0.321	0.238	0.1
	Local	30	602,551	310,074	0.238	0.332	0.246	0.1
Urban	Interstate	38	3,980,506	3,204,107	0.222	0.301	0.228	0.8
	Oth F/E	46	79,673	64,133	0.213	0.295	0.220	0.0
	Principal	28	2,504,155	2,015,719	0.244	0.344	0.252	0.6
	Minor	29	1,526,367	1,228,649	0.241	0.339	0.249	0.3
	Collector	25	477,435	384,311	0.254	0.357	0.262	0.1
	Local	30	727,490	374,368	0.238	0.335	0.246	0.1
High Occ. Veh		0	0	0	0.000	0.000	0.000	0.0
Total			12,524,492	9,695,411	VOC from Model VOC SIP Budget BUDGET - MODEL			2.6 5.7 3.1

VMT NORMALIZATION FACTORS

LOCAL

0.5146

2000 Model VMT to 2000

NON-LOCAL

0.80495

NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Tons/day = norm. VMT *
(gr/mi / 907184.7)

Vehicle Miles of Travel
Emission Factors

Metrolina Model
NCDENR

April 5, 2005
April 20, 2005

VOLATILE ORGANIC COMPOUNDS

Table I-20

Ozone Precursors

Mecklenburg County

Vehicle Miles traveled and Emissions Calculations

Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, Local starts per day, Local average hourly relative humidity

2005		avg. Speed	Model VMT	normal- ized VMT	Emission Factors (grams / mile)			VOC (tons/day)
					I&M 90.0%	NO I&M 10.0%	composite	
Rural	Interstate	0	0	0				0.0
	Principal	31	151,923	116,499	0.836	0.906	0.843	0.1
	Minor	27	151,056	115,834	0.892	0.970	0.900	0.1
	Maj.Coll	39	10,664	8,178	0.802	0.870	0.809	0.0
	Min. Coll.	38	145,174	111,323	0.805	0.873	0.812	0.1
	Local	30	193,923	90,993	0.863	0.939	0.871	0.1
Urban	Interstate	47	7,069,770	5,421,286	0.739	0.796	0.745	4.5
	Oth F/E	48	3,343,704	2,564,041	0.756	0.818	0.762	2.2
	Principal	29	4,418,847	3,388,489	0.879	0.959	0.887	3.3
	Minor	29	5,181,020	3,972,943	0.880	0.959	0.888	3.9
	Collector	27	3,278,813	2,514,281	0.901	0.982	0.909	2.5
	Local	30	3,755,937	1,762,364	0.871	0.950	0.879	1.7
High Occ. Veh		43	22,594	22,594	0.788	0.859	0.795	0.0
Total			27,723,427	20,088,824	VOC from Model Off-model VOC reductions Total VOC VOC SIP Budget BUDGET - Est. Emissions			18.5 (0.1) 18.4 25.9 7.5

VMT NORMALIZATION FACTORS

LOCAL

0.46922

2000 Model VMT to 2000

NON-LOCAL

0.76683

NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOX reductions - see section 4.4 56 kg / day

Tons/day = norm. VMT *

(gr/mi / 907184.7)

Vehicle Miles of Travel

Emission Factors

Metrolina Model

NCDENR

March 29, 2005

April 20, 2005

VOLATILE ORGANIC COMPOUNDS

Table I-23

Ozone Precursors

Mecklenburg County

Vehicle Miles traveled and Emissions Calculations

Mobile 6.2

FACTORS - April 20, 2005, Local vehicle mix, Local starts per day, Local average hourly relative humidity

2030		avg. Speed	Model VMT	normal- ized VMT	Emission Factors (grams / mile)			VOC (tons/day)
					I&M 91.0%	NO I&M 9.0%	composite	
Rural	Interstate	0	0	0				0.0
	Principal	27	480,653	368,578	0.239	0.324	0.247	0.1
	Minor	25	376,818	288,954	0.246	0.338	0.254	0.1
	Maj. Coll.	30	53,416	40,961	0.228	0.317	0.236	0.0
	Min. Coll.	28	328,692	252,050	0.234	0.324	0.242	0.1
	Local	30	727,654	341,431	0.228	0.316	0.236	0.1
	Urban	Interstate	41	10,298,737	7,897,343	0.208	0.280	0.214
Oth F/E		45	9,397,805	7,206,485	0.204	0.280	0.211	1.7
Principal		25	7,142,049	5,476,712	0.244	0.341	0.253	1.5
Minor		25	8,541,101	6,549,542	0.244	0.340	0.253	1.8
Collector		23	5,710,389	4,378,877	0.252	0.352	0.261	1.3
Local		30	5,703,608	2,676,252	0.227	0.318	0.235	0.7
High Occ. Veh		41	767,061	767,061	0.198	0.285	0.206	0.2
Total			49,527,983	36,244,245	VOC from Model Off-model VOC reductions Total VOC VOC SIP Budget BUDGET - Est. Emissions			9.4 (0.1) 9.3 25.9 16.6

VMT NORMALIZATION FACTORS

LOCAL

0.46922

2000 Model VMT to 2000

NON-LOCAL

0.76683

NCDOT Universe file VMT

No normalization factor for High Occupancy Vehicle lanes because no HOV facilities exist in base year

Off-model NOX reductions - see section 4.4 68 kg / day

Tons/day = norm. VMT *

(gr/mi / 907184.7)

Vehicle Miles of Travel

Emission Factors

Metrolina Model

NCDENR

April 5, 2005

April 20, 2005

VOLATILE ORGANIC COMPOUNDS

Table I-24

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2002		Emission Factors (grams / mile) ²					
Gaston		avg. Speed	VMT ¹	I&M 79.0%	NO I&M 21.0%	composite	VOC (kg/day)
Rural	Interstate	53	92,818	0.942	0.968	0.947	88
	Principal	47	128,635	1.055	1.088	1.062	137
	Minor	44	372,082	1.097	1.133	1.105	411
	Maj.Coll.	43	478,440	1.109	1.145	1.117	534
	Min. Coll.	45	254,170	1.096	1.132	1.104	280
	Local	30	255,629	1.210	1.254	1.219	312
Urban	Interstate	46	1,968,148	1.044	1.076	1.051	2,068
	Oth F/E	47	73,801	1.077	1.111	1.084	80
	Principal	34	1,298,334	1.178	1.219	1.187	1,541
	Minor	35	1,045,243	1.167	1.207	1.175	1,229
	Collector	30	248,152	1.226	1.271	1.235	307
	Local	30	494,925	1.226	1.271	1.235	611
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			6,710,377	VOC			7,597

Mecklenburg		avg. Speed	VMT ¹	I&M 85.0%	NO I&M 15.0%	composite	VOC (kg/day)
Rural	Interstate	0	0			0.000	0
	Principal	35	143,130	1.153	1.191	1.159	166
	Minor	28	135,077	1.268	1.314	1.275	172
	Maj.Coll.	38	7,996	1.168	1.207	1.174	9
	Min. Coll.	41	113,691	1.148	1.186	1.154	131
	Local	30	123,081	1.243	1.288	1.250	154
Urban	Interstate	43	6,571,980	1.088	1.122	1.093	7,184
	Oth F/E	43	2,354,678	1.127	1.164	1.133	2,667
	Principal	29	4,299,894	1.273	1.320	1.280	5,504
	Minor	29	5,128,228	1.272	1.319	1.279	6,559
	Collector	28	3,199,678	1.288	1.335	1.295	4,144
	Local	30	3,583,232	1.260	1.306	1.267	4,540
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			25,660,666	VOC			31,230

5-county ³		avg. Speed	VMT ¹	I&M 48.0%	NO I&M 52.0%	composite	VOC (kg/day)
Rural	Interstate	57	925,200	1.247	1.285	1.267	1,172
	Principal	48	830,595	1.388	1.438	1.414	1,174
	Minor	39	1,239,089	1.502	1.559	1.532	1,898
	Maj.Coll.	48	2,285,118	1.431	1.484	1.459	3,333
	Min. Coll.	46	1,420,446	1.444	1.498	1.472	2,091
	Local	30	1,992,894	1.645	1.711	1.679	3,347
Urban	Interstate	49	2,494,780	1.367	1.415	1.392	3,473
	Oth F/E	36	80,655	1.520	1.578	1.550	125
	Principal	36	2,068,806	1.551	1.612	1.583	3,274
	Minor	37	2,436,637	1.541	1.601	1.572	3,831
	Collector	36	1,245,898	1.554	1.615	1.586	1,976
	Local	30	1,492,164	1.659	1.727	1.694	2,528
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			18,512,283	VOC			28,222

2002 Metrolina Region (N.C.) Modeled VOC (kg / day)		67,049
Off-model VOC reductions (kg / day)⁴		(55)
Total VOC (kg / day)		66,994

¹ Vehicle Miles of Travel Metrolina Model Team, March 30, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-County includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model VOC reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

VOLATILE ORGANIC COMPOUNDS

Table I-25

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2010 Build			Emission Factors (grams / mile) ²				VOC (kg/day)
Gaston BUILD		avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	43	114,494	0.470	0.515	0.474	54
	Principal	43	178,950	0.502	0.559	0.507	91
	Minor	40	420,906	0.520	0.582	0.525	221
	Maj.Coll	41	546,949	0.520	0.581	0.525	287
	Min. Coll.	44	305,025	0.511	0.570	0.516	157
	Local	30	333,699	0.564	0.633	0.570	190
Urban	Interstate	41	2,383,241	0.502	0.557	0.506	1,207
	Oth F/E	47	74,866	0.500	0.557	0.505	38
	Principal	31	1,526,943	0.563	0.634	0.569	868
	Minor	32	1,197,829	0.558	0.627	0.564	675
	Collector	28	291,021	0.581	0.654	0.587	171
	Local	30	561,549	0.569	0.641	0.575	323
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			7,935,473	VOC			4,282

Mecklenburg BUILD			avg. speed	VMT ¹	I&M 91.0%	NO I&M 9.0%	composite	VOC (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	28	215,141	0.569	0.636	0.575	124	
	Minor	27	176,422	0.586	0.658	0.592	105	
	Maj.Coll	36	14,992	0.539	0.604	0.545	8	
	Min. Coll.	34	205,305	0.546	0.612	0.552	113	
	Local	30	276,955	0.568	0.637	0.574	159	
Urban	Interstate	46	7,788,712	0.492	0.545	0.497	3,869	
	Oth F/E	49	4,689,078	0.499	0.556	0.504	2,364	
	Principal	28	4,990,012	0.586	0.660	0.593	2,957	
	Minor	28	5,841,850	0.585	0.659	0.592	3,456	
	Collector	26	3,665,069	0.599	0.675	0.606	2,220	
	Local	30	4,145,000	0.573	0.646	0.580	2,402	
High Occ. Veh		47	75,762	0.511	0.575	0.517	39	
Total			32,084,295	VOC			17,818	

5-county BUILD ³			avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	VOC (kg/day)
Rural	Interstate	51	1,099,606	0.654	0.702	0.658	723	
	Principal	50	1,286,459	0.698	0.758	0.703	904	
	Minor	38	1,373,514	0.769	0.840	0.775	1,064	
	Maj.Coll	45	2,743,384	0.740	0.808	0.745	2,045	
	Min. Coll.	43	1,832,129	0.747	0.815	0.752	1,379	
	Local	30	2,750,966	0.833	0.913	0.839	2,309	
Urban	Interstate	45	2,988,793	0.712	0.773	0.717	2,143	
	Oth F/E	36	123,745	0.774	0.846	0.780	96	
	Principal	34	2,540,699	0.803	0.881	0.809	2,056	
	Minor	34	2,958,063	0.803	0.882	0.809	2,394	
	Collector	34	1,620,457	0.804	0.883	0.810	1,313	
	Local	30	1,729,711	0.840	0.923	0.847	1,464	
High Occ. Veh		0	0	0.000	0.000	0.000	0	
Total			23,047,527	VOC			17,891	

2010 Build Metrolina Region (N.C.) Modeled VOC (kg / day)	39,990
Off-model VOC reductions (kg / day)⁴	(91)
Total VOC (kg / day)	39,899

¹ Vehicle Miles of Travel Metrolina Model Team, March 29, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-county includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model VOC reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

VOLATILE ORGANIC COMPOUNDS

Table I-26

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2010 NoBuild			Emission Factors (grams / mile)²				VOC (kg/day)
Gaston NOBUILD		avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	42	113,320	0.473	0.518	0.477	54
	Principal	43	159,581	0.502	0.559	0.507	81
	Minor	38	440,174	0.526	0.588	0.531	234
	Maj.Coll	40	574,778	0.523	0.585	0.528	303
	Min. Coll.	43	325,877	0.513	0.573	0.518	169
	Local	30	333,699	0.564	0.633	0.570	190
Urban	Interstate	41	2,349,197	0.502	0.557	0.506	1,190
	Oth F/E	46	84,138	0.502	0.560	0.507	43
	Principal	30	1,525,170	0.569	0.641	0.575	877
	Minor	31	1,227,579	0.563	0.634	0.569	698
	Collector	27	315,982	0.588	0.662	0.594	188
	Local	30	561,549	0.569	0.641	0.575	323
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			8,011,046	VOC			4,348

Mecklenburg NOBUILD			avg. speed	VMT¹	I&M 91.0%	NO I&M 9.0%	composite	VOC (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	28	205,959	0.569	0.637	0.575		118
	Minor	26	184,849	0.594	0.667	0.601		111
	Maj.Coll	35	15,759	0.543	0.608	0.549		9
	Min. Coll.	33	197,177	0.551	0.618	0.557		110
	Local	30	276,955	0.568	0.638	0.574		159
Urban	Interstate	45	8,046,630	0.495	0.549	0.500		4,022
	Oth F/E	48	4,014,499	0.502	0.559	0.507		2,036
	Principal	26	5,089,360	0.600	0.676	0.607		3,088
	Minor	25	5,973,507	0.608	0.684	0.615		3,673
	Collector	21	3,806,724	0.648	0.732	0.656		2,496
	Local	30	4,145,000	0.574	0.646	0.580		2,406
High Occ. Veh		43	31,838	0.520	0.586	0.526		17
Total			31,988,257	VOC			18,245	

5-county NOBUILD³			avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	VOC (kg/day)
Rural	Interstate	51	1,106,868	0.654	0.702	0.658		728
	Principal	48	963,516	0.706	0.767	0.711		685
	Minor	35	1,527,815	0.786	0.860	0.792		1,210
	Maj.Coll	44	2,884,577	0.744	0.813	0.750		2,162
	Min. Coll.	42	1,896,099	0.751	0.821	0.757		1,435
	Local	30	2,750,966	0.833	0.913	0.839		2,309
Urban	Interstate	45	3,024,224	0.712	0.773	0.717		2,168
	Oth F/E	31	98,269	0.813	0.891	0.819		81
	Principal	28	2,526,747	0.858	0.944	0.865		2,185
	Minor	30	2,954,865	0.839	0.922	0.846		2,499
	Collector	32	1,663,009	0.821	0.902	0.827		1,376
	Local	30	1,729,711	0.840	0.923	0.847		1,464
High Occ. Veh		0	0	0.000	0.000	0.000		0
Total			23,126,666	VOC			18,302	

2010 No-Build Metrolina Region (N.C.) Modeled VOC (kg / day)	40,895
Off-model VOC reductions (kg / day)⁴	(59)
Total VOC (kg / day)	40,836

¹ Vehicle Miles of Travel Metrolina Model Team, April 7, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-county includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model VOC reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

VOLATILE ORGANIC COMPOUNDS

Table I-27

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2020 Build				Emission Factors (grams / mile) ²			VOC (kg/day)
Gaston BUILD		avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	40	137,309	0.264	0.328	0.269	37
	Principal	41	239,546	0.271	0.349	0.277	66
	Minor	36	550,750	0.281	0.366	0.288	159
	Maj.Coll	36	753,364	0.281	0.368	0.288	217
	Min. Coll.	41	410,358	0.273	0.356	0.280	115
	Local	30	447,378	0.296	0.387	0.303	136
Urban	Interstate	43	3,318,233	0.266	0.341	0.272	903
	Oth F/E	46	85,816	0.267	0.346	0.273	23
	Principal	31	1,986,331	0.293	0.388	0.301	597
	Minor	30	1,320,629	0.296	0.392	0.304	401
	Collector	27	372,856	0.306	0.405	0.314	117
	Local	30	644,844	0.296	0.392	0.304	196
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			10,267,414	VOC			2,966

Mecklenburg BUILD				I&M	NO I&M	composite	VOC
		avg. speed	VMT ¹	91.0%	9.0%		(kg/day)
Rural	Interstate	0	0			0.000	0
	Principal	24	282,604	0.311	0.401	0.319	90
	Minor	25	228,178	0.309	0.404	0.318	72
	Maj.Coll	32	20,041	0.285	0.372	0.293	6
	Min. Coll.	32	266,250	0.284	0.371	0.292	78
	Local	30	512,415	0.290	0.380	0.298	153
Urban	Interstate	44	9,116,716	0.260	0.332	0.266	2,429
	Oth F/E	46	7,589,557	0.261	0.338	0.268	2,033
	Principal	27	6,071,672	0.300	0.397	0.309	1,875
	Minor	27	6,741,641	0.301	0.397	0.310	2,087
	Collector	25	4,670,861	0.308	0.407	0.317	1,480
	Local	30	4,982,678	0.290	0.383	0.298	1,487
High Occ. Veh		45	544,419	0.257	0.342	0.265	144
Total			41,027,031	VOC			11,935

5-county BUILD ³				I&M	NO I&M	composite	VOC
		avg. speed	VMT ¹	92.0%	8.0%		(kg/day)
Rural	Interstate	48	1,634,937	0.326	0.402	0.332	543
	Principal	51	2,107,898	0.329	0.421	0.336	709
	Minor	37	1,706,319	0.358	0.467	0.367	626
	Maj.Coll	42	3,530,683	0.349	0.455	0.357	1,262
	Min. Coll.	41	2,426,115	0.350	0.457	0.359	870
	Local	30	3,959,371	0.381	0.502	0.391	1,547
Urban	Interstate	52	4,184,171	0.327	0.415	0.334	1,398
	Oth F/E	41	302,553	0.347	0.453	0.355	108
	Principal	33	2,929,574	0.369	0.490	0.379	1,109
	Minor	32	3,589,665	0.374	0.495	0.384	1,377
	Collector	30	1,961,146	0.381	0.506	0.391	767
	Local	30	2,027,219	0.381	0.506	0.391	793
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			30,359,652	VOC			11,108

2020 Build Metrolina Region (N.C.) Modeled VOC (kg / day)	26,009
Off-model VOC reductions (kg / day)⁴	(93)
Total VOC (kg / day)	25,916

¹ Vehicle Miles of Travel Metrolina Model Team, April 5, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-County includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model VOC reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

VOLATILE ORGANIC COMPOUNDS

Table I-28

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2020 NoBuild			Emission Factors (grams / mile) ²				VOC (kg/day)
Gaston NOBUILD		avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	39	136,787	0.267	0.330	0.272	37
	Principal	39	236,754	0.274	0.354	0.280	66
	Minor	34	554,488	0.285	0.372	0.292	162
	Maj.Coll	34	758,743	0.285	0.373	0.292	222
	Min. Coll.	38	479,402	0.278	0.362	0.285	136
	Local	30	447,378	0.296	0.388	0.303	136
Urban	Interstate	39	2,794,514	0.273	0.349	0.279	780
	Oth F/E	45	94,579	0.268	0.348	0.274	26
	Principal	24	2,019,986	0.319	0.422	0.327	661
	Minor	24	1,580,578	0.319	0.422	0.327	517
	Collector	24	412,165	0.319	0.421	0.327	135
	Local	30	644,844	0.296	0.392	0.304	196
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			10,160,219	VOC			3,074

Mecklenburg NOBUILD			avg. speed	VMT ¹	I&M 91.0%	NO I&M 9.0%	composite	VOC (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	21	325,902	0.325	0.419	0.333	109	
	Minor	24	245,263	0.314	0.411	0.323	79	
	Maj.Coll	23	25,734	0.319	0.418	0.328	8	
	Min. Coll.	25	342,592	0.309	0.404	0.318	109	
	Local	30	512,415	0.291	0.380	0.299	153	
Urban	Interstate	42	9,147,915	0.263	0.336	0.270	2,466	
	Oth F/E	44	6,533,333	0.264	0.342	0.271	1,771	
	Principal	22	6,215,179	0.324	0.429	0.333	2,072	
	Minor	20	7,298,515	0.336	0.445	0.346	2,524	
	Collector	17	4,731,460	0.370	0.489	0.381	1,801	
	Local	30	4,982,678	0.291	0.384	0.299	1,492	
High Occ. Veh		44	112,303	0.258	0.345	0.266	30	
Total			40,473,290	VOC			12,614	

5-county NOBUILD ³			avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	VOC (kg/day)
Rural	Interstate	46	1,397,213	0.333	0.412	0.339	474	
	Principal	48	1,729,434	0.338	0.434	0.346	598	
	Minor	32	1,891,517	0.378	0.496	0.387	733	
	Maj.Coll	37	3,967,525	0.364	0.476	0.373	1,480	
	Min. Coll.	35	2,806,054	0.368	0.482	0.377	1,058	
	Local	30	3,959,371	0.386	0.508	0.396	1,567	
Urban	Interstate	43	3,511,400	0.345	0.442	0.353	1,239	
	Oth F/E	28	167,339	0.390	0.514	0.400	67	
	Principal	25	3,396,799	0.409	0.546	0.420	1,427	
	Minor	26	3,896,354	0.405	0.538	0.416	1,619	
	Collector	27	2,347,388	0.400	0.532	0.411	964	
	Local	30	2,027,219	0.386	0.513	0.396	803	
High Occ. Veh		0	0	0.000	0.000	0.000	0	
Total			31,097,615	VOC			12,028	

2020 No-Build Metrolina Region (N.C.) Modeled VOC (kg / day)	27,716
Off-model VOC reductions (kg / day)⁴	(59)
Total VOC (kg / day)	27,657

¹ Vehicle Miles of Travel Metrolina Model Team, April 5, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-County includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model VOC reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area

VOLATILE ORGANIC COMPOUNDS

Table I-29

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2030 Build			Emission Factors (grams / mile) ²				VOC (kg/day)
Gaston BUILD		avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	38	163,234	0.221	0.287	0.226	37
	Principal	40	265,641	0.219	0.301	0.226	60
	Minor	34	665,994	0.229	0.318	0.236	157
	Maj.Coll	33	985,340	0.231	0.322	0.238	235
	Min. Coll.	33	546,106	0.231	0.321	0.238	130
	Local	30	602,551	0.238	0.332	0.246	148
Urban	Interstate	38	3,980,506	0.222	0.301	0.228	909
	Oth F/E	46	79,673	0.213	0.295	0.220	17
	Principal	28	2,504,155	0.244	0.344	0.252	631
	Minor	29	1,526,367	0.241	0.339	0.249	380
	Collector	25	477,435	0.254	0.357	0.262	125
	Local	30	727,490	0.238	0.335	0.246	179
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			12,524,492	VOC			3,008

Mecklenburg BUILD			avg. speed	VMT ¹	I&M 91.0%	NO I&M 9.0%	composite	VOC (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	27	480,653	0.239	0.324	0.247		119
	Minor	25	376,818	0.246	0.338	0.254		96
	Maj.Coll	30	53,416	0.228	0.317	0.236		13
	Min. Coll.	28	328,692	0.234	0.324	0.242		80
	Local	30	727,654	0.228	0.316	0.236		172
Urban	Interstate	41	10,298,737	0.208	0.280	0.214		2,209
	Oth F/E	45	9,397,805	0.204	0.280	0.211		1,981
	Principal	25	7,142,049	0.244	0.341	0.253		1,805
	Minor	25	8,541,101	0.244	0.340	0.253		2,158
	Collector	23	5,710,389	0.252	0.352	0.261		1,490
	Local	30	5,703,608	0.227	0.318	0.235		1,341
High Occ. Veh		41	767,061	0.198	0.285	0.206		158
Total			49,527,983	VOC			11,621	

5-county BUILD ³			avg. speed	VMT ¹	I&M 92.0%	NO I&M 8.0%	composite	VOC (kg/day)
Rural	Interstate	50	2,106,905	0.234	0.310	0.240		506
	Principal	46	2,893,540	0.243	0.341	0.251		726
	Minor	33	2,736,027	0.270	0.384	0.279		764
	Maj.Coll	39	4,979,919	0.256	0.365	0.265		1,318
	Min. Coll.	37	3,284,150	0.260	0.370	0.269		883
	Local	30	5,557,275	0.280	0.399	0.290		1,609
Urban	Interstate	47	5,122,767	0.241	0.334	0.248		1,273
	Oth F/E	42	332,095	0.250	0.355	0.258		86
	Principal	31	3,596,272	0.275	0.398	0.285		1,024
	Minor	31	4,818,281	0.275	0.398	0.285		1,372
	Collector	31	2,453,842	0.275	0.398	0.285		699
	Local	30	2,321,806	0.279	0.403	0.289		671
High Occ. Veh		0	0	0.000	0.000	0.000		0
Total			40,202,880	VOC			10,930	

2030 Build Metrolina Region (N.C.) Modeled VOC (kg / day)	25,560
Off-model VOC reductions (kg / day)⁴	(87)
Total VOC (kg / day)	25,473

¹ Vehicle Miles of Travel Metrolina Model Team, April 5, 2005
² Emissions Factors: NCDENR, April 20, 2005
³ 5-county includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties
⁴ Off model VOC reductions - see section 4.4
 Local vehicle mix, Local starts per day
 Average hourly relative humidity for Gaston and Mecklenburg counties
 56 year average hourly temperature for 5-county area

VOLATILE ORGANIC COMPOUNDS

Table I-30

**Ozone Precursors
Metrolina Region, North Carolina
Vehicle Miles Traveled and Emissions Calculations
Mobile 6.2**

2030 NoBuild			Emission Factors (grams / mile)²				VOC (kg/day)
Gaston NOBUILD		avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	
Rural	Interstate	37	162,944	0.223	0.289	0.228	37
	Principal	34	341,589	0.230	0.315	0.237	81
	Minor	27	740,324	0.249	0.345	0.257	190
	Maj.Coll	27	1,014,427	0.248	0.345	0.256	259
	Min. Coll.	29	651,407	0.241	0.336	0.249	162
	Local	30	602,551	0.238	0.332	0.246	148
Urban	Interstate	37	4,007,069	0.224	0.303	0.230	923
	Oth F/E	41	116,128	0.219	0.303	0.226	26
	Principal	24	2,646,378	0.259	0.364	0.267	708
	Minor	20	1,706,269	0.279	0.392	0.288	491
	Collector	21	534,805	0.273	0.384	0.282	151
	Local	30	727,490	0.238	0.335	0.246	179
High Occ. Veh		0	0	0.000	0.000	0.000	0
Total			13,251,383	VOC			3,355

Mecklenburg NOBUILD			avg. speed	VMT¹	I&M 91.0%	NO I&M 9.0%	composite	VOC (kg/day)
Rural	Interstate	0	0				0.000	0
	Principal	20	393,657	0.269	0.361	0.277		109
	Minor	22	299,902	0.260	0.358	0.269		81
	Maj.Coll	20	30,041	0.271	0.375	0.280		8
	Min. Coll.	23	374,998	0.254	0.351	0.263		99
	Local	30	727,654	0.228	0.316	0.236		172
Urban	Interstate	41	10,926,329	0.208	0.281	0.215		2,344
	Oth F/E	39	9,597,371	0.211	0.291	0.218		2,094
	Principal	20	7,407,631	0.268	0.376	0.278		2,057
	Minor	19	8,276,378	0.278	0.388	0.288		2,383
	Collector	16	5,851,619	0.313	0.433	0.324		1,895
	Local	30	5,703,608	0.227	0.319	0.235		1,342
High Occ. Veh		36	728,876	0.204	0.294	0.212		155
Total			50,318,064	VOC			12,738	

5-county NOBUILD³			avg. speed	VMT¹	I&M 92.0%	NO I&M 8.0%	composite	VOC (kg/day)
Rural	Interstate	48	2,164,032	0.237	0.314	0.243		526
	Principal	47	2,862,525	0.242	0.338	0.250		715
	Minor	31	2,205,607	0.276	0.394	0.285		630
	Maj.Coll	36	4,758,365	0.262	0.374	0.271		1,289
	Min. Coll.	34	3,530,730	0.267	0.380	0.276		975
	Local	30	5,557,275	0.280	0.399	0.290		1,609
Urban	Interstate	47	5,460,561	0.241	0.334	0.248		1,357
	Oth F/E	34	393,237	0.266	0.378	0.275		108
	Principal	26	3,696,946	0.295	0.426	0.305		1,129
	Minor	25	4,455,980	0.300	0.433	0.311		1,384
	Collector	26	2,587,255	0.295	0.426	0.305		790
	Local	30	2,321,806	0.279	0.403	0.289		671
High Occ. Veh		0	0	0.000	0.000	0.000		0
Total			39,994,319	VOC			11,183	

2030 NoBuild Metrolina Region (N.C.) Modeled VOC (kg / day)	27,276
Off-model VOC reductions (kg / day)⁴	(93)
Total VOC (kg / day)	27,183

¹ Vehicle Miles of Travel Metrolina Model Team, April 5, 2005

² Emissions Factors: NCDENR, April 20, 2005

³ 5-county includes: Cabarrus, Iredell (partial), Lincoln, Rowan, and Union Counties

⁴ Off model VOC reductions - see section 4.4

Local vehicle mix, Local starts per day

Average hourly relative humidity for Gaston and Mecklenburg counties

56 year average hourly temperature for 5-county area