

**TSD-1h**

## **Projected 8-h ozone air quality over the Ozone Transport Region**

Bureau of Air Quality Analysis and Research  
Division of Air Resources  
New York State Department of Environmental Conservation  
Albany, NY 12233

**March 26, 2007**

The USEPA guidance (EPA 2005 and EPA 2006) recommends the use of relative reduction factor (RRF) approach for demonstrating the attainment of the 8-hr ozone NAAQS. The OTC Modeling committee implemented this recommended approach in performing attainment assessment of the areas.

#### Attainment year 2009

As described in TSD-1g (2007), the RRFs were determined for all OTR monitors for the two future year simulations with 2009OTW and 2009BOTW emissions data. The base design value (DVC) for 2002 representing the number of DVs estimated on the basis of 3-yr averages available from 2000 to 2004 are listed in Tables 1 and 2 along with the RRF, the number of days, the level of threshold, and future year projected concentrations for each monitor identified by its AIRS ID, common name and the county. The values in bold represent projected design values that exceed the 8-hr ozone NAAQS.

In general both simulations do not differ much from each other in that they yield similar design values with the 2009BOTW providing concentrations that are about one or two ppb lower than the 2009OTW. However it should be noted that the Guidance provides for a window (82 to 87 ppb) that can be considered as demonstrating attainment provided there is sufficient information to support in the form of weight of evidence (WOE) that suggests that the projected design value would be at or less than the 8-hr ozone NAAQS, taking into consideration the current measured design value and other projected emissions reductions within and outside the modeling domain.

If such a consideration is given then there are only 6 monitors above 87 ppb in the OTR, and without such an option of WOE there would be 21 monitors that have projected design value above 84 ppb. It should be noted that in either case, a majority of them are located in the Baltimore–Philadelphia–New York City–Connecticut portion of inner OTR corridor associated with high emissions region.

These Tables also list monitors for which no future DV (DVF) was calculated, listed as -9 in all columns except for DVC, which is a limitation inherent in the method for calculating the RRF. Often these monitors have DVC less than 84 ppb, with the exception of the monitor at the summit of Whiteface, NY (360310002), that has a DVC of 88.3 ppb while at the base of Whiteface (360311003) the measured DVC is 84.3 ppb. In both instances, there were fewer than 5 days that the model simulation predicted base concentrations in the 9-grid cells surrounding these monitors was below the threshold of 70 ppb, resulting in assigning no RRF and no estimate of DVF for these monitors.

#### Attainment year 2012

One other option that was considered by the OTC Modeling committee is the simulation of 2012BOTW emissions within the OTR. The details of the development of the 2012BOTW inventory are provided in TSD-1f (2007). The CMAQ simulation was performed with the 2012BOTW emissions in the OTR with the remainder of the

modeling domain also at 2012 emissions. The results of the simulation were processed in a manner similar to those of 2009 and the resulting future year design values are listed in Table 3 in a format similar to those in Tables 1 and 2.

The listed future DVs indicate that there are 5 monitors that would have a projected design value above 84 ppb, again located in the inner OTR corridor. However it should be noted that if consideration is given to these monitors along with WOE then these would be within the prescribed range of WOE, thereby demonstrating ***modeled attainment for all monitors in the OTR*** under this scenario.

#### Non-monitored locations

One of the requirements of the EPA guidance is the need to investigate if there are locations within the modeling domain where the predicted future design values (DVF) are above the level of NAAQS but are not associated with a monitor to provide DVC. While the EPA has recommended the use of modeled attainment test software (MATS) to investigate such occurrences, it was decided by the Modeling committee that such an assessment should be undertaken by the individual areas themselves as part of their SIP analysis.

#### References

EPA (2005) Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS. EPA-454/R-05-002.

EPA (2006) Guidance on the use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM<sub>2.5</sub> and Regional Haze. Draft 3.2- September 2006.

TSD-1f (2007) Future Year Emissions Inventory for 8-h OTC Ozone Modeling

TSD-1g (2007) Relative response factor (RRF) and “Modeled Attainment Test”

Table 1      Projected 8-hr Ozone Design Values over OTR based on  
2009OTW Emissions Inventory

AIRS-ID	County	Monitor	#ofDV	DVC	DVF	RRF	#Days	Threshold
340290006	Ocean	Colliers Mills <sup>(1)</sup>	3	106	<b>92</b>	0.87	20	85
90013007	Fairfield	Stratford	3	98.3	<b>90</b>	0.922	38	85
361030009	Suffolk	Holtsville	3	97	<b>90</b>	0.928	34	85
90093002	New Haven	Madison	3	98.3	<b>89</b>	0.908	39	85
340070003	Camden	Camden	3	98.3	<b>88</b>	0.9	26	85
340155001	Gloucester	Clarksboro	3	98.3	<b>88</b>	0.9	25	85
420170012	Bucks	Bristol	3	99	<b>88</b>	0.898	25	85
90010017	Fairfield	Greenwich	3	95.7	<b>87</b>	0.915	30	85
340071001	Camden	Ancora St. Hos	3	100.7	<b>87</b>	0.873	27	85
421010024	Philadelphia	Northeast (Air	3	96.7	<b>87</b>	0.903	23	85
90011123	Fairfield	Danbury	3	95.7	<b>86</b>	0.9	18	85
340210005	Mercer	Rider Univ.	3	97	<b>86</b>	0.891	23	85
510130020	Arlington	Arlington Co.	3	96.7	<b>86</b>	0.897	24	85
510590018	Fairfax	Fairfax Co. -	3	96.7	<b>86</b>	0.892	20	85
90019003	Fairfield	Westport	3	94	<b>85</b>	0.911	37	85
90070007	Middlesex	Middletown	3	95.7	<b>85</b>	0.892	21	85
90099005	New Haven	Hamden	3	93.3	<b>85</b>	0.915	25	85
240251001	Harford	Edgewood	3	100.3	<b>85</b>	0.854	41	85
340030005	Bergen	Teaneck	3	91.7	<b>85</b>	0.93	18	85
361030002	Suffolk	Babylon	3	93.7	<b>85</b>	0.917	22	85
361192004	Westchester	White Plains	3	91.3	<b>85</b>	0.936	22	85
240030014	Anne Arundel	Davidsonville	3	98	84	0.86	30	85
240030019	Anne Arundel	Ft. Meade	3	97	84	0.871	30	85
340230011	Middlesex	Rutgers Univ.	3	96	84	0.876	22	85
340250005	Monmouth	Monmouth Univ.	3	95.7	84	0.881	45	85
340273001	Morris	Chester	3	95.3	84	0.884	13	85
360290002	Erie	Amherst	3	95.7	84	0.884	11	78
360850067	Richmond	Susan Wagner	3	93	84	0.905	42	85
510590030	Fairfax	Fairfax Co. -	3	95	84	0.887	21	85
250213003	Norfolk	MILTON	1	91	83	0.914	13	85
340190001	Hunterdon	Flemington	3	95.3	83	0.88	15	85
510591005	Fairfax	Fairfax Co. -	1	94	83	0.887	21	85
516500004	Hampton City	Hampton	3	88.3	83	0.94	36	85
110010043	DC	McMillan Reser	3	92.7	82	0.89	22	85
240259001	Harford	Aldino	3	97	82	0.849	35	85
240330002	Prince Georges	Greenbelt	2	94	82	0.874	28	85
250092006	Essex	LYNN	3	90	82	0.918	16	85
360631006	Niagara	Middleport	3	91.7	82	0.895	15	85
360790005	Putnam	Mt. Ninham	3	91.3	82	0.899	14	85
420290050	Chester	West Chester	1	95	82	0.871	12	85
421010014	Philadelphia	Northwest (Rox	3	90.7	82	0.913	20	85
440090007	Washington	EPA Lab	3	93.3	82	0.879	33	85

518000004	Suffolk City	Suffolk - TCC	3	87	82	0.953	26	85
100031010	New Castle	Brandywine	3	92.7	81	0.878	19	85
240150003	Cecil	Fair Hill	3	97.7	81	0.834	18	85
240338003	Prince Georges	PG Coun.Eques.	1	94	81	0.87	28	85
340110007	Cumberland	Millville	3	95.7	81	0.849	16	85
360130006	Chautauqua	Dunkirk	3	93	81	0.878	20	85
360270007	Dutchess	Millbrook	3	92	81	0.882	12	80
420030010	Allegheny	Pittsburgh (Ca	3	90.7	81	0.9	16	85
420070002	Beaver	Hookstown	3	91.3	81	0.89	10	82
420450002	Delaware	Chester	3	91.7	81	0.887	23	85
420910013	Montgomery	Norristown	3	92.3	81	0.886	21	85
510850003	Hanover	Hanover Co.	2	92	81	0.886	11	85
90131001	Tolland	Stafford	3	92.3	80	0.872	11	85
240053001	Baltimore	Essex	3	91.3	80	0.881	48	85
240290002	Kent	Millington	3	95.3	80	0.842	17	85
250010002	Barnstable	TRURO	3	92	80	0.879	23	85
250051002	Bristol	FAIRHAVEN	3	91	80	0.882	23	85
250130008	Hampden	CHICOPEE	3	92	80	0.877	10	83
250250041	Suffolk	BOSTON (Long I	3	88.7	80	0.911	21	85
360450002	Jefferson	Perch River	3	91.3	80	0.879	10	81
420030008	Allegheny	Lawrenceville	3	89.3	80	0.9	16	85
420030067	Allegheny	South Fayette	3	89.3	80	0.899	13	85
440030002	Kent	Alton Jones	3	93.3	80	0.866	17	85
510360002	Charles City	Charles City C	3	89.3	80	0.9	14	85
515100009	Alexandria Cit	Alexandria	3	90	80	0.892	20	85
90110008	New London	Groton	3	90	79	0.883	38	85
100031007	New Castle	Lums Pond	2	94.5	79	0.846	18	85
100031013	New Castle	Bellefonte	3	90.3	79	0.876	21	85
110010025	DC	Takoma Park	3	88.7	79	0.895	24	85
110010041	DC	River Terrace	3	89	79	0.89	22	85
230090102	Hancock	ANP Cadillac M	3	91.7	79	0.871	10	82
420290100	Chester	New Garden (Ai	3	94.7	79	0.839	19	85
100010002	Kent	Killens Pond	3	88.3	78	0.893	25	85
340315001	Passaic	Ramapo	3	86.7	78	0.9	19	85
360050083	Bronx	Botanical Gard	3	83.7	78	0.939	20	85
420031005	Allegheny	Harrison Twp	3	91.3	78	0.864	14	85
420070005	Beaver	Brighton Twp	3	89.7	78	0.876	12	82
420490003	Erie	Erie	3	89	78	0.88	23	85
420770004	Lehigh	Allentown	3	90.7	78	0.87	11	84
420950025	Northampton	Freemansburg	3	90	78	0.874	11	85
440071010	Providence	Francis School	3	89.7	78	0.872	17	85
510870014	Henrico	Henrico Co.	3	88.3	78	0.893	15	85
511071005	Loudon	Loudoun Co.	3	90	78	0.872	15	85
90031003	Hartford	E. Hartford	3	88	77	0.88	16	85
90050005	Litchfield	Cornwall	1	89	77	0.874	11	84
100051003	Sussex	Lewes	3	87	77	0.896	26	85
230312002	York	Kennebunkport	3	88.3	77	0.877	19	85
240051007	Baltimore	Padonia	3	88.7	77	0.874	26	85

340010005	Atlantic	Nacote Creek	3	89	77	0.876	27	85
340170006	Hudson	Bayonne	3	84.7	77	0.911	22	85
420050001	Armstrong	Kittanning	3	90.7	77	0.856	11	84
420550001	Franklin	Methodist Hill	3	90.7	77	0.849	11	77
420710007	Lancaster	Lancaster	3	90.7	77	0.853	17	85
420850100	Mercer	Farrell	3	91.3	77	0.85	10	82
421290008	Westmoreland	Greensburg	3	88	77	0.881	18	85
421330008	York	York	3	89	77	0.866	17	85
510595001	Fairfax	Fairfax Co. -	3	88	77	0.886	21	85
100051002	Sussex	Seaford	3	90	76	0.846	10	80
240170010	Charles	S Maryland	3	93	76	0.819	17	85
240313001	Montgomery	Rockville	3	86.7	76	0.885	26	85
250094004	Essex	NEWBURY	3	86	76	0.884	27	85
360130011	Chautauqua	Westfield	3	87	76	0.88	12	85
420110009	Berks	Reading	3	88.7	76	0.861	10	85
420958000	Northampton	Easton	3	88	76	0.873	12	85
421250005	Washington	Charleroi	3	86.3	76	0.883	15	85
240130001	Carroll	South Carroll	3	88.7	75	0.853	12	85
250154002	Hampshire	WARE	3	86.3	75	0.877	10	81
360551004	Monroe	Rochester	3	83.7	75	0.898	18	85
361030004	Suffolk	Riverhead	3	83	75	0.904	36	85
420590002	Greene	Holbrook	3	87.7	75	0.858	10	85
421010136	Philadelphia	Southwest (Elm	3	83	75	0.907	23	85
510410004	Chesterfield	Chesterfield C	3	84.7	75	0.893	10	85
510590005	Fairfax	Fairfax Co. -	3	87	75	0.871	18	85
511790001	Stafford	Stafford Co.	3	86	75	0.878	36	85
230313002	York	Kittery	3	85.3	74	0.871	16	85
240210037	Frederick	Frederick Airp	3	87.3	74	0.858	11	85
250171102	Middlesex	STOW	3	85.7	74	0.875	10	80
330111010	Hillsborough	Nashua	2	86	74	0.871	10	75
360010012	Albany	Loudonville	3	83	74	0.899	8	70
360810124	Queens	Queens College	2	83	74	0.895	26	85
360910004	Saratoga	Stillwater	3	84.7	74	0.878	6	70
361173001	Wayne	Williamson	3	84	74	0.889	18	85
420431100	Dauphin	Hershey	3	86.7	74	0.857	16	85
421255001	Washington	Florence	3	85.7	74	0.868	10	83
511530009	Prince William	Prince William	3	85	74	0.876	12	83
230052003	Cumberland	Cape Elizabeth	3	84.3	73	0.874	18	85
230130004	Knox	Port Clyde	3	83.7	73	0.873	13	85
240430009	Washington	Hagerstown	3	85.3	73	0.857	10	84
250034002	Berkshire	ADAMS	3	83.3	73	0.881	9	70
330115001	Hillsborough	Peterborough	1	84	73	0.877	10	73
360671015	Onondaga	East Syracuse	3	82.3	73	0.896	8	70
360715001	Orange	Valley Central	3	84.7	73	0.87	10	76
420010002	Adams	Biglerville (P	3	85	73	0.868	10	80
420070014	Beaver	Beaver Falls	3	85	73	0.868	10	83
420430401	Dauphin	Harrisburg	3	85	73	0.862	15	85
421174000	Tioga	Tioga County (	3	85	73	0.859	5	70

421250200	Washington	Washington	3	85.3	73	0.86	11	85
511611004	Roanoke	Roanoke Co.	3	83.7	73	0.873	11	76
230090103	Hancock	ANP McFarland	3	83.7	72	0.872	10	82
250130003	Hampden	AGAWAM	1	83	72	0.878	10	83
250270015	Worcester	WORCESTER	3	84	72	0.867	10	79
330150012	Rockingham	Rye	2	83.5	72	0.871	16	85
420110001	Berks	Kutztown	2	84.5	72	0.858	10	85
420334000	Clearfield	Moshannon (PSU	3	87.3	72	0.827	11	76
421290006	Wetsmoreland	Murrysville	3	82	72	0.89	20	85
510690010	Frederick	Frederick Co.	3	82.7	72	0.873	11	81
518000005	Suffolk City	Suffolk - Holl	3	82.3	72	0.878	10	76
420210011	Cambria	Johnstown	3	85	71	0.844	10	85
420274000	Centre	Penn Nursery (	3	84.7	71	0.85	11	74
420690101	Lacakawana	Peckville	3	83.3	71	0.858	10	75
420990301	Perry	Perry County	3	83.3	71	0.853	10	77
511130003	Madison	Madison Co. -	3	84.7	71	0.845	11	71
420270100	Centre	State College	3	84.3	70	0.839	10	76
420692006	Lacakawana	Scranton	3	82	70	0.858	10	75
420791101	Luzerene	Wilkes-Barre	3	83.7	70	0.844	10	76
500030004	Bennington	Bennington	3	79.7	70	0.888	8	70
510330001	Caroline	Caroline Co.	3	82.3	70	0.852	10	84
360650004	Oneida	Camden	3	79.7	69	0.869	10	70
420130801	Blair	Altoona	3	83.3	69	0.837	10	80
420810100	Lycoming	Montoursville	1	82	69	0.851	11	75
230112005	Kennebec	Gardiner Pray	3	78	68	0.872	10	71
330150013	Rockingham	999	1	80	68	0.86	10	73
420791100	Luzerene	Nanticoke	3	81.7	68	0.844	10	76
330173002	Strafford	Rochester	2	78.5	67	0.863	11	71
510610002	Fauquier	Fauquier Co.	3	79.3	67	0.852	11	73
511390004	Page	Page Co.	3	79.7	67	0.844	12	72
250250042	Suffolk	BOSTON (Harris	3	73	66	0.91	16	85
420730015	Lawrence	New Castle	3	78.3	66	0.849	10	83
230090301	Hancock	Castine	1	75	65	0.878	10	79
250150103	Hampshire	AMHERST	3	74.7	65	0.878	10	76
420814000	Lycoming	Tiadaghton (PS	3	78.7	65	0.837	10	72
511630003	Rockbridge	Rockbridge Co.	3	76.7	65	0.856	8	70
230310038	York	West Buxton	1	75	64	0.862	9	70
330050007	Cheshire	Keene	3	74.3	64	0.869	10	72
360430005	Herkimer	Nick's Lake	3	74	64	0.874	6	70
421010004	Philadelphia	Frankford (Lab	3	71.3	64	0.908	25	85
250090005	Essex	LAWRENCE	1	70	61	0.883	10	82
330150015	Rockingham	Portsmouth	1	68	59	0.871	16	85
CC0040002	999	Roosevelt-Camp	3	58.3	51	0.889	10	75
230038001	Aroostook	Ashland135	3	64	-9	-9	-9	-999
230173001	Oxford	North Lovell	3	60.7	-9	-9	-9	-999
230194007	Penobscot	Howland	3	66.7	-9	-9	-9	-999
230194008	Penobscot	Holden Rider B	2	79	-9	-9	-9	-999
330012004	Belknap	Laconia	2	76.5	-9	-9	-9	-999

330031002	Carroll	Conway	1	67	-9	-9	-9	-999
330090008	Grafton	Haverhill	3	70.3	-9	-9	-9	-999
330130007	Merrimack	Concord	3	74.7	-9	-9	-9	-999
330190003	Sullivan	Claremont	3	74.3	-9	-9	-9	-999
360150003	Chemung	Elmira	3	80.3	-9	-9	-9	-999
360310002	Essex	Whiteface Summ	3	88.3	-9	-9	-9	-999
360310003	Essex	Whiteface Base	3	84.3	-9	-9	-9	-999
360410005	Hamilton	Piseco Lake	3	78.7	-9	-9	-9	-999
360530006	Madison	Camp Georgetow	3	79.7	-9	-9	-9	-999
361111005	Ulster	Belleayre	3	81.3	-9	-9	-9	-999
500070007	Chittenden	Underhill	3	77	-9	-9	-9	-999
511970002	Wythe	Wythe Co.	3	79.7	-9	-9	-9	-999

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420290050	Chester	West Chester	1	95	82	0.868	12	85
421010014	Philadelphia	Northwest (Rox	3	90.7	82	0.911	20	85
516500004	Hampton City	Hampton	3	88.3	82	0.939	36	85
518000004	Suffolk City	Suffolk - TCC	3	87	82	0.952	26	85
100031010	New Castle	Brandywine	3	92.7	81	0.875	19	85
240150003	Cecil	Fair Hill	3	97.7	81	0.831	18	85
240330002	Prince Georges	Greenbelt	2	94	81	0.872	28	85
240338003	Prince Georges	PG Coun.Eques.	1	94	81	0.868	28	85
340110007	Cumberland	Millville	3	95.7	81	0.847	16	85
360130006	Chautauqua	Dunkirk	3	93	81	0.876	20	85

360631006	Niagara	Middleport	3	91.7	81	0.893	15	85
360790005	Putnam	Mt. Ninham	3	91.3	81	0.895	14	85
420030010	Allegheny	Pittsburgh (Ca	3	90.7	81	0.898	16	85
420070002	Beaver	Hookstown	3	91.3	81	0.889	10	82
420450002	Delaware	Chester	3	91.7	81	0.885	23	85
420910013	Montgomery	Norristown	3	92.3	81	0.883	21	85
440090007	Washington	EPA Lab	3	93.3	81	0.876	33	85
510850003	Hanover	Hanover Co.	2	92	81	0.885	11	85
90131001	Tolland	Stafford	3	92.3	80	0.867	11	85
240053001	Baltimore	Essex	3	91.3	80	0.879	48	85
250010002	Barnstable	TRURO	3	92	80	0.877	23	85
250130008	Hampden	CHICOPEE	3	92	80	0.872	10	83
250250041	Suffolk	BOSTON (Long I	3	88.7	80	0.909	21	85
360270007	Dutchess	Millbrook	3	92	80	0.879	12	80
420030008	Allegheny	Lawrenceville	3	89.3	80	0.898	16	85
420030067	Allegheny	South Fayette	3	89.3	80	0.897	13	85
440030002	Kent	Alton Jones	3	93.3	80	0.862	17	85
510360002	Charles City	Charles City C	3	89.3	80	0.899	14	85
515100009	Alexandria Cit	Alexandria	3	90	80	0.891	20	85
90110008	New London	Groton	3	90	79	0.879	38	85
100031007	New Castle	Lums Pond	2	94.5	79	0.843	18	85
110010025	DC	Takoma Park	3	88.7	79	0.894	24	85
110010041	DC	River Terrace	3	89	79	0.888	22	85
230090102	Hancock	ANP Cadillac M	3	91.7	79	0.869	10	82
240290002	Kent	Millington	3	95.3	79	0.838	17	85
250051002	Bristol	FAIRHAVEN	3	91	79	0.878	23	85
360450002	Jefferson	Perch River	3	91.3	79	0.876	10	81
420290100	Chester	New Garden (Ai	3	94.7	79	0.835	19	85
100010002	Kent	Killens Pond	3	88.3	78	0.891	25	85
100031013	New Castle	Bellefonte	3	90.3	78	0.873	21	85
360050083	Bronx	Botanical Gard	3	83.7	78	0.939	20	85
420031005	Allegheny	Harrison Twp	3	91.3	78	0.862	14	85
420070005	Beaver	Brighton Twp	3	89.7	78	0.874	12	82
420490003	Erie	Erie	3	89	78	0.879	23	85
420770004	Lehigh	Allentown	3	90.7	78	0.867	11	84
420950025	Northampton	Freemansburg	3	90	78	0.87	11	85
510870014	Henrico	Henrico Co.	3	88.3	78	0.892	15	85
511071005	Loudon	Loudoun Co.	3	90	78	0.87	15	85
90031003	Hartford	E. Hartford	3	88	77	0.876	16	85
90050005	Litchfield	Cornwall	1	89	77	0.87	11	84
100051003	Sussex	Lewes	3	87	77	0.893	26	85
230312002	York	Kennebunkport	3	88.3	77	0.875	19	85
240051007	Baltimore	Padonia	3	88.7	77	0.872	26	85
340010005	Atlantic	Nacote Creek	3	89	77	0.874	27	85
340170006	Hudson	Bayonne	3	84.7	77	0.911	22	85
340315001	Passaic	Ramapo	3	86.7	77	0.898	19	85
420050001	Armstrong	Kittanning	3	90.7	77	0.854	11	84
420850100	Mercer	Farrell	3	91.3	77	0.85	10	82

421290008	Westmoreland	Greensburg	3	88	77	0.878	18	85
440071010	Providence	Francis School	3	89.7	77	0.868	17	85
510595001	Fairfax	Fairfax Co. -	3	88	77	0.885	21	85
240313001	Montgomery	Rockville	3	86.7	76	0.883	26	85
360130011	Chautauqua	Westfield	3	87	76	0.879	12	85
420550001	Franklin	Methodist Hill	3	90.7	76	0.841	11	77
420710007	Lancaster	Lancaster	3	90.7	76	0.843	17	85
420958000	Northampton	Easton	3	88	76	0.869	12	85
100051002	Sussex	Seaford	3	90	75	0.843	10	80
240130001	Carroll	South Carroll	3	88.7	75	0.847	12	85
240170010	Charles	S Maryland	3	93	75	0.816	17	85
250094004	Essex	NEWBURY	3	86	75	0.882	27	85
250154002	Hampshire	WARE	3	86.3	75	0.873	10	81
420110009	Berks	Reading	3	88.7	75	0.855	10	85
421010136	Philadelphia	Southwest (Elm	3	83	75	0.905	23	85
421250005	Washington	Charleroi	3	86.3	75	0.879	15	85
421330008	York	York	3	89	75	0.853	17	85
510410004	Chesterfield	Chesterfield C	3	84.7	75	0.892	10	85
510590005	Fairfax	Fairfax Co. -	3	87	75	0.869	18	85
511790001	Stafford	Stafford Co.	3	86	75	0.876	36	85
230313002	York	Kittery	3	85.3	74	0.869	16	85
250171102	Middlesex	STOW	3	85.7	74	0.87	10	80
330111010	Hillsborough	Nashua	2	86	74	0.867	10	75
360551004	Monroe	Rochester	3	83.7	74	0.895	18	85
360810124	Queens	Queens College	2	83	74	0.894	26	85
361030004	Suffolk	Riverhead	3	83	74	0.901	36	85
361173001	Wayne	Williamson	3	84	74	0.886	18	85
420590002	Greene	Holbrook	3	87.7	74	0.855	10	85
421255001	Washington	Florence	3	85.7	74	0.867	10	83
511530009	Prince William	Prince William	3	85	74	0.873	12	83
230052003	Cumberland	Cape Elizabeth	3	84.3	73	0.873	18	85
240210037	Frederick	Frederick Airp	3	87.3	73	0.846	11	85
250034002	Berkshire	ADAMS	3	83.3	73	0.877	9	70
330115001	Hillsborough	Peterborough	1	84	73	0.873	10	73
360010012	Albany	Loudonville	3	83	73	0.89	8	70
360671015	Onondoga	East Syracuse	3	82.3	73	0.889	8	70
360715001	Orange	Valley Central	3	84.7	73	0.868	10	76
360910004	Saratoga	Stillwater	3	84.7	73	0.869	6	70
420070014	Beaver	Beaver Falls	3	85	73	0.866	10	83
420431100	Dauphin	Hershey	3	86.7	73	0.845	16	85
421250200	Washington	Washington	3	85.3	73	0.858	11	85
230090103	Hancock	ANP McFarland	3	83.7	72	0.871	10	82
230130004	Knox	Port Clyde	3	83.7	72	0.871	13	85
240430009	Washington	Hagerstown	3	85.3	72	0.845	10	84
250130003	Hampden	AGAWAM	1	83	72	0.873	10	83
250270015	Worcester	WORCESTER	3	84	72	0.863	10	79
330150012	Rockingham	Rye	2	83.5	72	0.869	16	85
421174000	Tioga	Tioga County (	3	85	72	0.856	5	70

421290006	Wetsmoreland	Murrysville	3	82	72	0.887	20	85
511611004	Roanoke	Roanoke Co.	3	83.7	72	0.872	11	76
518000005	Suffolk City	Suffolk - Holl	3	82.3	72	0.876	10	76
420010002	Adams	Biglerville (P	3	85	71	0.837	10	80
420110001	Berks	Kutztown	2	84.5	71	0.852	10	85
420210011	Cambria	Johnstown	3	85	71	0.841	10	85
420274000	Centre	Penn Nursery (	3	84.7	71	0.843	11	74
420334000	Clearfield	Moshannon (PSU	3	87.3	71	0.824	11	76
420430401	Dauphin	Harrisburg	3	85	71	0.841	15	85
510690010	Frederick	Frederick Co.	3	82.7	71	0.869	11	81
511130003	Madison	Madison Co. -	3	84.7	71	0.844	11	71
420270100	Centre	State College	3	84.3	70	0.833	10	76
420690101	Lacakawana	Peckville	3	83.3	70	0.849	10	75
420791101	Luzerene	Wilkes-Barre	3	83.7	70	0.838	10	76
420990301	Perry	Perry County	3	83.3	70	0.841	10	77
500030004	Bennington	Bennington	3	79.7	70	0.883	8	70
360650004	Oneida	Camden	3	79.7	69	0.867	10	70
420130801	Blair	Altoona	3	83.3	69	0.835	10	80
420692006	Lacakawana	Scranton	3	82	69	0.849	10	75
420810100	Lycoming	Montoursville	1	82	69	0.845	11	75
510330001	Caroline	Caroline Co.	3	82.3	69	0.85	10	84
330150013	Rockingham	999	1	80	68	0.858	10	73
420791100	Luzerene	Nanticoke	3	81.7	68	0.839	10	76
230112005	Kennebec	Gardiner Pray	3	78	67	0.869	10	71
330173002	Strafford	Rochester	2	78.5	67	0.86	11	71
510610002	Fauquier	Fauquier Co.	3	79.3	67	0.85	11	73
511390004	Page	Page Co.	3	79.7	67	0.842	12	72
250250042	Suffolk	BOSTON (Harris	3	73	66	0.908	16	85
420730015	Lawrence	New Castle	3	78.3	66	0.848	10	83
230090301	Hancock	Castine	1	75	65	0.879	10	79
250150103	Hampshire	AMHERST	3	74.7	65	0.874	10	76
420814000	Lycoming	Tiadaghton (PS	3	78.7	65	0.832	10	72
511630003	Rockbridge	Rockbridge Co.	3	76.7	65	0.855	8	70
230310038	York	West Buxton	1	75	64	0.86	9	70
330050007	Cheshire	Keene	3	74.3	64	0.865	10	72
360430005	Herkimer	Nick's Lake	3	74	64	0.873	6	70
421010004	Philadelphia	Frankford (Lab	3	71.3	64	0.906	25	85
250090005	Essex	LAWRENCE	1	70	61	0.88	10	82
330150015	Rockingham	Portsmouth	1	68	59	0.869	16	85
CC0040002	999	Roosevelt-Camp	3	58.3	51	0.888	10	75
230038001	Aroostook	Ashland135	3	64	-9	-9	-9	-999
230173001	Oxford	North Lovell	3	60.7	-9	-9	-9	-999
230194007	Penobscot	Howland	3	66.7	-9	-9	-9	-999
230194008	Penobscot	Holden Rider B	2	79	-9	-9	-9	-999
330012004	Belknap	Laconia	2	76.5	-9	-9	-9	-999
330031002	Carroll	Conway	1	67	-9	-9	-9	-999
330090008	Grafton	Haverhill	3	70.3	-9	-9	-9	-999
330130007	Merrimack	Concord	3	74.7	-9	-9	-9	-999

330190003	Sullivan	Claremont	3	74.3	-9	-9	-9	-999
360150003	Chemung	Elmira	3	80.3	-9	-9	-9	-999
360310002	Essex	Whiteface Summ	3	88.3	-9	-9	-9	-999
360310003	Essex	Whiteface Base	3	84.3	-9	-9	-9	-999
360410005	Hamilton	Piseco Lake	3	78.7	-9	-9	-9	-999
360530006	Madison	Camp Georgetow	3	79.7	-9	-9	-9	-999
361111005	Ulster	Belleayre	3	81.3	-9	-9	-9	-999
500070007	Chittenden	Underhill	3	77	-9	-9	-9	-999
511970002	Wythe	Wythe Co.	3	79.7	-9	-9	-9	-999

Table 3 Projected 8-hr Ozone Design Values over OTR based on  
2012BOTW Emissions Inventory

AIRS-ID	County	Monitor	#ofDV	DVC	DVF	RRF	#Days	Threshold
90013007	Fairfield	Stratford	3	98.3	86	0.878	38	85
340290006	Ocean	Colliers Mills <sup>(1)</sup>	3	106	86	0.819	20	85
361030009	Suffolk	Holtsville	3	97	86	0.889	34	85
420170012	Bucks	Bristol	3	99	84	0.849	25	85
90010017	Fairfield	Greenwich	3	95.7	83	0.874	30	85
90093002	New Haven	Madison	3	98.3	83	0.853	39	85
340070003	Camden	Camden	3	98.3	83	0.852	26	85
340155001	Gloucester	Clarksboro	3	98.3	83	0.853	25	85
340071001	Camden	Ancora St. Hos	3	100.7	82	0.817	27	85
361030002	Suffolk	Babylon	3	93.7	82	0.884	22	85
361192004	Westchester	White Plains	3	91.3	82	0.904	22	85
421010024	Philadelphia	Northeast (Air	3	96.7	82	0.858	23	85
90011123	Fairfield	Danbury	3	95.7	81	0.853	18	85
90019003	Fairfield	Westport	3	94	81	0.868	37	85
90099005	New Haven	Hamden	3	93.3	81	0.874	25	85
340030005	Bergen	Teaneck	3	91.7	81	0.892	18	85
340210005	Mercer	Rider Univ.	3	97	81	0.843	23	85
90070007	Middlesex	Middletown	3	95.7	80	0.839	21	85
240251001	Harford	Edgewood	3	100.3	80	0.804	41	85
340250005	Monmouth	Monmouth Univ.	3	95.7	80	0.836	45	85
360290002	Erie	Amherst	3	95.7	80	0.839	11	78
360850067	Richmond	Susan Wagner	3	93	80	0.868	42	85
510130020	Arlington	Arlington Co.	3	96.7	80	0.832	24	85
250092006	Essex	LYNN	3	90	79	0.88	16	85
250213003	Norfolk	MILTON	1	91	79	0.873	13	85
340230011	Middlesex	Rutgers Univ.	3	96	79	0.826	22	85
340273001	Morris	Chester	3	95.3	79	0.83	13	85
360631006	Niagara	Middleport	3	91.7	79	0.871	15	85
510590018	Fairfax	Fairfax Co. -	3	96.7	79	0.825	20	85
518000004	Suffolk City	Suffolk - TCC	3	87	79	0.91	26	85
240030014	Anne Arundel	Davidsonville	3	98	78	0.797	30	85
240030019	Anne Arundel	Ft. Meade	3	97	78	0.809	30	85
340190001	Hunterdon	Flemington	3	95.3	78	0.825	15	85
421010014	Philadelphia	Northwest (Rox	3	90.7	78	0.868	20	85
516500004	Hampton City	Hampton	3	88.3	78	0.893	36	85
250250041	Suffolk	BOSTON (Long I	3	88.7	77	0.873	21	85
360450002	Jefferson	Perch River	3	91.3	77	0.847	10	81
360790005	Putnam	Mt. Ninhm	3	91.3	77	0.845	14	85
420030010	Allegheny	Pittsburgh (Ca	3	90.7	77	0.858	16	85
420290050	Chester	West Chester	1	95	77	0.813	12	85
420450002	Delaware	Chester	3	91.7	77	0.844	23	85
420910013	Montgomery	Norristown	3	92.3	77	0.839	21	85
440090007	Washington	EPA Lab	3	93.3	77	0.828	33	85

510590030	Fairfax	Fairfax Co. -	3	95	77	0.82	21	85
510591005	Fairfax	Fairfax Co. -	1	94	77	0.82	21	85
100031010	New Castle	Brandywine	3	92.7	76	0.83	19	85
110010043	DC	McMillan Reser	3	92.7	76	0.824	22	85
240053001	Baltimore	Essex	3	91.3	76	0.838	48	85
240259001	Harford	Aldino	3	97	76	0.793	35	85
240330002	Prince Georges	Greenbelt	2	94	76	0.812	28	85
240338003	Prince Georges	PG Coun.Eques.	1	94	76	0.809	28	85
360130006	Chautauqua	Dunkirk	3	93	76	0.824	20	85
360270007	Dutchess	Millbrook	3	92	76	0.828	12	80
420030008	Allegheny	Lawrenceville	3	89.3	76	0.858	16	85
90131001	Tolland	Stafford	3	92.3	75	0.814	11	85
230090102	Hancock	ANP Cadillac M	3	91.7	75	0.818	10	82
240150003	Cecil	Fair Hill	3	97.7	75	0.775	18	85
250010002	Barnstable	TRURO	3	92	75	0.825	23	85
250051002	Bristol	FAIRHAVEN	3	91	75	0.833	23	85
250130008	Hampden	CHICOPEE	3	92	75	0.82	10	83
340110007	Cumberland	Millville	3	95.7	75	0.791	16	85
340170006	Hudson	Bayonne	3	84.7	75	0.891	22	85
360050083	Bronx	Botanical Gard	3	83.7	75	0.908	20	85
420030067	Allegheny	South Fayette	3	89.3	75	0.851	13	85
440030002	Kent	Alton Jones	3	93.3	75	0.809	17	85
90110008	New London	Groton	3	90	74	0.831	38	85
100010002	Kent	Killens Pond	3	88.3	74	0.849	25	85
100031007	New Castle	Lums Pond	2	94.5	74	0.789	18	85
100031013	New Castle	Bellefonte	3	90.3	74	0.827	21	85
100051003	Sussex	Lewes	3	87	74	0.853	26	85
240290002	Kent	Millington	3	95.3	74	0.784	17	85
420031005	Allegheny	Harrison Twp	3	91.3	74	0.815	14	85
420770004	Lehigh	Allentown	3	90.7	74	0.816	11	84
510360002	Charles City	Charles City C	3	89.3	74	0.833	14	85
510850003	Hanover	Hanover Co.	2	92	74	0.815	11	85
515100009	Alexandria Cit	Alexandria	3	90	74	0.825	20	85
110010025	DC	Takoma Park	3	88.7	73	0.833	24	85
110010041	DC	River Terrace	3	89	73	0.824	22	85
340010005	Atlantic	Nacote Creek	3	89	73	0.826	27	85
340315001	Passaic	Ramapo	3	86.7	73	0.853	19	85
420070002	Beaver	Hookstown	3	91.3	73	0.802	10	82
420070005	Beaver	Brighton Twp	3	89.7	73	0.814	12	82
420290100	Chester	New Garden (Ai	3	94.7	73	0.777	19	85
420490003	Erie	Erie	3	89	73	0.83	23	85
420850100	Mercer	Farrell	3	91.3	73	0.804	10	82
420950025	Northampton	Freemansburg	3	90	73	0.816	11	85
421290008	Westmoreland	Greensburg	3	88	73	0.831	18	85
440071010	Providence	Francis School	3	89.7	73	0.819	17	85
90031003	Hartford	E. Hartford	3	88	72	0.826	16	85
90050005	Litchfield	Cornwall	1	89	72	0.818	11	84
230312002	York	Kennebunkport	3	88.3	72	0.824	19	85

240051007	Baltimore	Padonia	3	88.7	72	0.816	26	85
360130011	Chautauqua	Westfield	3	87	72	0.829	12	85
360551004	Monroe	Rochester	3	83.7	72	0.861	18	85
420050001	Armstrong	Kittanning	3	90.7	72	0.799	11	84
420710007	Lancaster	Lancaster	3	90.7	72	0.795	17	85
421250005	Washington	Charleroi	3	86.3	72	0.838	15	85
510870014	Henrico	Henrico Co.	3	88.3	72	0.824	15	85
240313001	Montgomery	Rockville	3	86.7	71	0.822	26	85
250094004	Essex	NEWBURY	3	86	71	0.834	27	85
360810124	Queens	Queens College	2	83	71	0.861	26	85
361173001	Wayne	Williamson	3	84	71	0.848	18	85
420110009	Berks	Reading	3	88.7	71	0.806	10	85
420550001	Franklin	Methodist Hill	3	90.7	71	0.788	11	77
420958000	Northampton	Easton	3	88	71	0.816	12	85
421010136	Philadelphia	Southwest (Elm	3	83	71	0.861	23	85
421330008	York	York	3	89	71	0.807	17	85
510595001	Fairfax	Fairfax Co. -	3	88	71	0.818	21	85
511071005	Loudon	Loudoun Co.	3	90	71	0.798	15	85
100051002	Sussex	Seaford	3	90	70	0.787	10	80
240170010	Charles	S Maryland	3	93	70	0.753	17	85
250154002	Hampshire	WARE	3	86.3	70	0.82	10	81
250171102	Middlesex	STOW	3	85.7	70	0.819	10	80
330111010	Hillsborough	Nashua	2	86	70	0.816	10	75
360010012	Albany	Loudonville	3	83	70	0.853	8	70
360671015	Onondaga	East Syracuse	3	82.3	70	0.854	8	70
361030004	Suffolk	Riverhead	3	83	70	0.845	36	85
420590002	Greene	Holbrook	3	87.7	70	0.804	10	85
230052003	Cumberland	Cape Elizabeth	3	84.3	69	0.822	18	85
230313002	York	Kittery	3	85.3	69	0.819	16	85
240130001	Carroll	South Carroll	3	88.7	69	0.782	12	85
330115001	Hillsborough	Peterborough	1	84	69	0.822	10	73
360910004	Saratoga	Stillwater	3	84.7	69	0.824	6	70
421290006	Wetmoreland	Murrysville	3	82	69	0.848	20	85
510410004	Chesterfield	Chesterfield C	3	84.7	69	0.816	10	85
230090103	Hancock	ANP McFarland	3	83.7	68	0.82	10	82
230130004	Knox	Port Clyde	3	83.7	68	0.82	13	85
240210037	Frederick	Frederick Airp	3	87.3	68	0.779	11	85
250034002	Berkshire	ADAMS	3	83.3	68	0.828	9	70
250130003	Hampden	AGAWAM	1	83	68	0.823	10	83
330150012	Rockingham	Rye	2	83.5	68	0.819	16	85
360715001	Orange	Valley Central	3	84.7	68	0.812	10	76
420070014	Beaver	Beaver Falls	3	85	68	0.81	10	83
420431100	Dauphin	Hershey	3	86.7	68	0.792	16	85
421174000	Tioga	Tioga County (	3	85	68	0.805	5	70
421250200	Washington	Washington	3	85.3	68	0.803	11	85
510590005	Fairfax	Fairfax Co. -	3	87	68	0.789	18	85
510690010	Frederick	Frederick Co.	3	82.7	68	0.825	11	81
511130003	Madison	Madison Co. -	3	84.7	68	0.806	11	71

511530009	Prince William	Prince William	3	85	68	0.804	12	83
511611004	Roanoke	Roanoke Co.	3	83.7	68	0.823	11	76
511790001	Stafford	Stafford Co.	3	86	68	0.798	36	85
240430009	Washington	Hagerstown	3	85.3	67	0.791	10	84
250270015	Worcester	WORCESTER	3	84	67	0.809	10	79
420010002	Adams	Biglerville (P	3	85	67	0.791	10	80
420110001	Berks	Kutztown	2	84.5	67	0.802	10	85
420210011	Cambria	Johnstown	3	85	67	0.798	10	85
420274000	Centre	Penn Nursery (	3	84.7	67	0.798	11	74
420334000	Clearfield	Moshannon (PSU	3	87.3	67	0.775	11	76
421255001	Washington	Florence	3	85.7	67	0.787	10	83
360650004	Oneida	Camden	3	79.7	66	0.84	10	70
420130801	Blair	Altoona	3	83.3	66	0.794	10	80
420270100	Centre	State College	3	84.3	66	0.787	10	76
420430401	Dauphin	Harrisburg	3	85	66	0.786	15	85
420690101	Lacakawana	Peckville	3	83.3	66	0.796	10	75
500030004	Bennington	Bennington	3	79.7	66	0.837	8	70
518000005	Suffolk City	Suffolk - Holl	3	82.3	66	0.808	10	76
420692006	Lacakawana	Scranton	3	82	65	0.796	10	75
420791101	Luzerene	Wilkes-Barre	3	83.7	65	0.786	10	76
420810100	Lycoming	Montoursville	1	82	65	0.798	11	75
420990301	Perry	Perry County	3	83.3	65	0.792	10	77
330150013	Rockingham	999	1	80	64	0.802	10	73
420791100	Luzerene	Nanticoke	3	81.7	64	0.788	10	76
510330001	Caroline	Caroline Co.	3	82.3	64	0.78	10	84
230112005	Kennebec	Gardiner Pray	3	78	63	0.818	10	71
250250042	Suffolk	BOSTON (Harris	3	73	63	0.87	16	85
330173002	Strafford	Rochester	2	78.5	63	0.807	11	71
360430005	Herkimer	Nick's Lake	3	74	63	0.853	6	70
511390004	Page	Page Co.	3	79.7	63	0.799	12	72
230090301	Hancock	Castine	1	75	62	0.827	10	79
510610002	Fauquier	Fauquier Co.	3	79.3	62	0.788	11	73
250150103	Hampshire	AMHERST	3	74.7	61	0.825	10	76
420730015	Lawrence	New Castle	3	78.3	61	0.79	10	83
420814000	Lycoming	Tiadaghton (PS	3	78.7	61	0.785	10	72
421010004	Philadelphia	Frankford (Lab	3	71.3	61	0.86	25	85
511630003	Rockbridge	Rockbridge Co.	3	76.7	61	0.797	8	70
230310038	York	West Buxton	1	75	60	0.806	9	70
330050007	Cheshire	Keene	3	74.3	60	0.813	10	72
250090005	Essex	LAWRENCE	1	70	58	0.829	10	82
330150015	Rockingham	Portsmouth	1	68	55	0.819	16	85
CC0040002	999	Roosevelt-Camp	3	58.3	49	0.849	10	75
230038001	Aroostook	Ashland135	3	64	-9	-9	-9	-999
230173001	Oxford	North Lovell	3	60.7	-9	-9	-9	-999
230194007	Penobscot	Howland	3	66.7	-9	-9	-9	-999
230194008	Penobscot	Holden Rider B	2	79	-9	-9	-9	-999
330012004	Belknap	Laconia	2	76.5	-9	-9	-9	-999
330031002	Carroll	Conway	1	67	-9	-9	-9	-999

330090008	Grafton	Haverhill	3	70.3	-9	-9	-9	-999
330130007	Merrimack	Concord	3	74.7	-9	-9	-9	-999
330190003	Sullivan	Claremont	3	74.3	-9	-9	-9	-999
360150003	Chemung	Elmira	3	80.3	-9	-9	-9	-999
360310002	Essex	Whiteface Summ	3	88.3	-9	-9	-9	-999
360310003	Essex	Whiteface Base	3	84.3	-9	-9	-9	-999
360410005	Hamilton	Piseco Lake	3	78.7	-9	-9	-9	-999
360530006	Madison	Camp Georgetow	3	79.7	-9	-9	-9	-999
361111005	Ulster	Belleayre	3	81.3	-9	-9	-9	-999
500070007	Chittenden	Underhill	3	77	-9	-9	-9	-999
511970002	Wythe	Wythe Co.	3	79.7	-9	-9	-9	-999

Notes:

<sup>(1)</sup> Colliers Mills Ocean County New Jersey Monitor (AIRS # 340290006) DVC was miscalculated as 106 ppb. The DVC should be 105.7 ppb based on the following calculation:

Year	1 <sup>st</sup> High	2 <sup>nd</sup> High	3 <sup>rd</sup> High	4 <sup>th</sup> High
2000	131 ppb	124 ppb	116 ppb	114 ppb
2001	122 ppb	109 ppb	109 ppb	108 ppb
2002	125 ppb	125 ppb	119 ppb	116 ppb
2003	116 ppb	111 ppb	96 ppb	95 ppb
2004	102 ppb	93 ppb	92 ppb	88 ppb

Calculate the Design Values for 2002, 2003 and 2004 according to EPA Guidance.

2002 DV (2000-2002)

$$(114 + 108 + 116 \text{ ppb})/3 = 112 \text{ ppb}$$

2003 DV (2001-2003)

$$(108 + 116 + 95 \text{ ppb})/3 = 106 \text{ ppb}$$

2004 DV (2002-2004)

$$(116 + 95 + 88 \text{ ppb})/3 = 99 \text{ ppb}$$

Using EPA Guidance calculate the 2002 base case DV to calculate future year design values:

$$(112 \text{ ppb} + 106 \text{ ppb} + 99 \text{ ppb})/3 = 105.7 \text{ ppb} = \text{DVC}$$

Projected design value based on 2009 OTW emissions inventory

DVC \* RRF=2009 OTW DV

$$105.7 * 0.87 = 91 \text{ ppb}$$

Projected design value based on 2009 BOTW emissions inventory

DVC \* RRF=2009 BOTW DV

$$105.7 * 0.868 = 91 \text{ ppb}$$

Projected design value based on 2012 BOTW emissions inventory

DVC \* RRF=2012 BOTW DV

$$105.7 * 0.819 = 86 \text{ ppb}$$