

PART III: AVAILABLE CAPACITY OF PUBLIC FACILITIES AND SERVICES

Overview

Concurrency Management tests for available capacity in the following public facilities and services:

- Fire and Emergency Medical Services
- Police
- Roads
- Schools
- Public Sewer
- Public Water

In accordance with Chapter 71, proposed developments that are subject to the concurrency ordinance are tested for adequacy at the preliminary and final stages of the approval process. The mechanism for the testing is the Adequate Threshold Capacity (ATC) certificate. When a test is required, the staff determines which public facilities would be affected by the proposed development and distributes ATC certificates for completion by the appropriate agencies.

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Fire and Emergency Medical Services

THRESHOLD FOR FIRE AND EMS

adequate –

1. projected total of late and no responses < 15% of calls, measured quarterly; and total of no responses < 4% of calls, measured quarterly; and
2. response time is <= 8 minutes from time of dispatch to on-scene arrival with adequate apparatus and personnel, using a 24-month average; and
3. all bridges and roads for the most direct route or acceptable secondary route to the project site are adequate to support fire and emergency response apparatus.

approaching inadequate –

1. either the projected total of late and no responses equals or exceeds 15% of calls, measured quarterly, or total number of no responses equals or exceeds 4% of calls, measured quarterly, but not both; or
2. response time is between 8 and 10 minutes from time of dispatch to on-scene arrival with adequate apparatus and personnel, using a 24-month average.

inadequate –

1. projected total of late and no responses equals or exceeds 15% of calls, measured quarterly; and total of no responses equals or exceeds 4% of calls, measured quarterly; or
2. response time is > 10 minutes from time of dispatch to on-scene arrival with adequate apparatus and personnel, using a 24-month average; or
3. a bridge or road is inadequate to support fire and emergency response apparatus for the most direct route and a bridge or road is inadequate to support fire and emergency response apparatus for the acceptable secondary route to the project site.

ADMINISTRATIVE PROCEDURES

The ATC certificates are completed and signed by the Office of Public Safety Support Services (OPSSS). When a proposed residential development is tested for adequacy, the first and second criteria under the threshold are tested by reviewing 911 dispatch data for the affected fire district. The third criteria, dealing with roads and bridges, is tested by identifying the preferred and secondary routes that the fire company would take from the firehouse to the proposed development in an emergency. Any bridges on the routes are listed and compared with the list of inadequate bridges. The worst rating of the three criteria trumps the others.

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The first criteria is the percentage of calls that result in a late or no response. The data is collected by the Emergency Operations Center, which issues reports on a monthly, quarterly, and annual basis. The threshold is based on the quarterly reports.

Criteria 1: Late / No Response

When the Emergency Operations Center receives a call for emergency assistance, the e-911 operator determines the type of response that is needed. Based on where the call originated and the availability of personnel and vehicles, the operator dispatches the call to a particular station. In most cases the call is dispatched to the station in the district where the call originated, but in a case where personnel and/or vehicles are already responding to another call, a neighboring station may be dispatched. Whichever district is dispatched first is counted as having received the first responder call. Types of calls are grouped as either fire calls or EMS calls. When the appropriate unit pulls out from the station, the radio operator notifies the Emergency Operations Center. If more than 4 minutes elapses between the dispatch and the unit leaving the station, the call is categorized as a late response. If more than 5 minutes elapses, the operator reassigns the dispatch to a different station and the first station is charged with a no response.

The late/no response statistic tracks all the first responder dispatches in a given fire district. If four percent or more of the dispatches result in a no response, and fifteen percent or more result in a late or no response, then the service is deemed inadequate. In cases where either the no responses equal or exceed four percent or the late plus the no equal or exceed fifteen percent, but not both, the service is deemed approaching inadequate. Otherwise, the service is deemed adequate.

Nearly all of the companies have performed at adequate levels by the late/no response measure. As indicated in Table 12, Reese and Manchester each had a quarter that was approaching inadequate for fire service. Lineboro was approaching inadequate for three quarters for fire service. Taneytown was inadequate during the last quarter of FY 10 for fire service. As shown in Table 13, all companies were adequate for EMS service for FY 10.

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Table 12
FIRST DUE LATE/NO RESPONSE BY
STATION – FIRE

Station	First Quarter FY 10 July/Aug/Sept 2009		Second Quarter FY 10 Oct/Nov/Dec 2009		Third Quarter FY 10 Jan/Feb/Mar 2010		Fourth Quarter FY 10 April/May/June 2010	
	% Late & No Response	% No Response	% Late & No Response	% No Response	% Late & No Response	% No Response	% Late & No Response	% No Response
Mount Airy	1.72%	1.72%	3.92%	0.00%	2.22%	0.00%	2.00%	0.00%
Hampstead	0.00%	0.00%	3.45%	3.45%	9.26%	0.00%	7.41%	0.00%
Westminster	3.63%	0.52%	2.79%	0.93%	3.68%	1.05%	1.76%	0.59%
Manchester	12.20%	0.00%	7.32%	4.88%	9.30%	0.00%	7.14%	0.00%
Taneytown	5.88%	0.00%	5.00%	0.00%	9.38%	0.00%	16.00%	4.00%
Pleasant Valley	5.00%	0.00%	6.67%	3.33%	4.55%	0.00%	0.00%	0.00%
Lineboro	5.56%	5.56%	18.18%	0.00%	15.00%	0.00%	0.00%	0.00%
Union Bridge	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Reese	19.44%	0.00%	0.00%	0.00%	14.29%	0.00%	8.33%	2.78%
New Windsor	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.69%	0.00%
Harney	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sykesville	1.38%	0.00%	0.00%	0.00%	0.90%	0.00%	0.91%	0.00%
Gamber	3.57%	0.00%	6.45%	0.00%	0.00%	0.00%	6.67%	0.00%
Winfield	10.87%	2.17%	14.29%	2.38%	11.36%	0.00%	2.63%	0.00%
Countywide	4.66%	0.58%	4.13%	1.03%	5.19%	0.30%	3.81%	0.48%

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Station	First Quarter FY 10 July/Aug/Sept 2009		Second Quarter FY 10 Oct/Nov/Dec 2009		Third Quarter FY 10 Jan/Feb/Mar 2010		Fourth Quarter FY 10 April/May/June 2010	
	% Late & No Response	% No Response	% Late & No Response	% No Response	% Late & No Response	% No Response	% Late & No Response	% No Response
Mount Airy	1.44%	0.72%	0.41%	0.41%	1.03%	0.69%	4.29%	3.57%
Hampstead	0.00%	0.00%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%
Westminster	0.42%	0.25%	0.42%	0.42%	0.53%	0.18%	0.35%	0.09%
Manchester	0.00%	0.00%	0.47%	0.47%	1.40%	0.93%	0.00%	0.00%
Taneytown	1.79%	0.00%	3.20%	1.83%	3.54%	2.02%	3.98%	1.20%
Pleasant Valley	0.00%	0.00%	0.98%	0.00%	1.96%	0.98%	0.00%	0.00%
Lineboro	10.00%	2.50%	6.82%	0.00%	0.00%	0.00%	6.00%	2.00%
Union Bridge	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Reese	0.61%	0.00%	1.16%	0.00%	0.00%	0.00%	0.00%	0.00%
New Windsor	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.11%	0.00%
Harney	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sykesville	0.00%	0.00%	1.29%	0.74%	0.41%	0.41%	0.73%	0.37%
Gamber	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.74%	0.00%
Winfield	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%
Countywide	0.53%	0.18%	0.81%	0.43%	0.70%	0.39%	1.00%	0.49%

Table 13
FIRST DUE LATE/NO RESPONSE BY
STATION – EMS

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Criteria 2: Average Response Time The second criterion is average response time. The data is also collected by Emergency Operations Center. Reports are issued monthly.

Response time is measured from the moment the e-911 operator dispatches a call until the moment the appropriate unit arrives on the scene. Average response time is the average of all the response times in a given district over a 24-month period. It is a 24-month rolling average, updated monthly. In February 2008 the criteria was changed to a 24-month measurement from the previous 12-month average. The change to a 24-month average was intended to reduce the month-to-month fluctuations and provide more predictability and consistency. For EMS, all first responder calls in a district are used to calculate the average response time. For fire service, only calls with a certain level of urgency are counted. Fourteen call types, including house fires, are counted. Less urgent call types, such as brush fires and downed power lines, are not counted towards average response time because they do not warrant high-speed driving.

During FY 10, ten of the fourteen districts maintained adequate average response times for both fire and EMS. With the exception of the average fire response time from February 2010, which was inadequate, Pleasant Valley posted average response times at approaching inadequate levels for fire and EMS throughout the year. Lineboro was approaching inadequate for EMS all year, and approaching inadequate for fire for the last half of the year. New Windsor was approaching inadequate for fire for the first seven months the year; Reese was approaching inadequate for fire for the last five months of the year. Harney was approaching inadequate and inadequate for fire throughout the year.

The high average response times in the Pleasant Valley and Lineboro fire districts can be attributed to the characteristics of rural fire districts. The calls in rural districts are not concentrated in one geographic area like they are in districts with a city or town. Additionally, the road network tends to be less interconnected. The route from the station to the origin of the call is less likely to resemble a straight line. For Harney fire, the inadequacy is attributed to a low number of calls and one particular call with an inadequate response time.

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		8/1/07 - 7/31/09	9/1/07- 8/31/09	10/1/07- 9/30/09	11/1/07- 10/31/09	12/1/07- 11/30/09	1/1/08 - 12/31/09	2/1/08 - 1/31/10	3/1/08 - 2/28/10	4/1/08- 3/31/10	5/1/08 - 4/30/10	6/1/08- 5/31/10	7/1/08 - 6/30/10
1	Mt. Airy	6:34	6:33	6:30	6:30	6:33	6:40	6:45	6:58	7:00	7:03	7:02	7:06
2	Hampstead	7:25	7:26	7:35	7:43	7:48	7:46	7:55	7:49	7:48	7:52	7:44	7:49
3	Westminster	5:57	5:58	5:57	5:54	5:55	5:56	5:56	5:58	5:54	5:55	5:52	5:55
4	Manchester	7:46	7:43	7:44	7:31	7:33	7:44	7:51	7:55	7:51	7:55	7:54	7:48
5	Taneytown	7:49	7:53	7:49	7:55	7:43	7:38	7:51	7:49	7:30	7:20	7:22	7:19
6	Pleasant Valley	9:56	9:47	9:50	9:49	9:38	9:38	9:30	10:22	9:37	9:33	9:45	9:45
7	Lineboro	7:21	7:09	7:04	7:04	7:21	7:47	8:31	8:26	8:49	8:37	8:33	8:34
8	Union Bridge	5:31	5:04	5:04	4:54	4:54	4:43	4:50	5:27	6:03	6:10	6:39	7:03
9	Reese	7:41	7:42	7:42	7:49	7:47	7:45	7:55	8:02	8:18	8:23	8:08	8:17
10	New Windsor	8:04	8:04	8:11	8:09	8:30	8:32	8:29	7:35	7:14	6:54	7:33	7:36
11	Harney	10:29	10:29	10:29	10:29	9:28	9:28	9:28	9:28	9:28	9:28	10:11	10:11
12	Sykesville	6:41	6:40	6:39	6:41	6:46	6:50	6:53	7:01	6:56	6:58	7:02	7:04
13	Gamber	6:24	6:25	6:26	6:33	6:38	6:34	6:30	6:24	6:36	6:44	6:41	6:50
14	Winfield	7:50	7:50	7:50	7:43	7:41	7:44	7:40	7:45	7:36	7:19	7:23	7:36

Table 14
AVERAGE RESPONSE TIME BY STATION – FIRE

		8/1/07 - 7/31/09	9/1/07- 8/31/09	10/1/07- 9/30/09	11/1/07- 10/31/09	12/1/07- 11/30/09	1/1/08 - 12/31/09	2/1/08 - 1/31/10	3/1/08 - 2/28/10	4/1/08- 3/31/10	5/1/08 - 4/30/10	6/1/08- 5/31/10	7/1/08 - 6/30/10
1	Mt. Airy	6:42	6:42	6:40	6:38	6:39	6:37	6:38	6:39	6:40	6:41	6:41	6:40
2	Hampstead	5:57	5:55	5:57	5:57	5:57	5:58	5:58	6:00	6:02	6:00	6:00	5:59
3	Westminster	6:21	6:21	6:20	6:19	6:17	6:17	6:18	6:18	6:18	6:16	6:15	6:14
4	Manchester	6:16	6:17	6:16	6:15	6:19	6:21	6:22	6:26	6:28	6:31	6:32	6:33
5	Taneytown	6:32	6:29	6:28	6:28	6:26	6:27	6:30	6:29	6:28	6:29	6:27	6:26
6	Pleasant Valley	9:20	9:20	9:16	9:17	9:19	9:17	9:21	9:28	9:22	9:22	9:21	9:21
7	Lineboro	8:46	8:41	8:42	8:44	8:48	8:55	8:58	8:59	8:57	8:56	8:52	8:54
8	Union Bridge	6:03	6:00	5:56	5:55	5:53	5:55	5:58	6:01	6:01	6:01	6:02	6:05
9	Reese	7:28	7:29	7:30	7:31	7:29	7:28	7:31	7:34	7:35	7:34	7:34	7:36
10	New Windsor	6:27	6:26	6:32	6:34	6:32	6:33	6:34	6:35	6:32	6:31	6:30	6:30
11	Harney	7:07	7:13	7:12	7:11	7:08	7:17	7:16	7:23	7:25	7:26	7:21	7:21
12	Sykesville	6:38	6:38	6:38	6:38	6:37	6:37	6:37	6:40	6:40	6:39	6:38	6:37
13	Gamber	6:21	6:20	6:18	6:20	6:21	6:21	6:23	6:24	6:24	6:24	6:26	6:25
14	Winfield	7:37	7:35	7:36	7:37	7:35	7:34	7:33	7:36	7:37	7:40	7:41	7:41

Table 15
AVERAGE RESPONSE TIME BY STATION – EMS

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Criteria 3: Bridges and Roads

The third criterion is based on the capacity of any bridges along the route between the station and a proposed development. Data for the third criterion is provided by the OPSSS and the Department of Public Works (DPW). Available Threshold Capacity testing is completed by the OPSSS.

In spring of 2006, a consultant to the DPW completed an analysis of posted bridges in the county to determine their adequacy to carry fire equipment. Each of the fourteen fire companies submitted detailed information on the weight and axle loading of their respective vehicles. The vehicle data, along with bridge ratings, bridge locations, and maps of fire districts were provided to the consultant. For the analysis, a computer program was developed to model the structure type of each bridge and the axle loads and axle spacing of each fire vehicle. By using the program to model the stress and pressures exerted as a vehicle passes over a bridge, the consultant was able to identify inadequate structures. The County also uses a consultant to perform biennial inspections of bridges on County roads.

Table 16
INADEQUATE BRIDGES AND STATUS OF
PLANNED IMPROVEMENTS

Bridge No.	Bridge Description	Fire District (Fire Dist. No.)	Restricted Fire Trucks	Status
CL 385	Greenmount Church over Murphy Run	Hampstead (2)	Engine 23, Tanker 24, Truck 2	Funded in CIP. Construction is underway. To be completed in 2010.
CL 363	Stone Chapel over Little Pipe Creek	Westminster (3)	Tower 3	Funded in CIP. Major rehabilitation planned for 2014/2015.
CL 390	Bixlers Church over Big Pipe Creek	Westminster (3), Manchester (4)	West: Engines 32 and 33, Tower 3. Manch: Engine 44, Tanker 43, Squad 4	Funding for engineering identified in FY 11. Replacement in FY 13.
CL 393	Hoover Mill over Big Pipe Creek	Manchester (4)	Tanker 43, Squad 4	No plans for improvement. Will be monitored.
CL 202	Baumgardner over Piney Creek	Taneytown (5)	Engine 51, Tanker 54, Ladder 5	No plans for improvement. Located on a section of Baumgardner that is currently closed.
CL 269	Babylon over Silver Run	Taneytown (5)	Ladder 5	Funded in CIP. Engineering/design in FY 09. Replacement slated for 2012.
CL 241	Pearre over Sams Creek	Union Bridge (8)	Engine 81, Tanker 82, Squad 8	No plans for improvement. Structure located on Frederick County border.
CL 344	Old Kays Mill over Beaver Run	Reese (9), Gamber (13)	Reese: Engine 91. Gamber: Engine 131.	No plans for improvement. Will be monitored.
CL 299	Salem Bottom over Morgan Run	Winfield (14)	Tanker 14	No plans for improvement. Will be monitored.

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Bridges on state highways, with a few exceptions, are designed for all legal loads and therefore are assumed to be adequate. The three exceptions within Carroll County, two on MD 86 and one on MD 832, have posted weight limits.

When the analysis of County bridges was conducted in spring 2006, there were eleven inadequate structures in the county. Since that time two bridges have been removed from the list. Table 16 currently lists nine inadequate structures in the county. They are dispersed among eight of the fourteen fire districts. They are located on low-volume roadways that would not be part of the primary or secondary route between the local fire station and most residential developments in the fire district. One bridge, CL 241, is on the Frederick County border.

RELIEF FACILITIES IN THE CIP

There are no projects in the current CIP to address issues with the late/no response measure or the average response time measure. In January of 2007, the Pleasant Valley Volunteer Fire Company increased the staffing hours of an EMS driver from 12 hours / 7 days per week to 24 hours / 7 days per week. Following the staffing upgrade, average response times improved from inadequate levels to approaching inadequate levels.

Several bridge repairs and replacements have been included in the County's adopted CIP to address inadequacies. As indicated in Table 16, replacement of bridge CL 385 on Greenmount Church Road is underway. The adopted CIP also includes a project for replacement of bridge CL 269 on Babylon Road over Silver Run and a project for major rehabilitation of bridge CL 363 on Stone Chapel Road over Little Pipe Creek.

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Recommended capital improvements

RECOMMENDATIONS

As Table 16 indicates, there are four inadequate bridges for which replacement is underway or improvements are planned in the CIP. This leaves five inadequate bridges without improvements planned in the current CIP. Excluding bridge CL 202 and bridge CL 241 for their respective locations, upgrades as necessary to make the remaining three structures adequate are recommended.

Recommended building permit caps

No caps are recommended. Due to the fluctuations inherent in the monthly data, some fire districts change between adequate and approaching inadequate or inadequate multiple times during the year. It is not practical for the County to issue a new resolution to amend the building permit caps on a month to month basis, nor is it necessary. The Planning and Zoning Commission must review plans in accordance with Chapter 71 regardless of whether a building permit cap is in place.

Proposed changes to the boundaries of impact areas

No changes are recommended. The Concurrency Management program uses the fire district boundaries as established by the Carroll County Volunteer Emergency Services Association.

Proposed changes to threshold standards

No changes are recommended.

Proposed changes in concurrency management methodology

No changes are recommended.

PART III: AVAILABLE CAPACITY OF PUBLIC FACILITIES AND SERVICES

Police

THRESHOLD FOR POLICE

adequate –

projected ratio of sworn law enforcement officers to population is 1.3:1,000

approaching inadequate –

projected ratio of sworn law enforcement officers to population is between 1.2-1.3:1,000

inadequate –

projected ratio of sworn law enforcement officers to population < 1.2:1,000

ADMINISTRATIVE PROCEDURES

The data for the police threshold is compiled by the Bureau of Development Review. The calculation requires a countywide population estimate and a count of sworn law enforcement officers. Population estimates are updated monthly by the Bureau of Comprehensive Planning. The population is estimated by multiplying the number of use and occupancy permits issued since the last census by the average household size in the County and adding the result to the population in the most recent census. Law enforcement officer counts are provided by the Carroll County Sheriff's Office and include sworn officers from the Sheriff's Office, Maryland State Police, and various municipal police departments. The staffing levels at the Sheriff's Office and municipal police departments are based on the number of funded positions in the annual budget of the appropriate jurisdiction. The staffing level at the Maryland State Police is subject in part to the number of officers from a statewide police force that are assigned to the Westminster Barracks at any given time. To minimize monthly fluctuations, a 12-month rolling average for the number of State Police officers serving in the county is calculated.

Future threshold capacity is projected by adding the projected population from developments in the pipeline to the latest population estimate and adding additional sheriff's deputy positions planned for each year in the current adopted Operating Plan to the latest total of funded positions. The Operating Plan is a companion document to the CIP that is adopted annually by the Board of County Commissioners as part of the budgeting process.

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The number of sworn law enforcement officers at the end of FY 10 was 234 based on staffing levels as of June 30, 2010. The estimated population as of June 30, 2010 was 175,610. Including developments in the pipeline, the population is projected to be 176,566 by the end of FY 11.

RATIO OF SWORN LAW ENFORCEMENT OFFICERS PER 1,000 CITIZENS

The ratio of officer positions per 1,000 citizens at the end of FY 10 was 1.33. The ratio at the end of FY 11 is projected to be 1.32. Projecting the ratio using the development pipeline loses reliability quickly beyond a one to two year horizon. The development pipeline is made up of actual development plans that have been submitted for review. The time it takes to process a development plan from initial submittal to final approval typically ranges between six months and two years, depending on a number of factors including the type of plan. Many of the developments that will be constructed in three years do not yet appear in the pipeline.

	<i>As of July 1, 2009</i>			<i>As of June 30, 2010</i>		
	<i>Filled</i>	<i>Vacant</i>	<i>Total Available</i>	<i>Filled</i>	<i>Vacant</i>	<i>Total Available</i>
Carroll County Sheriff's Office	71	0	71	71	0	71
Maryland State Police	85	N/A	85	82	N/A	82
Westminster Police Department	43	2	45	45	0	45
Hampstead Police	9	0	9	9	0	9
Manchester Police	5	1	6	6	0	6
Sykesville Police	7	1	8	7	1	8
Taneytown Police	12	0	12	12	1	13
TOTAL	232	4	236	232	2	234

Table 17 – NUMBER OF ACTUAL SWORN PERSONNEL IN CARROLL COUNTY

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Table 18 –
PRESENT AND PROJECTED LEVEL OF
SERVICE

	<i>Population</i>	<i>Total Filled Positions</i>	<i>Ratio of Officers to Population</i>	<i>Funded and Total Police Positions</i>	<i>Ratio of Officers to Population</i>
July 1, 2009	174,909	232	1.33	236	1.35
June 30, 2010	175,610	232	1.32	234	1.33
June 30, 2011	176,566	N/A	N/A	234	1.32

VACANCY RATE

It is important to monitor the vacancy rate among the police forces in the County. If the vacancy rate remains consistently high, then adequacy tests based on the number of funded positions might not accurately reflect the capacity of the police to serve additional population. Table 19 reports the number of funded positions that were vacant as of the last day of each month from July 2009 through June 2010. The number of vacancies ranged from one to four with the highest vacancy rate at 2.72%.

Table 19 –
VACANCY RATE AMONG POLICE FORCES
IN CARROLL COUNTY

	2009						2010					
	<i>JUL</i>	<i>AUG</i>	<i>SEP</i>	<i>OCT</i>	<i>NOV</i>	<i>DEC</i>	<i>JAN</i>	<i>FEB</i>	<i>MAR</i>	<i>APR</i>	<i>MAY</i>	<i>JUN</i>
Actual Sworn Personnel, Not in Academy, Compliance Training, or Field Training	147	148	149	149	148	149	149	150	149	149	149	149
In Training/Academy	0	0	0	1	1	1	1	0	0	1	1	1
Vacancies	4	3	2	1	2	1	1	1	3	2	2	2
Vacancy Rate	2.72%	2.02%	1.34%	0.66%	1.34%	0.66%	0.66%	0.66%	2.01%	1.33%	1.33%	1.33%

Table 19 does not include Maryland State Police where officers from a statewide police force are assigned to the Westminster Barracks on an as-needed basis and a vacancy rate is not applicable.

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The adopted FY 11 Operating Plan includes no funding for additional officers in fiscal year 2012, funding for one additional officer in FY 13, and funding for two additional officers from FY 14 through FY 16. The Operating Plan is updated every year along with the CIP.

RELIEF IN THE ADOPTED FY 11
OPERATING PLAN

Evaluation of the feasibility of increasing the adequacy threshold to 1.5 officers

Table 20 calculates the number of additional officers that would be required for ratios of 1.3, 1.4, and 1.5 officers per 1,000 population based on projected population figures. The column for number of police positions needed uses as its base the total number of current funded police positions (234). To immediately achieve a ratio of 1.5 officers per 1,000 population, 31 additional officer positions would be required. Given the current economic conditions, this does not seem feasible.

<i>End of Year</i>	<i>Projected Population</i>	<i>1.3</i>	<i>Additional Police Needed to Maintain Min. Ratio</i>	<i>1.4</i>	<i>Additional Police Needed to Maintain Ratio</i>	<i>1.5</i>	<i>Additional Police Needed to Maintain Ratio</i>
FY 11	176,566	230	0	247	13	265	31
FY 12	177,783	231	0	249	15	267	33
FY 13	179,280	233	0	251	17	269	35
FY 14	180,988	235	1	253	19	271	37
FY 15	182,450	237	3	255	21	274	40

Table 20 –
POLICE OFFICERS NEEDED TO MAINTAIN
SELECTED THRESHOLDS

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RECOMMENDATIONS

Recommended building permit caps

No caps are recommended.

Proposed changes to the boundaries of impact areas

The impact area is the entire County, including incorporated and unincorporated areas. No changes are recommended.

Proposed changes to threshold standards

No changes are recommended at this time.

Proposed changes in concurrency management methodology

No changes are recommended at this time.

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Roads

adequate –

projected level of service for road segments and intersections within the traffic impact study area for the proposed project are rated Level of Service C or better

THRESHOLD FOR ROADS

approaching inadequate –

projected level of service for road segments and intersections within the traffic impact study area for the proposed project are rated Level of Service D

inadequate –

projected level of service for road segments and intersections within the traffic impact study area for the proposed project are rated Level of Service E or F

When a proposed development is tested for adequacy, the Carroll County Engineering Review Division determines which road or roads need to be evaluated. Depending on which agency owns/maintains the affected road(s), the Available Threshold Capacity certificates are completed and signed either by the County’s Engineering Review Division or by the Maryland State Highway Administration.

ADMINISTRATIVE PROCEDURES

The threshold for roads is based on Level of Service (LOS). LOS assigns a grade of A through F to a road segment or intersection to describe and define the level of congestion. LOS A indicates few vehicles relative to the design capacity of the road or intersection. LOS F indicates a volume of traffic that chokes traffic flow. Carroll County does not perform a comprehensive LOS analysis of all roads and intersections, nor does the County project future LOS. Instead, when a proposed development exceeds certain criteria, the County and/or the Maryland State Highway Administration require the developer to have a traffic impact study performed. The County and/or State meet with the developer to determine which road segments or intersections need to be evaluated. The traffic impact study determines the LOS that exists on any affected roads and the LOS that would result if the proposed development were built. The results of the traffic impact study are checked against the threshold for roads to determine adequacy.

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The criteria used to determine whether a traffic impact study must be done include the projected number of vehicle trips the proposed development will generate and the traffic count on the affected road(s). The County's guidelines for traffic impact studies are listed in Chapter 5 of the Design Manual Vol. 1 – Roads and Storm Drains. A traffic impact study is required for any proposed development that will generate 50 or more peak hour trips. A traffic impact study may be required for any proposed development that will generate 25 or more peak hour trips. In addition, a traffic impact study may be required for proposed developments in the vicinity of areas previously identified as having LOS E or F, hazardous locations, or other concerns.

If a traffic impact study is not required, the Department of Public Works determines adequacy using the following information:

functional classification – a designation assigned to a road that indicates the amount of traffic the road has been designed to carry. An inventory of functional classification designations for County roads was updated by the Department of Planning and the Department of Public Works in 2007.

traffic counts – a measurement of the number of vehicles passing a point on a road during certain times of day. The Department of Public Works updates the traffic counts on County roads every three years.

trip generation factors – an estimate of the amount of traffic generated by various types of development. Typically trip generation for residential development is estimated by multiplying the number of dwelling units (e.g. houses, apartments, etc.) in the proposed development by a predetermined factor.

By adding the trip generation factor to existing traffic count data, the Department of Public Works can estimate the traffic volume on a roadway if a proposed development were built. The projected traffic volume is then compared with standards for the volume of traffic that the various functional classifications of roadway are designed to carry. The result is a projected level of service that is checked against the threshold for roads to determine adequacy.

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Recommended capital improvements

No capital improvements are recommended.

Recommended building permit caps

No caps are recommended.

Proposed changes to the boundaries of impact areas

Study areas are determined on a case by case basis when a proposed project is tested for adequacy.

Proposed changes to threshold standards

No changes are recommended at this time.

Proposed changes in concurrency management methodology

No changes are recommended at this time.

RECOMMENDATIONS

PART III: AVAILABLE CAPACITY OF PUBLIC FACILITIES AND SERVICES

Schools

THRESHOLD FOR SCHOOLS **adequate –**

elementary or high school: current or projected enrollment equals or is less than 109% of State-rated capacity

middle school: current or projected enrollment equals or is less than 109% of functional capacity

approaching inadequate –

elementary or high school: current or projected enrollment is 110% to 119% of State-rated capacity

middle school: current or projected enrollment is 110% to 119% of the functional capacity

inadequate –

elementary or high school: current or projected enrollment exceeds 120% of State-rated capacity

middle school: current or projected enrollment exceeds 120% of functional capacity

BACKGROUND The threshold for schools compares a school’s current and projected enrollment with its capacity. Carroll County measures the capacity in middle schools differently than it measures capacity in elementary or high schools. The threshold for middle schools is based on functional capacity instead of State-rated capacity.

Functional capacity: the measurement of capacity used by Carroll County for middle schools [# of teaching stations for core curriculum subjects (i.e. math, English, science, etc.) x 25 students per teaching station]

State-rated capacity: the measurement of capacity used by Carroll County for elementary and high schools

Elementary [# of classrooms x 23 students per classroom (grades 1-5), x 22 students per classroom (kindergarten), x 20 students per classroom (pre-k)]

High school [# of teaching stations (gym, media center, computer lab, classrooms) x .85 utilization factor x 25 students per station]

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The key difference between functional capacity and State-rated capacity lies in whether all classrooms are counted or only core curriculum teaching stations are counted. A State-rated capacity figure is available for each middle school. Carroll County elects to use functional capacity as the measurement for middle school facilities because it takes into account the team approach that is the foundation of the middle school philosophy. The team approach allows teachers of core curriculum subjects to be organized into blocks and, within each block, to share a joint planning period. The non-core curriculum teaching stations, such as gyms and media centers, do not count towards the measurement of functional capacity. Throughout a school day, as various blocks of students rotate through the non-core teaching stations, one block of core curriculum classrooms and core subject teachers are free, i.e. the joint planning period. When functional capacity is used, a middle school has capacity for fewer students than it would under State-rated capacity.

In recent years, the Board of Education and the Board of County Commissioners have built several new schools and completed several school addition projects. The most recently completed school, Manchester Valley High School, opened in August 2009. Addition projects for full-day kindergarten at Winfield Elementary and William Winchester Elementary are underway and expected to be completed in August 2010. Additional full-day kindergarten additions to County elementary schools are planned.

Annually, the Carroll County Board of Education provides current enrollment figures and enrollment projections for a ten-year period, the first six years of which are included in the County's CIP. The projections are used to determine if building permit caps should be put in place. The projections are usually completed by the middle of November. Chapter 71 provides for building permit caps to be enacted during any portion of the year. On March 5, 2009, the Board of County Commissioners adopted Resolution No. 740-09 maintaining the building permit cap in the Mount Airy Middle School attendance area through FY 14.

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FACILITY CAPACITY The tables on the following pages list enrollments as a percentage of facility capacity so that adequacy can be assessed. Enrollment projections through FY 16 are included in the tables. The FY 10 CIP applied to the 6-year period of FY 10 through FY 15. The final column in Tables 21-23 for FY 16 is used once the FY 11 CIP is adopted.

Table 21 shows projected enrollments as a percentage of State-rated capacities among elementary schools. One elementary school, William Winchester, was approaching inadequate in FY 10. For the remaining years shown in the table, William Winchester is projected to be adequate.

To correspond with the adequacy threshold for middle schools, Table 22 lists functional capacity, rather than State-rated capacity, for each facility. One middle school faces projected inadequacies. Mount Airy Middle School was approaching inadequate in FY 10 and is projected to be approaching inadequate in FY 11. For FY 12 through FY 16, Mount Airy Middle School is projected to be inadequate. The FY 11 CIP includes the Mount Airy Middle School replacement project. The projections included in this report do not consider the additional capacity that will be created with the replacement project. Sykesville Middle School was approaching inadequate in FY 10 and is projected to be approaching inadequate in FY 11 and FY 15. Sykesville Middle is projected to be adequate for FY 12 through FY 14.

Among high schools listed in Table 23, Liberty High School was approaching inadequate in FY 10 and is projected to remain so through FY 11. Beyond FY 11, Liberty High School is projected to be adequate.

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<i>Elementary School</i>	<i>State Rated Capacity</i>			<i>Actual</i>		<i>Projected</i>				
	<i>K thru 5</i>	<i>Pre K</i>	<i>Spec Ed</i>	<i>FY 10</i>	<i>FY 11</i>	<i>FY 12</i>	<i>FY 13</i>	<i>FY 14</i>	<i>FY 15</i>	<i>FY 16²</i>
Carrolltowne	548	0	50	102.3%	104.8%	103.2%	101.2%	101.8%	103.5%	102.5%
Charles Carroll	320	0	0	100.6%	104.1%	103.4%	101.3%	102.8%	102.5%	102.8%
Cranberry Station	550	20	0	82.3%	81.6%	82.5%	82.3%	82.6%	80.7%	80.4%
Ebb Valley	571	20	0	81.7%	83.8%	80.9%	82.7%	80.2%	79.9%	78.2%
Eldersburg	570	0	0	91.4%	90.2%	91.2%	88.9%	88.8%	88.1%	88.9%
Elmer Wolfe	548	0	0	72.6%	73.9%	75.5%	74.5%	73.0%	72.6%	73.4%
Freedom	525	0	0	102.7%	105.7%	101.3%	103.2%	103.8%	103.8%	103.8%
Friendship Valley	527	0	0	90.9%	91.1%	91.1%	93.4%	92.2%	88.6%	87.9%
Hampstead	548	0	40	64.8%	69.6%	69.4%	70.9%	70.4%	69.6%	68.4%
Linton Springs	731	0	0	91.8%	94.0%	95.9%	94.1%	91.9%	91.7%	92.2%
Manchester	707	20	0	78.5%	79.6%	80.1%	80.7%	78.1%	77.9%	78.1%
Mechanicsville	616	0	0	91.6%	90.7%	95.0%	95.0%	93.5%	90.3%	89.3%
Mt. Airy	598	0	0	83.4%	85.5%	82.8%	85.3%	87.0%	87.8%	88.1%
Parr's Ridge	590	20	0	82.6%	84.3%	84.9%	85.4%	82.6%	80.8%	80.3%
Piney Ridge	571	0	0	104.0%	104.9%	106.3%	105.8%	105.4%	103.5%	103.7%
Robert Moton	504	0	40	81.4%	82.4%	82.4%	81.4%	79.0%	79.8%	79.6%
Runnymede	594	20	40	83.3%	85.0%	85.3%	84.9%	80.7%	85.2%	81.8%
Sandymount	527	0	0	86.5%	87.9%	88.8%	87.3%	85.8%	85.6%	84.8%
Spring Garden	593	0	0	86.0%	88.5%	88.0%	88.7%	84.7%	85.3%	86.7%
Taneytown	550	20	0	77.4%	76.7%	77.2%	77.5%	75.3%	76.0%	77.0%
Westminster	570	0	0	100.0%	99.8%	98.1%	96.7%	99.1%	96.7%	95.4%
Wm. Winchester ¹	548	20	0	110.1%	104.6%	107.2%	107.2%	107.2%	104.0%	102.5%
Winfield ¹	731	0	40	92.2%	83.5%	85.2%	84.8%	83.3%	83.0%	82.6%

Table 21 –
Elementary Schools
FY 10 - 16 Enrollments as a Percentage of
State-Rated Capacity

¹ Projected enrollment capacity percentages in **bold** type account for construction projects that will expand State-rated capacity in FY 11.

² Enrollment projections for FY 16 become applicable with the adoption of the FY 11 CIP.

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Table 22 –
Middle Schools
FY 10 - 16 Enrollments as a Percentage of
Functional Capacity

Middle School	Functional Capacity		Actual		Projected				
	6 thru 8	Spec Ed	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16 ¹
Mount Airy	500	10	118.2%	116.7%	121.0%	124.1%	125.9%	123.1%	125.9%
New Windsor	500	10	84.7%	79.8%	75.1%	73.7%	76.7%	77.6%	75.9%
North Carroll	750	20	80.1%	80.0%	80.0%	74.9%	78.6%	75.8%	78.7%
Northwest	775	10	67.0%	67.0%	69.6%	63.1%	65.4%	61.0%	62.3%
Oklahoma Road	825	20	93.3%	87.1%	92.9%	94.8%	94.9%	88.3%	87.0%
Shiloh	825	20	87.5%	78.5%	80.0%	77.8%	83.3%	81.7%	81.9%
Sykesville	725	20	116.2%	112.6%	106.7%	107.0%	109.3%	112.3%	107.9%
Westminster East	750	40	90.6%	92.3%	93.8%	99.6%	100.3%	103.3%	102.5%
Westminster West	1025	20	98.4%	97.7%	95.3%	91.7%	89.3%	94.4%	95.9%

¹ Enrollment projections for FY 16 become applicable with the adoption of the FY 11 CIP.

Table 23 –
High Schools
FY 10 - 16 Enrollments as a Percentage of
State-Rated Capacity

High School	State-Rated Capacity		Actual		Projected				
	9 thru 12	Spec Ed	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16 ¹
Century	1190	50	103.4%	101.0%	99.1%	96.8%	93.9%	91.0%	90.6%
Francis Scott Key	1254	50	88.1%	82.1%	76.4%	77.8%	75.6%	73.1%	73.9%
Liberty	1063	0	113.4%	112.5%	107.7%	105.2%	99.2%	100.1%	102.0%
Manchester Valley	1254	40	42.1%	53.1%	53.3%	52.6%	51.1%	52.7%	50.2%
North Carroll	1339	20	75.8%	63.4%	58.9%	57.0%	53.7%	51.4%	51.0%
South Carroll	1233	0	89.2%	90.1%	88.9%	87.1%	87.7%	88.4%	87.3%
Westminster	1849	30	91.2%	91.4%	89.6%	87.8%	87.9%	85.8%	84.8%
Winters Mill	1190	50	96.7%	95.2%	94.0%	93.9%	94.0%	95.7%	99.0%

¹ Enrollment projections for FY 16 become applicable with the adoption of the FY 11 CIP.

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Recommended capital improvements

RECOMMENDATIONS

No additional capital improvements are recommended at this time. The adopted CIP includes a project to address the capacity issue at Mount Airy Middle School. Construction funding is obligated for FY 12. It is expected that the new school will be open for students in August of 2014.

Recommended building permit caps

A zero-permit cap is in effect for the Mount Airy Middle School enrollment area through FY 14.

Proposed changes to the boundaries of impact areas

The Concurrency Management program uses the enrollment districts for each school as established by the Carroll County Board of Education. New attendance area boundaries for high schools were established when Manchester Valley High School was opened in 2009. No changes are recommended.

Proposed changes to existing or adopted threshold standards

No changes are recommended with regard to the threshold standards for schools.

Proposed changes in concurrency analysis methodology

No changes are recommended at this time.

PART III: AVAILABLE CAPACITY OF PUBLIC FACILITIES AND SERVICES

Public Water and Sewer Service

THRESHOLD FOR PUBLIC WATER

adequate –

projected maximum day demand < 85% of the total system production capacity

approaching inadequate –

projected maximum day demand 85 - 94.99% of the total system production capacity

inadequate –

projected maximum day demand \geq 95% of the total system production capacity

THRESHOLD FOR PUBLIC SEWER

adequate –

projected average daily flow < 85% of the wastewater treatment facility permitted capacity

approaching inadequate –

projected average daily flow 85 - 94.99% of the wastewater treatment facility permitted capacity

inadequate –

projected average daily flow \geq 95% of the wastewater treatment facility permitted capacity

ADMINISTRATIVE PROCEDURES

Carroll County operates three public utility facilities: Hampstead Sewerage System, Freedom District Sewer, and Freedom District Water. ATC certificates for water and/or sewer service in the Freedom area and sewer service in the Hampstead area are completed and signed by the Bureau of Utilities in the Department of Public Works. For projects in unincorporated areas of the County that are planned to connect to a municipally-owned water or sewer system, the ATC certificates are completed and signed by the municipality.

The adequacy thresholds for water and sewer are based on measurement of flows, but they are handled differently. The adequacy threshold for water requires that the County compare the projected maximum day demand for water with the total production capacity of the system. The total system production capacity (TSPC) is the amount of water flow the system can provide. It is typically measured in million gallons per day (mgd). The maximum day demand is calculated by applying a factor of 1.75 to the projected annual average day demand which consists of three components:

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- the existing demand for water of all users hooked up to the system;
- the total projected demand of any developments that have received preliminary or final approval from the Commission but have not yet hooked up to the system; and
- the projected demand for water that the proposed development currently undergoing testing for adequacy would generate.

For the projections, the County uses the Maryland Department of Environment (MDE) standard which is to multiply the number of proposed residential units by 250 gallons per day (gpd). The resulting number, expressed in gpd, represents the amount of water flow that the proposed development would draw from the system if it were connected, i.e. the projected demand of the development. As proposed developments go through the approval process, the Bureau of Utilities is responsible for monitoring the status of all projects that would connect to County water, including those not subject to Chapter 71, and the impact the projected demand would have on capacity in the water system.

The adequacy threshold for sewer requires that the County compare the projected annual average daily flow of wastewater with the wastewater treatment facility permitted capacity. The wastewater treatment facility is permitted and monitored by MDE and its capacity is expressed in mgd. For the purpose of testing the projected adequacy of sewer service capacity, the projected average daily flow consists of three components:

- the existing usage by all connections to the system;
- the total projected usage by any developments that have received preliminary or final approval from the Commission but have not yet hooked up to the system; and
- the projected usage by the proposed development currently undergoing testing for adequacy.

For the usage projections, the County uses the MDE standard which is to multiply the number of proposed residential units by 250 gpd. The resulting number, expressed in gpd, represents the amount of wastewater treatment capacity the proposed development would use if it were connected, i.e. the projected usage by the development. As with water service, the Bureau of Utilities monitors the status of all projects that would connect to a County sewer system, including those not subject to Chapter 71.

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ANALYSIS OF REMAINING CAPACITY

Freedom Water Supply

Freedom Water Plant	6.000 MGD
Fairhaven Well	0.340 MGD
Raincliffe Well	<u>0.381 MGD</u>
Total System Production Capacity (TSPC)	6.721 MGD

85% of TSPC $6.721 \times .85 = 5.713$ MGD

95% of TSPC $6.721 \times .95 = 6.385$ MGD

Chapter 71 states that maximum day demand is calculated by multiplying the annual average day demand for water by 1.75. For the purpose of determining the annual average day demand for water, the Bureau of Utilities reviews the annual average daily flows from the five preceding years and uses the five-year average or the preceding year, whichever is higher.

2009 Annual Average Day Demand	= 2.018 MGD
5-year Average Day Demand	= 2.114 MGD
Projected Annual Average Day Demand	= 2.114 MGD
Calculated Maximum Day Demand (1.75 x 2.114)	= 3.700 MGD
Calculated % of TSPC (3.700 ÷ 6.721)	= 55%

The projected maximum daily demand for the Freedom Water System is less than 85% of the total system production capacity. In accordance with Chapter 71, the service meets the adequate threshold standard.

Freedom Sewer

Design Capacity	3.500 MGD
Permitted Capacity	3.500 MGD

85% Permitted Flow (3.50 x .85) = 2.975 MGD

95% Permitted Flow (3.50 x .95) = 3.325 MGD

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2007 Average Daily Flow	2.180 MGD
2008 Average Daily Flow	2.036 MGD
2009 Average Daily Flow	2.127 MGD
3-year Average	2.114 MGD
Projected Annual Average Daily Flow	2.127 MGD

The standard for sewer in Chapter 71 is based on the projected annual average daily flow. For the purpose of determining the projected annual average daily flow for sewer, the higher of the 3-year average or the preceding year is used. The County and State share the use of the wastewater treatment facility. Of the 3.5 MGD capacity, the County can allocate 2.6 MGD and the State can allocate 0.9 MGD.

The Freedom Sewer Plant is operating at less than 85% of permitted capacity and therefore meets the adequate threshold standard.

Hampstead Sewer

Design Capacity	0.900 MGD
Permitted Capacity	0.900 MGD
85% Permitted Flow (0.9 x .85) =	.765 MGD
95% Permitted Flow (0.9 x .95) =	.855 MGD
2007 Average Daily Flow	0.642 MGD
2008 Average Daily Flow	0.545 MGD
2009 Average Daily Flow	0.558 MGD
3-Year Average	0.582 MGD
Projected Annual Average Daily Flow	0.582 MGD

The Hampstead Sewer Plant is operating at less than 85% of permitted capacity and therefore meets the adequate threshold standard.

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RECOMMENDATIONS

Recommended capital improvements

No capital improvements are recommended at this time.

Recommended building permit caps

No caps on building permits are recommended at this time.

Proposed changes to the boundaries of impact areas

Impact areas are the service areas for public water and sewer.

Proposed changes to threshold standards

No changes are recommended at this time.

Proposed changes in concurrency management methodology

No changes are recommended at this time.