

EDUCATIONAL SPACE ANALYSIS OVERVIEW

To confirm a sound basis for future facility planning, Plunkett Raysich Architects (PRA) has confirmed the capacity of each educational facility in the Burlington Area School District. Historical enrollment data and future enrollment projections were obtained from the Applied Population Laboratory report dated October 2015 provided by the District.

Per discussion with District Administration and building principals, the following maximum class size guidelines were provided for all grade levels:

<u>Grade</u>	<u>Student/Teach Ratio</u>
4K	18:1
Kindergarten	23:1
First Grade	24:1
Second Grade	25:1
Third – Fourth Grade	26:1
Fifth – Sixth Grade	28:1
Seventh – Eighth Grade	28:1
Ninth – Twelfth Grade	30:1

The Burlington Area School District also operates Montessori programming for grades Kindergarten through Fourth at Cooper Elementary and grades fifth and sixth at Dyer Intermediate School. For capacity determination and planning purposes, spaces used for this programming are not differentiated from the mainstream programming spaces.

There are three questions that need to be answered in order to determine a building's capacity. These questions are:

1. Is the existing capacity adequate to service the needs of the District today and in the future? If not, what are the additional space needs required? (Capacity)
2. Are there any building space deficiencies that should be addressed as part of a Facilities Master Plan? (Deficiency)
3. What facilities will be required in order to accommodate visionary programs? (Vision)

All evaluations assume that the District will continue to place students based on available space, does not change the curriculum, will continue to use the rooms as identified. Current enrollment has been identified for reference and does not factor into any capacity calculations but has been identified to determine if a building is currently over or under capacity.

Two calculations are utilized to establish the functional capacity of an educational facility. The **“Maximum Capacity”** is the point where every teaching station in a building is theoretically utilized at maximum occupancy for the specified number of periods out of each day. At this point, the building does not have room to add students without exceeding class size limits. At elementary levels where students spend the majority of their day in a single classrooms, this calculation can be an effective way of monitoring building enrollment however, operating a building at this level will leave little to no scheduling flexibility for changes in enrollment.

The second approach to determining a functional building capacity is establishing a **“Target Capacity.”** This is the point where the building is functioning optimally as an educational facility. When a school exceeds this number, it is an indication that the District should be planning and preparing for the future of the facility or other facilities within the District before reaching the identified maximum capacity. To arrive at this number, an efficiency factor is applied to the Maximum Capacity number established previously.

This analysis incorporates an operational efficiency factor based upon the grade levels that occupy each building. The factors utilized are considered national benchmarks and are as follows:

- Elementary Buildings (Grades 4K-4): 90%
- Intermediate School (Grades 5-6): 90%
- Middle School Buildings (Grades 6-8): 85%
- High School Buildings (Grades 9-12): 80%

These efficiency factors are used to compensate for scheduling inefficiencies and variations in class size. Operating a facility at or below these levels allows for the availability of time and space in the building to support teacher preparation and tutoring activities, the flexibility to accommodate scheduling conflicts between events and classes and unscheduled special assistance to individual students or small groups of students.

Elementary School Capacity

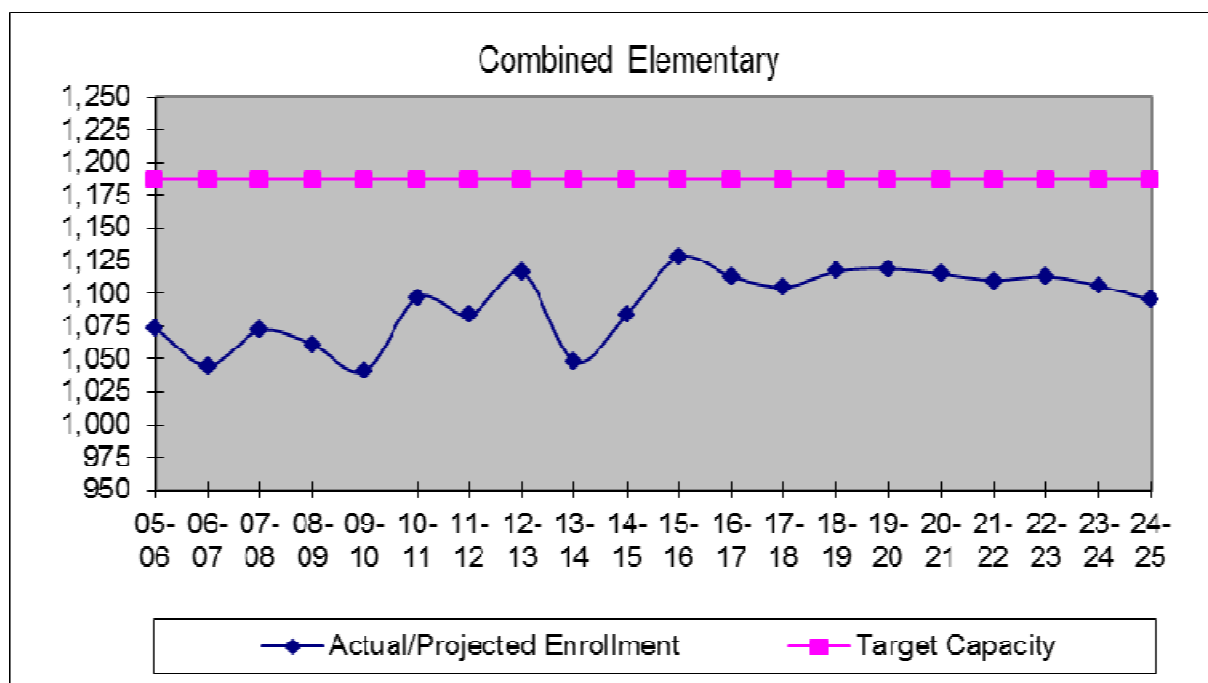
To determine the capacity of an elementary building, the number classrooms currently available in a given building is multiplied by the number of students that can occupy that room per the District provided guidelines. The resultant calculation is then multiplied by the efficiency factor as described above. In the case of elementary schools, this factor is 90%.

The following pages provide specific data for each elementary school with regards to historical and current enrollment data and the current building capacity.

Target Class Size Formula:

$$\text{Number of Classrooms Available} * \text{Class Size} = \text{Maximum Capacity}$$

$$\text{Number of Classrooms Available} * \text{Class Size} * 90\% = \text{Target Capacity}$$



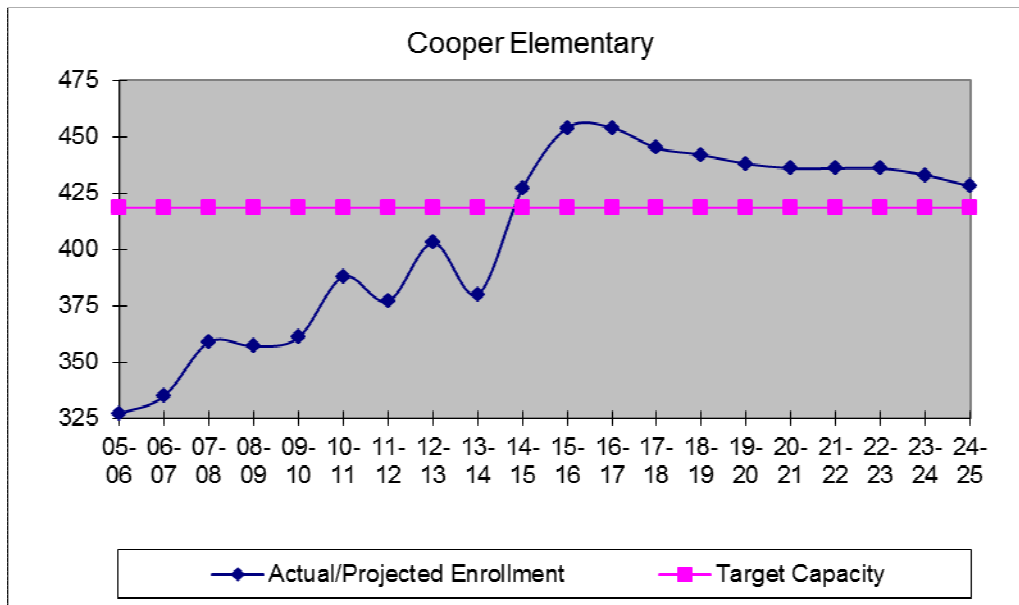
As the previous chart indicates, the Burlington Area School District has seen a relatively consistent elementary enrollment over the past several years. That trend is project to continue for the foreseeable future. It should be noted that beginning with the 2014-2015 school year, Four Year Old Kindergarten was added to the district which did help to counter a slight decline in the elementary enrollment numbers. Combined, the facilities currently being utilized for Grades Kindergarten through Fourth Grade have capacity available compared to the combined Target Capacity.

Cooper Elementary

Cooper Elementary is an older building situated in the City of Burlington. Enrollment has been increasing over the past several years and now sits above the target capacity. Cooper Elementary serves as one of the primary Early Childhood delivery sites. As such, several classrooms and other spaces within the building are dedicated to this programming. Beginning with the 2014/2015 school year, Four Year Old Kindergarten was also added, further increasing demand for space.

Within Cooper Elementary is the District's 4K-3 Montessori program. Those spaces dedicated to the Montessori program are included in the overall building capacity determination.

Per the chart below, enrollment is projected to remain above the target capacity for the foreseeable future. Plans should be made to address this issue either through reconfiguring space, adding additional educational capacity or redrawing attendance area boundaries to better balance student enrollment demand.



Burlington Area School District Educational Space Analysis

Building/Program Capacities

Cooper Elementary

Current Enrollment and Room Usage - Year 2015/16

Program	Current Enrollment	Number of Rooms Used	Number of Students Per Room	Notes
Speech	7	1	7.0	
EC	5	1	5.0	
Montessori - 4K/5K	51	2	14.5	Half day 4K (two sessions per day)
Montessori - 1-3	78	3	26.0	
4K	32	1	16.0	Two half day sessions in one classroom
Kindergarten	53	3	17.7	
First Grade	65	3	21.7	
Second Grade	50	2	25.0	
Third Grade	60	3	20.0	
Fourth Grade	51	2	25.5	
Totals:	452	20		

Enrollment Capacity based on Maximum and Target Class Size

Num of Rooms	Program	Maximum Class Size	Maximum Capacity	Target Class Size	Target Capacity
1	Speech	7	7	6.3	6.3
1	EC	5	5	4.5	4.5
2	Montessori - 4K/5K	18	36	16.2	32.4
3	Montessori - 1-3	26	78	23.4	70.2
1	4K	18	18	16.2	16.2
3	Kindergarten	23	69	20.7	62.1
3	First Grade	24	72	21.6	64.8
2	Second Grade	25	50	22.5	45
3	Third Grade	26	78	23.4	70.2
2	Fourth Grade	26	52	23.4	46.8
20	Total Classrooms		465		418.5

	Maximum Capacity	465	Target Capacity	419
Current Enrollment		452		452
Available Capacity		13		-34

*Target Capacity represents 90% of the Maximum Capacity

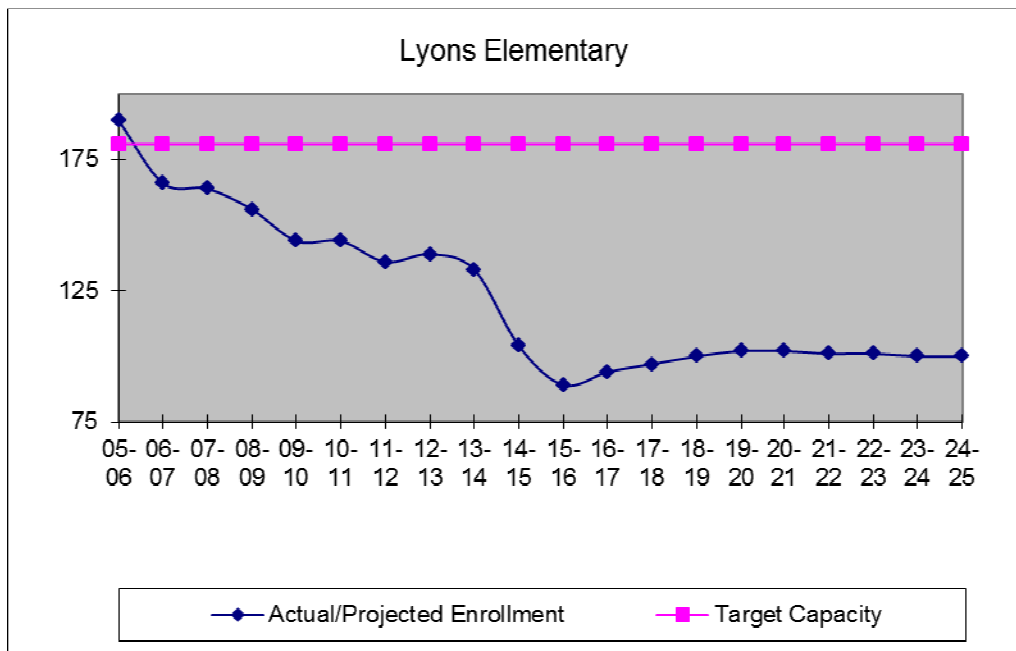
Enrollment Projection

	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Actual/Projected Enrollment	403	380	427	454	454	445	442	438	436	436	436	433	428
Maximum Capacity	465	465	465	465	465	465	465	465	465	465	465	465	465
Target Capacity	419	419	419	419	419	419	419	419	419	419	419	419	419
Maximum Capacity (Over)/Under Target Capacity	62	85	38	11	11	20	23	27	29	29	29	32	37
(Over)/Under	16	39	-9	-36	-36	-27	-24	-20	-18	-18	-18	-15	-10

Lyons Elementary

Lyons Elementary is a single section rural school located southwest of the City of Burlington. This building has seen significant enrollment decline over the past decade due to an aging population within its attendance area. At the current time, the enrollment is so low within certain grades that from year to year, a grade may not be taught at this building. It should also be noted that this building does not currently accommodate 4K programming. Students within this attendance area that enroll in the 4K program attend another school within the District for that first year and then transition into Lyons for Kindergarten.

Due to the low enrollment at this building, several classrooms are currently being utilized for intervention or other specialized services. This is a logical use of space when available but should enrollment begin to increase, the District should be aware that these classrooms should be reassigned back to standard core curriculum function.



Burlington Area School District Educational Space Analysis

Building/Program Capacities

Lyons Elementary

Current Enrollment and Room Usage - Year 2015/16

Program	Current Enrollment	Number of Rooms Used	Number of Students Per Room	Notes
Kindergarten	23	1	23.0	
First Grade	-	0	0.0	No First Grade section this year.
Second Grade	22	1	22.0	
Third Grade	24	1	24.0	
Fourth Grade	20	1	20.0	
Totals:	89	4		

Enrollment Capacity based on Maximum and Target Class Size

Num of Rooms	Program	Maximum Class Size	Maximum Capacity	Target Class Size	Target Capacity
3	Open Classrooms	25	75	22.5	67.5
1	Kindergarten	23	23	20.7	20.7
0	First Grade	24	0	21.6	0
1	Second Grade	25	25	22.5	22.5
1	Third Grade	26	26	23.4	23.4
1	Fourth Grade	26	26	23.4	23.4
1	Available Classrooms	26	26	23.4	23.4
8	Total Classrooms		201		180.9

	Maximum Capacity	201	Target Capacity	181	*Target Capacity represents 90% of the Maximum Capacity
Current Enrollment		89		89	
Available Capacity		112		92	

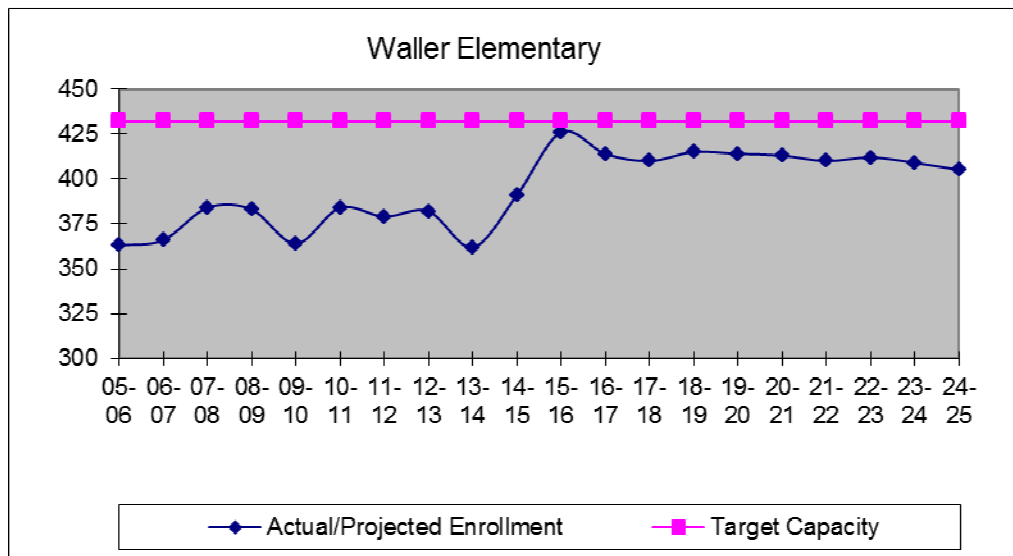
Enrollment Projection

	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Actual/Projected Enrollment	139	133	104	89	94	97	100	102	102	101	101	100	100
Maximum Capacity	201	201	201	201	201	201	201	201	201	201	201	201	201
Target Capacity	181	181	181	181	181	181	181	181	181	181	181	181	181
Maximum Capacity													
(Over)/Under	62	68	97	112	107	104	101	99	99	100	100	101	101
Target Capacity													
(Over)/Under	42	48	77	92	87	84	81	79	79	80	80	81	81

Waller Elementary

Like Cooper Elementary, Waller Elementary is an older building situated in the City of Burlington. Enrollment has been relatively steady over the past several years with a bump occurring in the 2014/2015 school year when 4K was added to the District. Waller Elementary serves as one of the primary Early Childhood delivery sites. As such, several classrooms and other spaces within the building are dedicated to this programming.

As indicated by the chart below, Waller Elementary does have some available capacity.



Burlington Area School District Educational Space Analysis

Building/Program Capacities

Waller Elementary

Current Enrollment and Room Usage - Year 2015/16

Program	Current Enrollment	Number of Rooms Used	Number of Students Per Room	Notes
EC	20	2	10.0	
4K	9	2	4.5	Two half day sessions in one classroom
Kindergarten	74	4	18.5	
First Grade	70	4	17.5	
Second Grade	75	4	18.8	
Third Grade	73	3	24.3	
Fourth Grade	64	3	21.3	
Totals:	385	22		

Enrollment Capacity based on Maximum and Target Class Size

Num of Rooms	Program	Maximum Class Size	Maximum Capacity	Target Class Size	Target Capacity
2	EC	18	36	16.2	32.4
2	4K	18	36	16.2	32.4
4	Kindergarten	23	92	20.7	82.8
4	First Grade	24	96	21.6	86.4
4	Second Grade	25	100	22.5	90
3	Third Grade	26	78	23.4	70.2
3	Fourth Grade	26	78	23.4	70.2
22	Total Classrooms		480		432

Maximum Capacity
480

Target Capacity
432

*Target Capacity represents 90% of the Maximum Capacity

Current Enrollment
Available Capacity

385
95

385
47

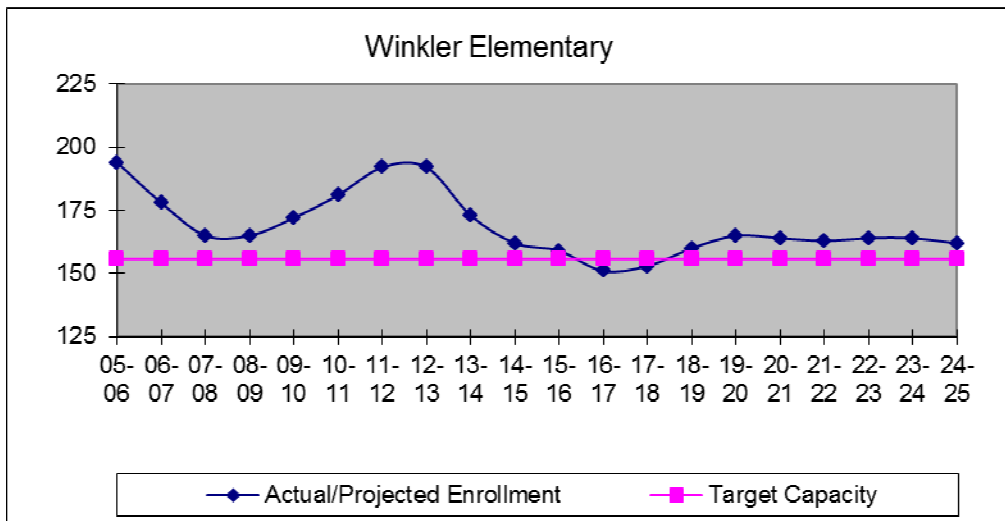
Enrollment Projection

	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Actual/Projected Enrollment	382	362	391	426	414	410	415	414	413	410	412	409	405
Maximum Capacity	480	480	480	480	480	480	480	480	480	480	480	480	480
Target Capacity	432	432	432	432	432	432	432	432	432	432	432	432	432
Maximum Capacity (Over)/Under	98	118	89	54	66	70	65	66	67	70	68	71	75
Target Capacity (Over)/Under	50	70	41	6	18	22	17	18	19	22	20	23	27

Winkler Elementary

Winkler Elementary is a smaller school situated south of the City of Burlington. Enrollment has declined somewhat over the past several years and is projected to remain flat for the foreseeable future. Winkler Elementary serves grades Kindergarten through Fourth Grade and is generally a one section school. Depending on the enrollment numbers on any given year, space does exist for additional sections as needed. This school has operated above the target capacity in the past and is projected to run slightly above the target capacity in years to come. Given the relatively small difference, it does not appear that at this time this building warrants expansion or reconfiguration for capacity reasons.

As indicated by the chart below, Winkler Elementary does have some available capacity.



Burlington Area School District Educational Space Analysis

Building/Program Capacities

Winkler Elementary

Current Enrollment and Room Usage - Year 2015/16

Program	Current Enrollment	Number of Rooms Used	Number of Students Per Room	Notes
Kindergarten	32	2	16.0	
First Grade	28	1	28.0	
Second Grade	27	1	27.0	
Third Grade	29	1	29.0	
Fourth Grade	43	2	21.5	
Totals:	159	7		

Enrollment Capacity based on Maximum and Target Class Size

Num of Rooms	Program	Maximum Class Size	Maximum Capacity	Target Class Size	Target Capacity
2	Kindergarten	23	46	20.7	41.4
1	First Grade	24	24	21.6	21.6
1	Second Grade	25	25	22.5	22.5
1	Third Grade	26	26	23.4	23.4
2	Fourth Grade	26	52	23.4	46.8
7	Total Classrooms		173		155.7

	Maximum Capacity	173	Target Capacity	156	*Target Capacity represents 90% of the Maximum Capacity
Current Enrollment		159		159	
Available Capacity		14		-3	

Enrollment Projection

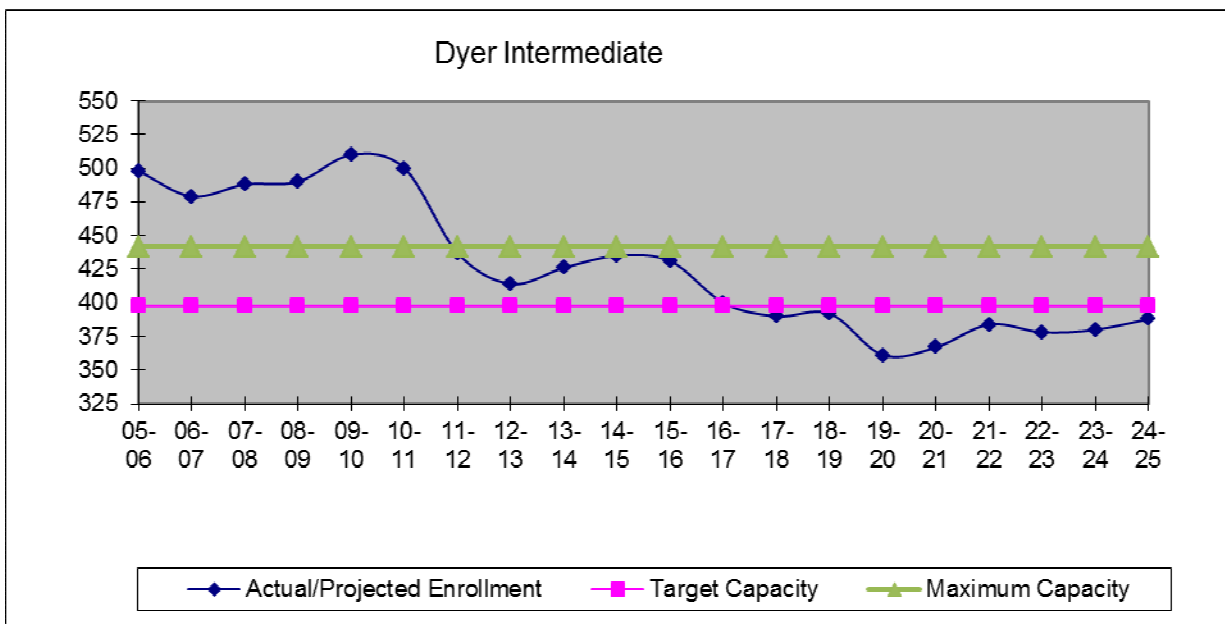
	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Actual/Projected Enrollment	192	173	162	159	151	153	160	165	164	163	164	164	162
Maximum Capacity	173	173	173	173	173	173	173	173	173	173	173	173	173
Target Capacity	156	156	156	156	156	156	156	156	156	156	156	156	156
Maximum Capacity	(19)	0	11	14	22	20	13	8	9	10	9	9	11
Target Capacity	(36)	(17)	(6)	(3)	5	3	(4)	(9)	(8)	(7)	(8)	(8)	(6)

Dyer Intermediate School

Dyer Intermediate School serves Grades Five and Six and functions like an elementary school with students spending the majority of their day within one classroom. The capacity of Dyer has been determined utilizing the same method as described above for elementary schools.

Within Dyer is the District's 4-6 Montessori program. As with the Montessori program spaces at Cooper Elementary, these spaces are included in the overall capacity determination.

Dyer has seen declining enrollment for the past several years with a general leveling off projected into the future. The building has operated above both its target and maximum capacities in the past and continues to be crowded at this time. Projections do place numbers below the target capacity but attention should be given to ensure that limited space does not impact future programming.



Burlington Area School District Educational Space Analysis

Building/Program Capacities

Dyer Intermediate School

Current Enrollment and Room Usage - Year 2015/16

Program	Current Enrollment	Number of Rooms Used	Number of Students Per Room	Notes
Fifth Grade	215	8	26.9	Montessori program included in
Sixth Grade	216	9	24.0	mainstream numbers
Totals:	431	17		

Enrollment Capacity based on Maximum and Target Class Size

Num of Rooms	Program	Maximum Class Size	Maximum Capacity	Target Class Size	Target Capacity
8	Fifth Grade	26	208	23.4	187.2
9	Sixth Grade	26	234	23.4	210.6
17	Total Classrooms		442		397.8

	Maximum Capacity	442	Target Capacity	398	*Target Capacity represents 90% of the Maximum Capacity
Current Enrollment	431	431			
Available Capacity	11	-33			

Enrollment Projection

	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Actual/Projected Enrollment	414	426	435	431	400	390	392	361	367	384	378	380	388
Maximum Capacity	442	442	442	442	442	442	442	442	442	442	442	442	442
Target Capacity	398	398	398	398	398	398	398	398	398	398	398	398	398
Maximum Capacity	28	16	7	11	42	52	50	81	75	58	64	62	54
Target Capacity	(16)	(28)	(37)	(33)	(2)	8	6	37	31	14	20	18	10

Karcher Middle School

The capacity of the middle school is based upon the number of educational spaces available within each building. The number of educational spaces is then calculated by the number of students to occupy the space, which has been determined by the Districts Class Size Guidelines. The usage factor is determined by the actual use of a classroom, divided by the number of periods that the building operates within an instructional day. The resultant calculation is then multiplied by 85% efficiency factor which is a planning guideline for the student station utilization. Each classroom or instructional space that has been assigned for student credit will be factored in to the calculation. This method will determine how many students are in an assigned instruction space at any one period of the day. After a period has ended, the students rotate to another instructional space. The periods that each instructional space is used will vary depending upon the administrations scheduling of the spaces, as will the target class size number, which is dependent upon the acceptable number of students assigned.

Karcher Middle School operates within the old High School building. As the chart above implies, this building is significantly oversized for the population that it serves. When the current High School building was completed in 2000 and the Middle School moved to its current location, it was anticipated that portions of Karcher would be closed off to student and staff access. In the years since, this operational assumption has not held up as various spaces have been assigned for a variety of uses. This organization leaves a building that is open throughout to student access and is inefficient to operate.

Target Class Size Formula:

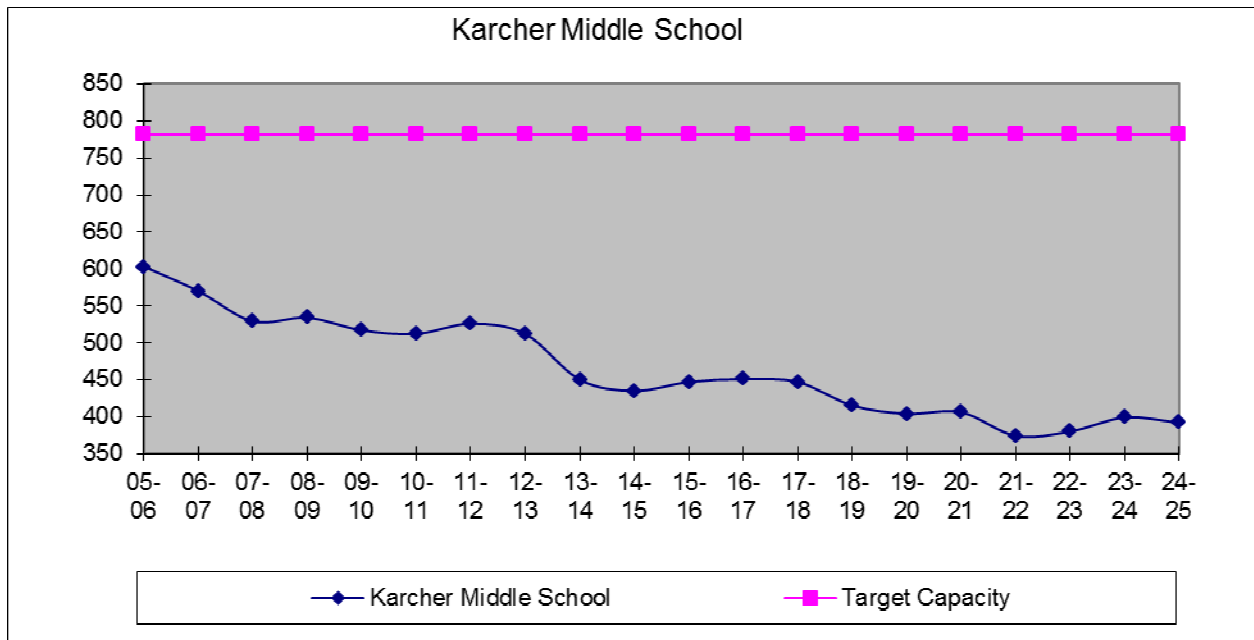
$$\text{Periods used} / \text{Periods in day} = \text{Usage Factor \%}$$

$$\text{Number of Rooms} * \text{Usage Factor \%} * \text{Class size} = \text{Capacity} * 85\% = \text{Target Capacity}$$

Maximum Class Size Formula:

$$\text{Periods used} / \text{Periods in day} = \text{Usage Factor \%}$$

$$\text{Number of Rooms} * \text{Usage Factor \%} * \text{Class size} = \text{Maximum Capacity}$$



Burlington Area School District Educational Space Analysis

Building/Program Capacities

Karcher Middle School

Current Enrollment and Room Usage - Year 2015/16

Program	Current Enrollment
Seventh Grade	227
Eighth Grade	220
Totals:	447

Enrollment Capacity based on Maximum and Target Class Size

Num of Rooms	Program	Periods Per Day	Periods Used	Usage Factor	Target Class Size	Maximum Capacity	Efficiency Factor	Target Capacity
12	Standard Classrooms	8	6	75%	27	243	85%	207
4	Science	8	6	75%	27	81	85%	69
9	Potential Classrooms	8	6	75%	27	182	85%	155
13	Open Classrooms	8	6	75%	27	263	85%	224
38								
3	Phy-ed Stations	8	5	63%	27	51	85%	43
2	Health Classrooms	8	5	63%	27	34	85%	29
1	Tech Ed Stations	8	5	63%	27	17	85%	14
1	Art	8	4	50%	27	14	85%	11
1	Vocal	8	4	50%	26	13	85%	11
1	Choir	8	2	25%	20	5	85%	4
1	Band	8	2	25%	50	13	85%	11
1	Orchestra	8	2	25%	20	5	85%	4

		Maximum Capacity	Target Capacity
Building Capacity		920	782
Current Enrollment		447	447
Available Capacity		473	335

Enrollment Projection

	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Actual/Projected Enrollment	512	450	435	447	451	447	415	404	406	374	380	399	392
Maximum Capacity	920	920	920	920	920	920	920	920	920	920	920	920	920
Target Capacity	782	782	782	782	782	782	782	782	782	782	782	782	782
Maximum Capacity Over/(Under)	408	470	485	473	469	473	505	516	514	546	540	521	528
Target Capacity Over/(Under)	270	332	347	335	331	335	367	378	376	408	402	383	390

Burlington High School Capacity

The capacity of the high school is based upon the number of educational spaces available within each building. The number of educational spaces is then calculated by the number of students to occupy the space, which has been determined by the Districts Class Size Guidelines. The usage factor is determined by the actual use of a classroom, divided by the number of periods that the building operates within an instructional day. The resultant calculation is then multiplied by 80% efficiency factor which is a planning guideline for the student station utilization. Each classroom or instructional space that has been assigned for student credit will be factored in to the calculation. This method will determine how many students are in an assigned instruction space at any one period of the day. After a period has ended, the students rotate to another instructional space. The periods that each instructional space is used will vary depending upon the administrations scheduling of the spaces, as will the target class size number, which is dependent upon the acceptable number of students assigned.

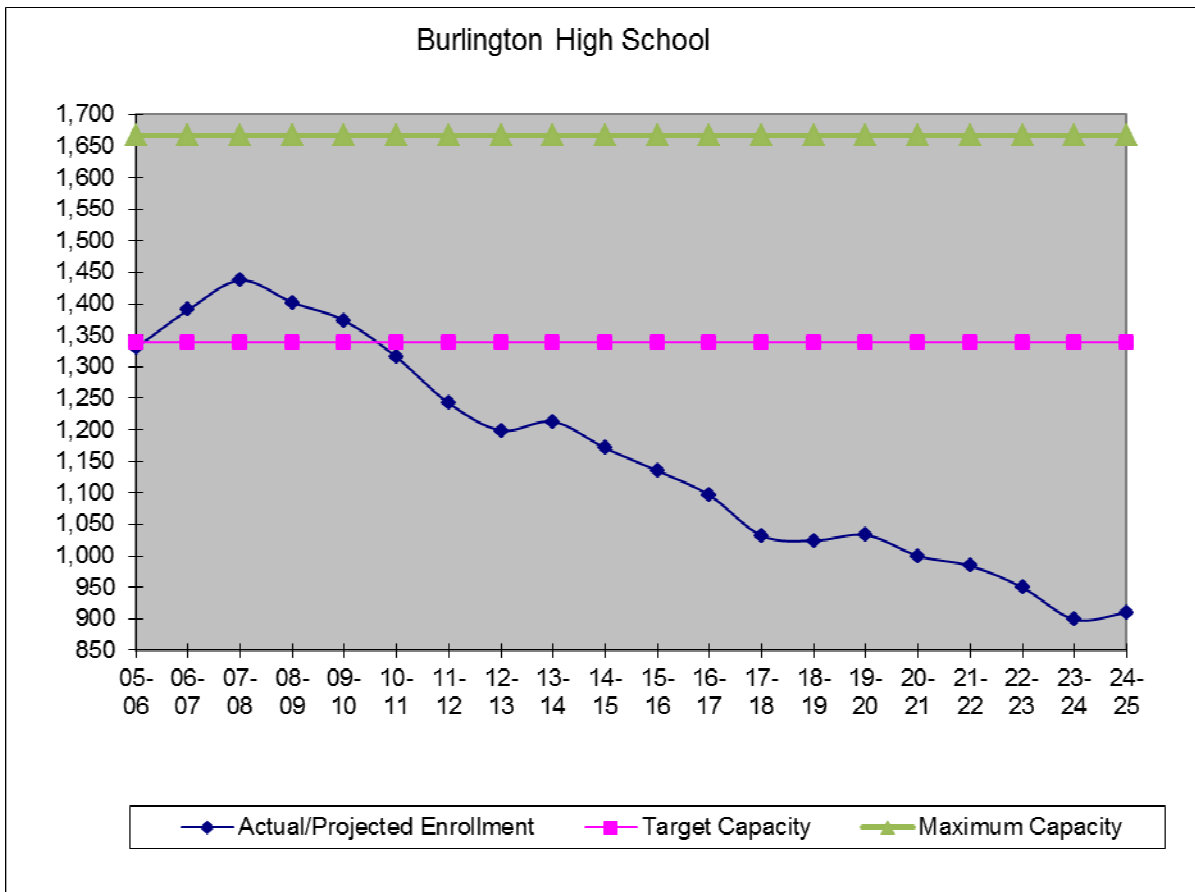
Target Class Size Formula:

$$\begin{aligned} \text{Periods used} / \text{Periods in day} &= \text{Usage Factor \%} \\ \text{Number of Rooms} * \text{Usage Factor \%} * \text{Class size} &= \text{Capacity} * \\ 80\% &= \text{Target Capacity} \end{aligned}$$

Maximum Class Size Formula:

$$\begin{aligned} \text{Periods used} / \text{Periods in day} &= \text{Usage Factor \%} \\ \text{Number of Rooms} * \text{Usage Factor \%} * \text{Class size} &= \text{Maximum Capacity} \end{aligned}$$

Burlington High School was completed in 2000 and was designed to accommodate a larger student population that currently attends the school. Enrollment peaked in 2007 and has been declining since. Future projections show a further significant decline in the years to come. The chart above indicates that continued decline as well as the Target and Maximum Capacity lines.



Burlington Area School District Educational Space Analysis

Building/Program Capacities

Burlington High School

Current Enrollment and Room Usage - Year 2015/16

Program	Current Enrollment
Ninth Grade	251
Tenth Grade	266
Eleventh Grade	322
Twelfth Grade	296
Totals:	1,135

Enrollment Capacity based on Maximum and Target Class Size

Num of Rooms	Program	Periods Per Day	Periods Used	Usage Factor	Target Class Size	Maximum Capacity	Efficiency Factor	Target Capacity
32	Standard Classrooms	8	7	88%	30	840	80%	672
9	Science	8	7	88%	24	189	80%	151
41								
3	Phy-ed Stations	8	7	88%	30	79	80%	63
1	Weight/Fitness	8	7	88%	30	26	80%	21
1	PE Classroom	8	7	88%	30	26	80%	21
		8						
4	World Language	8	7	88%	30	105	80%	84
4	Business Education	8	7	88%	30	105	80%	84
1	Ag Classroom	8	4	50%	24	12	80%	10
2	STEM Labs	8	4	50%	24	24	80%	19
1	Tech Ed / Woods	8	3	38%	20	8	80%	6
1	Tech Ed / Autos	8	3	38%	20	8	80%	6
1	Tech Ed / Metals	8	3	38%	20	8	80%	6
4	Art	8	6	75%	24	72	80%	58
1	Film/Multi-Media CR	8	4	50%	24	12	85%	10
2	FACE / Childcare	8	4	50%	60	60	85%	51
1	Band	8	5	63%	70	44	85%	37
1	Choir	8	4	50%	50	25	80%	20
1	Orchestra	8	4	50%	50	25	80%	20

		Maximum Capacity	Target Capacity
Building Capacity		1,667	1,339
Current Enrollment		1,135	1,135
Available Capacity		532	204

Enrollment Projection

	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Actual/Projected Enrollment	1,199	1,213	1,171	1,135	1,096	1,032	1,024	1,033	1,000	984	950	899	910
Maximum Capacity	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667
Target Capacity	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339
Maximum Capacity													
Over/(Under)	468	454	496	532	571	635	643	634	667	683	717	768	757
Target Capacity													
Over/(Under)	140	126	168	204	243	307	315	306	339	355	389	440	429

Site Analysis

The following are generally accepted standards for proper educational site size determinations:

Elementary Schools: 10 Acres + 1 Acre/100 Students Served

Middle Schools: 20 Acres + 1 Acre / 100 Students Served

High Schools: 30 Acres + 1 Acre / 100 Students Served

School	Enrollment Capacity	Recommended Site Size	Current Site Size
Cooper Elementary	419	14 Acres	2.63 Acres
Lyons Elementary	181	11 Acres	7.52 Acres
Waller Elementary	432	14 Acres	9.95 Acres
Winkler Elementary	156	11 Acres	10 Acres
Dyer Intermediate School 398		14 Acres	9.78 Acres
Karcher Middle School	782	28 Acres	10 Acres
Burlington High School	1,339	43 Acres	62.5 Acres

By current standards, all of the building sites are undersized with the exception of the High School. This becomes apparent when reviewing site circulation and congestion that was reported at most buildings during student drop off and pick up. These constraints also become evident when developing concepts for expanding or renovating existing buildings.