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Tigard-Tualatin School District Enrollment Forecast Update, 2011-12 to 2020-21

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**TIGARD-TUALATIN SCHOOL DISTRICT
ENROLLMENT FORECAST UPDATE
2011-12 TO 2020-21**



DECEMBER, 2010

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2011-12 TO 2020-21**

**Prepared By
Population Research Center
Portland State University**

DECEMBER, 2010

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EXECUTIVE SUMMARY

This report presents the results of a demographic study conducted by the Portland State University Population Research Center (PRC). The study includes analysis of population, housing and enrollment trends affecting the District in recent years, estimates of the impacts of housing development on TTSD enrollment, and forecasts of district-wide and individual school enrollments for the 2011-12 to 2020-21 school years.

Enrollment Trends

The Tigard-Tualatin School District (TTSD) enrolled 12,393 students in Fall 2010, a decrease of 74 students (0.6 percent) from Fall 2009. The loss occurred at both the elementary and middle school levels, with decreases of 41 students (0.7 percent) in grades K-5 and 123 students (4.2 percent) in grades 6-8. Conversely, district-wide enrollment in high school grades 9-12 *increased* by 90 students (2.3 percent).

Two significant factors contributed to the downward enrollment trend. First, the Portland region's seasonally adjusted unemployment rate has remained over 10 percent since early 2009, slowing migration to the area and preventing the depressed housing market from recovering. The District's typical enrollment gains due to an inflow of families with children have not occurred for the past two years. In both 2009-10 and 2010-11 there was a small net loss due to more children leaving than entering District schools. Second, MITCH Charter School, which is not included in the historic or forecast enrollment figures in this report, expanded by about 100 students, adding grades 6-8 and one additional 1st grade class. Many of the new students at MITCH would have been enrolled at District-run schools if not for the expansion.

Prior to 2009-10, total K-12 enrollment in the TTSD grew in 20 out of 21 years. New housing development contributed to enrollment growth throughout that period. Sustained growth in elementary enrollment from the late 1980s to the mid 1990s and the more recent growth in high school enrollment were influenced by the rapid increase in births

caused by the “echo” of the baby boom. Since the late 1990s, a growing Latino population has also been a major contributor to the District’s enrollment growth.

Potential Residential Development

Under current plans there is a shrinking amount of developable residential land in the District’s communities. If plans remain unchanged and new housing construction returns to recent levels after the current downturn, the District will be near its residential capacity by the end of the 10 year horizon of these forecasts. However, additional residential capacity is expected to be added in the West Bull Mountain area, where a concept plan for future neighborhoods has been recently completed. Planning documents call for more affordable and higher density housing than currently exists in the established parts of Bull Mountain. Next steps include development of a community plan as well as finance and infrastructure plans. It may be six to seven years before the first homes are occupied in West Bull Mountain, but an analysis included in this report finds that the area may be home to between 750 and 1,000 TTSD students at build-out, based on the range of housing units envisioned in the concept plan and current student generation rates in comparable housing within the District. Recently completed comprehensive plans for the town centers of the Cities of Tigard and Tualatin also envision development that includes a mix of higher-density and affordable housing.

Enrollment Forecast

In the next two years, little or no K-12 growth is expected due to the severe housing downturn and regional job losses. However, over the 10 year forecast period, K-12 enrollment is forecast to increase by 1,267 students (10 percent), exceeding the increase of 888 students experienced in the past 10 years. K-5 enrollments begin to grow significantly in 2013-14, while modest growth is expected for secondary enrollments until mid-decade (2015-16), after which their growth accelerates. There will be annual fluctuations that no forecast can anticipate; a one or two year deviation from the forecast does not mean that the forecast trend will be inaccurate in the long run.

Table 1 compares the historic and forecast growth for the District by five year increment. More detailed forecasts for the District may be found in Table 18 of this report.

	Actual			Forecast	
	2000-01	2005-06	2010-11	2015-16	2020-21
District Total	11,505	12,133	12,393	12,863	13,660
<i>5 year change</i>		628 5%	260 2%	470 4%	797 6%
K-5	5,313	5,474	5,642	5,961	6,333
<i>5 year change</i>		161 3%	168 3%	319 6%	372 6%
6-8	2,676	2,832	2,799	2,840	3,182
<i>5 year change</i>		156 6%	-33 -1%	41 1%	342 12%
9-12	3,516	3,827	3,952	4,062	4,145
<i>5 year change</i>		311 9%	125 3%	110 3%	83 2%

Population Research Center, PSU. December 2010.

Individual School Forecasts

Forecasts for individual schools depict what future enrollments might be if current boundaries, grade configurations, and number of schools remain unchanged. Specific figures may be found in Table 19 of this report and in the one page school profiles in the Appendix.

Among elementary schools, Alberta Rider and Woodward’s attendance areas contain the greatest amount of buildable residential land within the City of Tigard. Primarily zoned R-7 for homes with a minimum lot size of 5,000 square feet, these areas contain residential land zoned at a higher density than most existing neighborhoods in the area. They also include the TTSD portion of the West Bull Mountain area. The two schools will experience the largest increases among elementary schools over the next 10 years if their boundaries were to remain unchanged.

Middle school enrollment growth is concentrated at Twality due to growth in all of its feeder elementary schools, as well as ongoing new housing development. Tigard High School's enrollment forecast is fairly stable, but significant growth is forecast for Tualatin High School after 2013-14, as a consequence of the growth at its feeder middle school, Twality.

INTRODUCTION

For the fifth consecutive year, the Tigard-Tualatin School District (TTSD) requested that the Portland State University Population Research Center (PRC) prepare enrollment forecasts for use in the District's planning. This report updates TTSD enrollment history and local area population, housing, and economic trends, and presents new forecasts for a 10 year horizon from 2011-12 to 2020-21. Information sources include the U.S. Census Bureau, birth data from the Oregon Center for Health Statistics, city and county population estimates produced by PRC, county population forecasts from the Oregon Office of Economic Analysis, employment trends and forecasts from the Oregon Employment Department, and housing development data from the cities and counties.

The District serves the cities of Tigard, Tualatin, Durham and King City, and portions of unincorporated Washington County, notably the Metzger and Bull Mountain communities.¹ Most of the District is within Washington County; a portion in Clackamas County (to the east of SW 65th Ave. in the City of Tualatin) contains less than three percent of the District's total population.

Following this introduction are sections presenting recent population, housing, and enrollment trends within the District. Next are the results of the district-wide enrollment forecasts and individual school forecasts, and a description of the methodology used to produce them. The final section contains a brief discussion of the nature and accuracy of forecasts. An appendix contains one page profiles for each school showing its enrollment history, enrollment forecasts, and capacity.

¹ The northern edge of the City of Tigard is served by the Beaverton School District, and small portions of the City of Tualatin are served by the West Linn-Wilsonville and Sherwood School Districts.

POPULATION AND HOUSING TRENDS, 1990 to 2010

During the decade between the 1990 and 2000 Censuses, total population within the boundaries of the TTSD grew by 37 percent, from 51,653 persons to 70,775. Over 97 percent of TTSD residents live within the Washington County portion of the District (68,900 persons in 2000). Clackamas County accounts for the rest (1,875 persons in 2000). The District's rate of population growth during the 1990s was slightly less than the 43 percent growth experienced by Washington County overall, but greater than the 21 percent growth rate in Clackamas County.

By Summer 2011, data from the 2010 Census will facilitate in depth analysis of the District's recent demographic trends. For now, we rely on estimates for the year 2010. These estimates show that since 2000, the District's population has continued to grow, but at an average of about 1,500 persons per year, compared with 1,900 persons per year in the 1990s. The two counties, the metropolitan region, and each of the District's cities, with the exception of King City, have grown more slowly in the current decade than in the 1990s. The 1990, 2000, and 2010 populations of each of the cities served by TTSD, the District itself, the two counties, and the metropolitan region are shown in Table 2.

Previous studies contained several tables detailing recent and current residential development data. That data is still being maintained, but is not included in this report because new housing is currently contributing very little to the District's enrollment. No new subdivisions or other major residential developments have been approved within the District since 2008, with the exception of a 48 unit senior housing development under construction in Tigard. Many of the developments approved in 2008 are still on hold. In response to the economic downturn, the City of Tigard passed an ordinance in April 2010 extending land use approvals for previously approved subdivisions, partitions, and site development reviews.

Table 2
City and Region Population, 1990, 2000, and 2010

	1990	2000	2010	Avg. Annual Growth Rate	
				1990-2000	2000-2010
City of Durham	748	1,382	1,405	6.3%	0.2%
City of King City ¹	2,060	1,949	2,800	-0.6%	3.6%
City of Tigard ²	29,435	41,223	47,595	3.4%	1.4%
City of Tualatin ³	14,664	22,791	26,160	4.5%	1.4%
Tigard-Tualatin S.D. ⁴	51,653	70,775	85,805	3.2%	1.9%
Clackamas County	278,850	338,391	381,775	2.0%	1.2%
Washington County	311,554	445,342	532,620	3.6%	1.8%
Portland-Vancouver-Beaverton MSA ⁵	1,523,741	1,927,881	2,235,580	2.4%	1.5%

1. King City's population growth includes the annexation of 288 residents between 2000 and 2010.

2. Population of the entire city of Tigard. About 82% of the city's population is within the TTSD. Population growth includes the annexation of 1,205 residents between 1990 and 2000 and 1,119 residents between 2000 and 2010.

3. Population of the entire city of Tualatin. About 93% of the city's population is within the TTSD. Population growth includes the annexation of 101 residents between 1990 and 2000 and 53 residents between 2000 and 2010.

4. Estimated population for 2010 is PSU-PRC's 2010 TTSD population forecast from Table 15 of this report.

5. Portland-Vancouver-Beaverton MSA consists of Clackamas, Columbia, Multnomah, Washington, Yamhill (OR) and Clark and Skamania (WA) Counties.

Sources: U.S. Census Bureau, 1990 and 2000 censuses and 2008 Small Area Income and Poverty Estimates program; Portland State University Population Research Center, Preliminary July 1, 2010 estimates; State of Washington Office of Financial Management April 1, 2010 estimates.

The residential building permit data presented in Table 3 show some evidence that homebuilding activity may have bottomed out in 2009. Although nowhere near the 500 homes per year average seen between 2000 and 2006, the 145 single family homes permitted within the District in the first 10 months of 2010 is double the number in calendar year 2009.

**Table 3
Housing Units Authorized by Building Permits**

Year Permit Issued	TTSD District Total		Durham		King City		Tigard (TTSD part) ¹		Tualatin ²		Washington County Uninc. (TTSD part)	
	Single Family	Multiple Family	Single Family	Multiple Family	Single Family	Multiple Family	Single Family	Multiple Family	Single Family	Multiple Family	Single Family	Multiple Family
2000	456	17	2	0	0	0	351	0	64	17	39	0
2001	680	0	4	0	0	0	438	0	222	0	16	0
2002	489	264	1	0	0	0	296	0	184	264	8	0
2003	565	0	1	0	51	0	331	0	140	0	42	0
2004	450	108	1	0	14	0	240	108	174	0	21	0
2005	467	38	1	0	68	0	299	6	86	0	13	32
2006	455	20	3	0	113	0	228	20	101	0	10	0
2007	353	0	1	0	52	0	172	0	48	0	80	0
2008	117	0	1	0	12	0	45	0	21	0	38	0
2009	72	0	1	0	10	0	38	0	2	0	21	0
2010 (Jan-Oct)	145	50	2	0	13	0	77	50	21	0	32	0

1. Eighty-seven percent of the City's authorized single family units reported by the Census Bureau are allocated to the TTSD, based on GIS shape file (points) provided by City of Tigard Community Development Department.

2. The entire city is included, because almost no permits for new homes have been issued since 2000 by the City of Tualatin for areas outside the TTSD.

Source for Washington County Unincorporated Area: Washington County Land Use & Transportation -- Building Services Department database downloadable at <http://www.co.washington.or.us/LUT/Divisions/Building/Reports/building-permit-search.cfm>. Records within TTSD identified by PSU-PRC.

Source for cities: U.S. Census Bureau, Residential Construction Branch. Data available online at <http://censtats.census.gov/bldg/bldgprmt.shtml>.

HOUSING AND ENROLLMENT

TTSD Students Residing in New Housing

How many children are expected to live in future new homes and attend TTSD schools? Because each development is unique, the number of resident public school students may depend on factors other than the number of homes. These factors include affordability, proximity to schools, the number of bedrooms, and the presence or absence of child-friendly amenities within the development and in the surrounding neighborhood. However, we can measure the current average number of TTSD students per recently constructed housing unit. These figures help to inform the enrollment forecasts for individual schools, and they can be used by District staff on an *ad hoc* basis to estimate potential student generation from planned and proposed developments.

Using data from Metro, we compiled a multiple family housing inventory in a spatial file based on parcels that differentiates apartments, condominiums, and manufactured home parks. This data file provides more comprehensive information on the number of housing units than was available in the past. We then combined this file with the parcel file and student address points from Fall 2010 in order to quantify the number of students by housing type.

For District homes built between 2000 and 2009, the average number of TTSD K-12 students per single family home was 0.52, or about one student in every two homes. The rates are similar to or lower than those we have measured for new single family homes in recent studies for other area school districts.² Homes built in the 1990s also had an average of 0.52 K-12 students, but these slightly older homes housed slightly older families — fewer elementary and more secondary school children. Homes built before 1990 have an average of just 0.37 TTSD K-12 students per home.

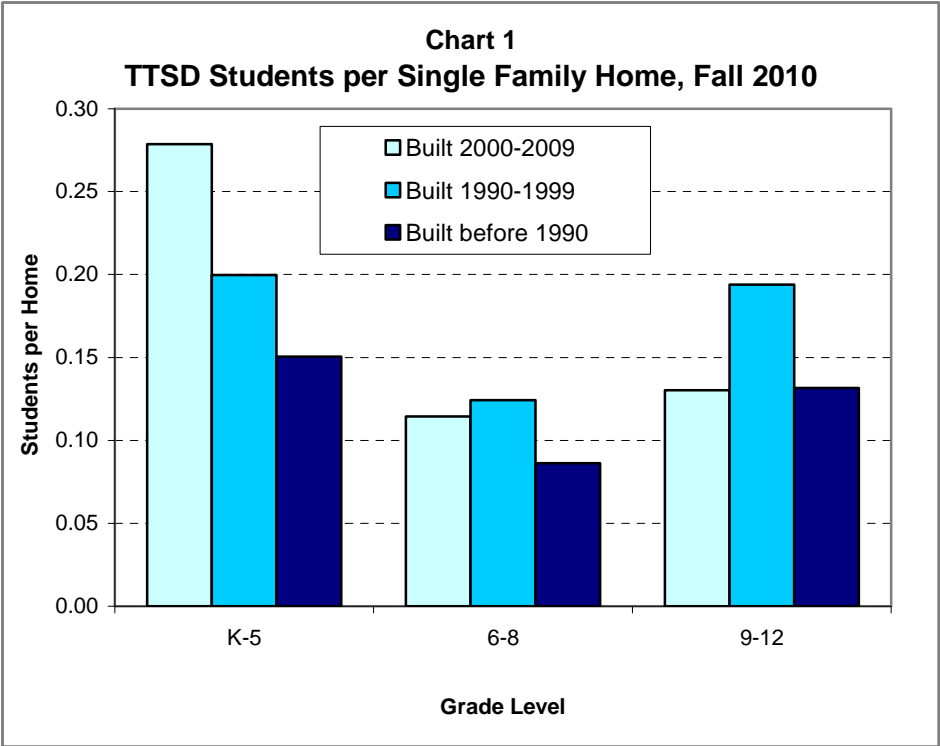
² For example, 0.66 in the North Clackamas School District, 0.48 in the Oregon City School District, 0.84 in the Sherwood School District, and 0.57 in the Canby School District.

Table 4 includes these rates by age of single family home as well as rates for other types of homes. In the most recent decade, a growing number of lots in new subdivisions are designed for attached or nearly attached (“skinny”) row homes. Several hundred of these homes on smaller lots had been built by 2009, generating fewer than half as many TTSD students per home (0.25) as detached homes built at about the same time (0.59). Among other types of housing, rental apartments had higher student generation rates (0.34) than condominium units (0.11) or manufactured homes (0.19).

	Grade Level			
	K-5	6-8	9-12	K-12
Single family homes built 2000-2009	0.28	0.11	0.13	0.52
<i>detached homes built 2000-2009</i>	0.32	0.13	0.15	0.59
<i>row homes built 2000-2009</i>	0.11	0.07	0.07	0.25
Single family homes built 1990-1999	0.20	0.12	0.19	0.52
Single family homes built before 1990	0.15	0.09	0.13	0.37
Condominiums	0.05	0.03	0.03	0.11
Apartments	0.17	0.07	0.09	0.34
Manufactured homes in M.H. Parks	0.09	0.06	0.04	0.19

Source: Data compiled by PSU-PRC, using TTSD student data and geographic shape files from Metro RLIS. Excludes senior housing developments. Includes students attending district charters and special programs.

These same Fall 2010 student generation rates are shown in Chart 1, illustrating the “aging in place” that occurs in single family homes. On average, homes that are 10-20 years old have fewer young children than homes that are less than 10 years old. As the older children graduate from high school, the homes built in the 1990s will soon have even fewer K-12 residents, much like the homes built before 1990 that are now more than 20 years old. Although younger families may eventually occupy the older homes, owner-occupied homes turn over to new owners very gradually, and the new owners will represent a diverse mix of households that may not include as many families with children as the newer tract homes.



ENROLLMENT TRENDS

The Tigard-Tualatin School District (TTSD) enrolled 12,393 students in Fall 2010, a decrease of 74 students (0.6 percent) from Fall 2009. The loss occurred at both the elementary and middle school levels, with decreases of 41 students (0.7 percent) in grades K-5 and 123 students (4.2 percent) in grades 6-8. Conversely, district-wide enrollment in high school grades 9-12 *increased* by 90 students (2.3 percent).

Two significant factors contributed to the downward enrollment trend. First, the Portland region's seasonally adjusted unemployment rate has remained over 10 percent since early 2009, slowing migration to the area and preventing the depressed housing market from recovering. The District's typical enrollment gains due to an inflow of families with children have not occurred for the past two years. In both 2009-10 and 2010-11 there was a small net loss due to more children leaving than entering District schools. Second, MITCH Charter School, which is not included in the historic or forecast enrollment figures in this report, expanded by about 100 students, adding grades 6-8 and one additional 1st grade class. Many of the new students at MITCH would have been enrolled at District-run schools if not for the expansion.

Prior to 2009-10, total K-12 enrollment in the TTSD grew in 20 out of 21 years. New housing development contributed to enrollment growth throughout that period. Sustained growth in elementary enrollment from the late 1980s to the mid 1990s and the more recent growth in high school enrollment were influenced by the rapid increase in births caused by the "echo" of the baby boom. Since the late 1990s, a growing Latino population has also been a major contributor to the District's enrollment growth.

Table 5 summarizes the enrollment history for the District by grade level annually for the past 10 years, from 2000-01 to 2010-11. As shown in the table, the District added between 100 and 200 students and experienced growth rates of one to two percent in most years prior to the decline of the past two years. Growth for the entire period was 888 students, or eight percent.

**Table 5
Tigard-Tualatin School District, Enrollment History, 2000-01 to 2010-11**

Grade	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
K	813	835	831	779	807	893	906	860	924	886	902
1	869	901	909	906	921	900	990	984	919	971	896
2	855	874	937	912	887	944	905	1,017	1,010	927	949
3	894	889	878	926	920	897	964	903	1,009	1,007	909
4	978	902	906	877	913	940	931	963	919	970	1,001
5	904	993	919	899	914	900	975	945	990	922	985
6	885	918	1,008	924	926	913	910	965	974	966	904
7	916	899	912	990	945	950	929	937	981	969	958
8	875	918	914	915	1,003	969	957	953	936	987	937
9	933	928	991	952	971	1,066	992	1,015	976	944	1,028
10	928	948	923	977	951	952	1,033	1,015	1,006	977	951
11	891	933	963	891	942	932	910	1,007	973	968	978
12	764	827	822	844	890	874	898	890	976	968	993
US*	0	0	0	18	20	3	7	6	2	5	2
Total	11,505	11,765	11,913	11,810	12,010	12,133	12,307	12,460	12,595	12,467	12,393
<i>Annual change</i>		260 2.3%	148 1.3%	-103 -0.9%	200 1.7%	123 1.0%	174 1.4%	153 1.2%	135 1.1%	-128 -1.0%	-74 -0.6%
K-5	5,313	5,394	5,380	5,299	5,362	5,474	5,671	5,672	5,775	5,683	5,642
6-8	2,676	2,735	2,834	2,829	2,874	2,832	2,796	2,855	2,891	2,922	2,799
9-12	3,516	3,636	3,699	3,682	3,774	3,827	3,840	3,933	3,929	3,862	3,952

	5 Year Change: 2000-01 to 2005-06		5 Year Change: 2005-06 to 2010-11		10 Year Change: 2000-01 to 2010-11	
	Change	Pct.	Change	Pct.	Change	Pct.
K-5	161	3%	168	3%	329	6%
6-8	156	6%	-33	-1%	123	5%
9-12	311	9%	125	3%	436	12%
Total	628	5%	260	2%	888	8%

*Note: "US" are ungraded secondary students, included in grade 9-12 totals.

Sources: Oregon Department of Education; TTSD

Private and Home School Enrollment and District “Capture Rate”

The Oregon Department of Education’s (ODE’s) most recent list of private schools shows five schools in the Tigard-Tualatin area that enroll 100 or more students each. In 2007-08 they enrolled a total of 1,229 children including 1,036 in grades K-8 and 193 in grades 9-12. The total enrollment at these same five schools was 1,204 in 2006-07 and 1,088 in 2005-06. The largest of the five in 2007-08 was Horizon Christian School in Tualatin, with 389 K-8 students and 93 high school students, followed by St. Anthony’s School in Tigard, with 390 K-8 students. Horizon Christian’s high school program is relatively new; in Fall 2006, Horizon Christian (formerly Community Christian) expanded from a K-8 program, enrolling high school students in a new facility shared with the middle school students. A 12-room classroom building has been completed, and another 13 classrooms are planned for this new campus.

Private schools within the TTSD enroll local students as well as students from beyond the TTSD boundaries; conversely, TTSD residents attend private schools located throughout the metro area. Therefore, the number of students enrolled in private schools physically located within the District can not be used to measure overall private school share. The best source for private school enrollment by residence is census data. The 1990 and 2000 censuses and the more recent American Community Survey (ACS) included questions about school enrollment by level and by type (public or private). In 2000, 10 percent of K-12 students living in the District were enrolled in private schools. Specifically, 22 percent of kindergartners, nine percent of 1st-8th grade students (slightly lower than the State’s 10 percent share), and eight percent of 9th-12th grade students (same as the State) were enrolled in private schools. For grades 1-12 overall, the nine percent private school share in 2000 was an increase from the seven percent share in the 1990 Census. The ACS estimate from surveys conducted from 2006 to 2008 indicate that eight percent of TTSD K-12 students are enrolled in private schools. However, the ACS has a smaller sample size than the census long form, with larger margins of error.

Comparing the population counted in the 2000 Census with the TTSD enrollment by grade level confirms that the share of area children not attending TTSD schools is similar

or slightly higher than the private school shares. TTSD kindergarten enrollment in 1999-00 and 2000-01 averaged about 78 to 79 percent of the kindergarten-age population counted in the census, and TTSD 1st grade enrollment accounted for about 84 percent of the corresponding census population.

Another difference between TTSD enrollment and child population can be attributed to home schooling. Home schooled students living in the District are required to register with the Northwest Regional Educational Service District (NWRESD), though the statistics kept by the NRESD are not precise because students who move out of the area are not required to drop their registration. Students who enroll in public schools after being registered as home schooled are dropped from the home school registry. In 2009-10 there were 271 TTSD residents registered as home schooled.³ This accounts for less than two percent of total TTSD K-12 residents. The number of home-schooled students has remained in the range between 200 and 300 each year since 2000.

For purposes of forecasting enrollment, the ratios of kindergarten and first grade public school enrollment to overall population in the corresponding ages are very important. These ratios are called “capture rates.” Once a student is enrolled in the public schools in first grade, it is very likely that they will continue to be enrolled in subsequent grades, unless their family moves out of the District. At the time of the 2000 Census, the kindergarten capture rate was 0.78, and the first grade capture rate was 0.84. That means that about 22 percent of kindergarten-age children and 16 percent of first grade age children were not enrolled in TTSD schools. These children include students who were enrolled in private schools, net transfers to and from other public school districts, home schooled students, or children not yet attending school, since school is not compulsory until age seven.

MITCH Charter School

The District charter school MITCH is not included in the enrollment history or forecasts in this report. The school opened in 2003-04, and in 2009-10 it enrolled 147 students in grades K-5. In 2010-11, MITCH expanded to include grades K-8, and enrolled 247

³ Northwest Regional Education Service District, *2009-10 Annual Report*.

students. Its impact on enrollment at district-run schools has grown due to the addition of middle grades, an additional first grade class, and the gradual increase in the share of its students who are residents of TTSD. The TTSD resident share of MITCH enrollment has grown from about 60 percent in Fall 2006 to more than 80 percent in Fall 2010, meaning that the number of TTSD residents enrolled at MITCH has doubled from about 100 in Fall 2006 to about 200 in Fall 2010. The number of total and TTSD resident MITCH students by grade is shown in Table 6.

**Table 6
2009-10 and 2010-11 MITCH Students by Grade**

Grade	All MITCH Students 2009-10	TTSD Residents 2009-10	All MITCH Students 2010-11	TTSD Residents 2010-11
K	30	29	25	23
1	24	19	50	45
2	24	18	25	22
3	24	19	26	22
4	24	18	26	21
5	21	12	26	20
6			25	17
7			25	17
8			19	17
Total	147	115	247	204

It is not likely that all of MITCH’s TTSD residents would be enrolled in District-run schools if MITCH were not an option. Some might attend private schools, or charters in other districts. Based on an analysis of recent enrollment data, we estimate that about 120 elementary students and 40 middle school students now attending MITCH may have been enrolled in other TTSD schools. The elementary estimate is based primarily on the expansion of MITCH’s 1st grade this year. There were 21 additional seats available, and 14 of the new students had been enrolled in district-run kindergartens in 2009-10.⁴ Students from six different TTSD elementary schools transferred to MITCH for 1st grade; no school lost more than three students due to this transition. Applying two-thirds to all 178 MITCH K-5 students yields about 120 students, somewhat less than the 153 TTSD

⁴ Of the 50 first grade students, 29 had been enrolled in MITCH kindergarten in 2009-10.

K-5 residents attending MITCH. A similar ratio of MITCH middle school students would likely have attended one of TTSD’s three middle schools. There are 28 MITCH 6th-8th grade students who had attended District-run schools in 2009-10. Based on past transitions an additional six to eight students who were enrolled in MITCH 5th grade would have enrolled in District-run middle schools if MITCH had not added 6th grade. The total impact of MITCH adding middle grades may be close to 40 students. MITCH’s expansion has the biggest impact on Twality Middle School, whose attendance area is home to about 45 percent of MITCH’s TTSD residents at both the elementary and middle school levels. The number of 2010-11 MITCH students who attended TTSD District-run schools in 2009-10 is shown in Table 7.

Table 7
2010-11 MITCH Students who Attended TTSD District-run Schools in 2009-10

2010-11 Grade	2009-10 TTSD School				
	Total	Elementaries	Fowler	Hazelbrook	Twality
K	0				
1	14	14			
2	5	5			
3	3	3			
4	1	1			
5	1	1			
6	5	5			
7	11		1		10
8	12		4	5	3
Total	52	29	5	5	13

Because MITCH is operating close to its capacity and charter agreement of 250 students, no additional significant impacts on enrollments at other TTSD schools are expected in the near future. However, if students complete 8th grade at MITCH and then articulate to Tigard or Tualatin High School, future 8th to 9th grade progression rates may increase, since the MITCH students are not included in the 8th grade denominator.

Hispanic Enrollment Growth

In 2010-11, the District's Hispanic enrollment grew by 178 students (seven percent). Elementary schools added 88 Hispanic students (six percent). The largest percentage growth was in the high school grades 9-12, which added 76 Hispanic Students (12 percent). Over the past five years, Hispanic enrollment has increased by 895 students (46 percent), while the number of non-Hispanic students has decreased by 635 students (six percent).

Growth in the school age Hispanic population is attributable to in-migration of young adults and higher fertility rates. The slower growth, or decline, in the non-Hispanic school age population is related to the age distribution of the native U.S. born population, which is still impacted by the large baby boom generation. In the TTSD and in most communities there are currently more white non-Hispanics in their 40s and 50s than in their 20s and 30s, so their high school or college age children outnumber elementary-age children. Each year, more white non-Hispanics graduate from high school than enter kindergarten or first grade due to the age distribution of families and their children.

Hispanic enrollment is now 23 percent of the District K-12 total and 26 percent of the K-5 (elementary) total. Table 8 reports annual Hispanic enrollment by school level from 2005-06 to 2010-11.

**Table 8
Hispanic Enrollment History, Tigard-Tualatin School District**

School	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	Change 2005-06 to 2010-11	
							Number	Percent
Hispanic K-5	1,118	1,218	1,265	1,291	1,398	1,486	368	33%
<i>Share of District Total</i>	<i>20%</i>	<i>21%</i>	<i>22%</i>	<i>22%</i>	<i>25%</i>	<i>26%</i>		
Hispanic 6-8	359	441	514	582	624	638	279	78%
<i>Share of District Total</i>	<i>13%</i>	<i>16%</i>	<i>18%</i>	<i>20%</i>	<i>21%</i>	<i>23%</i>		
Hispanic 9-12	457	492	579	600	629	705	248	54%
<i>Share of District Total</i>	<i>12%</i>	<i>13%</i>	<i>15%</i>	<i>15%</i>	<i>16%</i>	<i>18%</i>		
Hispanic Total	1,934	2,151	2,358	2,473	2,651	2,829	895	46%
<i>Share of District Total</i>	<i>16%</i>	<i>17%</i>	<i>19%</i>	<i>20%</i>	<i>21%</i>	<i>23%</i>		
Non-Hispanic Total	10,199	10,156	10,102	10,122	9,816	9,564	-635	-6%
District Total	12,133	12,307	12,460	12,595	12,467	12,393	260	2%

Source: Tigard-Tualatin School District

Enrollment Turnover at Secondary Transition Grades: 5th to 6th and 8th to 9th

The most straightforward way to calculate enrollment change from one grade to the next is with a grade progression rate (GPR), which measures *net* change in enrollment. For example, if there are 100 students in 1st grade in one year, and 102 students in 2nd grade in the following year, the GPR is 1.02. This calculation only requires knowledge of total enrollment by grade each year. However, as a net measure, it does not tell us how many students enter and leave district schools each year.

The example in Table 9 detailing the transition from Fall 2009 5th grade to Fall 2010 6th grade shows a net loss of two percent of Fall 2009 5th grade students, expressed by the GPR of 0.980. The net loss of 18 students is composed of 105 students who did not advance to District-run 6th grade classes (most had left the district entirely), and 87 new students in Fall 2010 who had not been in District-run 5th grade classes the previous year. Although 5th to 6th grade represents a transition from elementary to middle school, this turnover is not significantly different from other grades. In fact, slightly larger numbers of students enter and leave the District between consecutive elementary grades.

Table 9		
Elementary to Middle School Transition		
Fall 2009 <u>5th Grade</u> Students by Fall 2010 Enrollment		
District-run 6th grade	817	88.6%
District-run 5th grade	1	0.1%
TTSD Charter or Special Program	6	0.7%
Not enrolled in TTSD	98	10.6%
Total	922	
Fall 2010 <u>6th Grade</u> Students by Fall 2009 Enrollment		
District-run 5th grade	817	90.4%
TTSD Charter or Special Program	2	0.2%
Not enrolled in TTSD	85	9.4%
Total	904	
<i>Grade Progression Rate (904 / 922) =</i>	<i>0.980</i>	

The transition from middle school to high school between 2009-10 and 2010-11 shown in Table 10 includes a net gain of about four percent, expressed by the GPR of 1.042. There

were a similar number of students leaving the District as in the elementary to middle school transition, but a greater number (139 students) enrolled in District-run 9th grade classes in Fall 2010 who had not been enrolled in District-run 8th grade classes in Fall 2009. An 8th-9th grade GPR greater than 1.00 is typical of many districts even in a period of stable or declining overall enrollment, since some students enroll in public schools after attending K-8 private schools.

Table 10		
Middle to High School Transition		
Fall 2009 <u>8th Grade</u> Students by Fall 2010 Enrollment		
District-run 9th grade	889	90.1%
Not enrolled in TTSD	98	9.9%
Total	987	
Fall 2010 <u>9th Grade</u> Students by Fall 2009 Enrollment		
District-run 9th grade	889	86.5%
TTSD Charter or Special Program	2	0.2%
Not enrolled in TTSD	137	13.3%
Total	1028	
<i>Grade Progression Rate (1028 / 987) =</i>	<i>1.042</i>	

Total enrollment at each of the District's schools and recent enrollment trends by school are shown in Table 11 on the next page.

**Table 11
Enrollment History for Individual Schools, 2005-06 to 2010-11**

School	Historic Enrollment						5 year change* 2005-06 to 2010-11	
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	Number	Percent
Alberta Rider	424	535	540	571	582	579	155	36.6%
Bridgeport	500	521	534	550	529	549	49	9.8%
Byrom	661	634	659	654	633	624	-37	-5.6%
C.F. Tigard	605	614	598	587	577	547	-58	-9.6%
Deer Creek	563	606	609	581	574	556	-7	-1.2%
Durham	532	525	512	542	556	548	16	3.0%
Metzger	578	609	589	590	582	574	-4	-0.7%
Templeton	537	557	551	588	588	614	77	14.3%
Tualatin	537	539	560	580	562	584	47	8.8%
Woodward	537	531	520	528	500	467	-70	-13.0%
Elementary Totals	5,474	5,671	5,672	5,771	5,683	5,642	168	3.1%
Fowler M.S.	935	910	898	876	885	823	-112	-12.0%
Hazelbrook M.S.	1,010	1,002	1,002	983	1,013	959	-51	-5.0%
Twality M.S.	887	879	951	1,028	1,020	1,012	125	14.1%
Middle School Totals	2,832	2,791	2,851	2,887	2,918	2,794	-38	-1.3%
Tigard H.S.	2,005	2,000	2,002	2,003	1,977	2,046	41	2.0%
Tualatin H.S.	1,791	1,772	1,863	1,864	1,825	1,854	63	3.5%
Durham Center	31	73	72	70	64	57	26	83.9%
High School Totals	3,827	3,845	3,937	3,937	3,866	3,957	130	3.4%
District Totals	12,133	12,307	12,460	12,595	12,467	12,393	260	2.1%

**Note: Enrollment change is shown for a five year period during which school boundaries have been relatively stable. The only attendance area changes have been small areas shifted from Metzger to Durham and from Fowler to Twality beginning in 2006.*

Sources: Oregon Department of Education; TTSD

POTENTIAL RESIDENTIAL DEVELOPMENT

The “Population and Housing Trends, 1990 to 2010” section of this report documents a slowdown in residential building permit activity beginning in 2007. Given expected growth in the region and the District’s proximity to the region’s major employment centers, housing demand should rebound with the economy. The current downturn does influence the short-range enrollment growth rates for 2011-12 and 2012-13.

A bigger concern in the long run is the availability of residential land for new housing construction. In previous forecasts, we considered the possibility that land use constraints would prevent the District from returning to its average of about 450 new single family homes annually prior to the downturn. If about 200 homes were built in each of the next two years, and an average of 450 homes were built in the following eight years, a total of 4,000 units would be added in the 10 year period. Does the District have enough residential land? After reviewing existing plans and current planning efforts, we conclude that the capacity does exist. However, as the supply of buildable land shrinks, single family housing that is both affordable and desirable for families with school age children may become scarcer.

Very little rental multi-family development has occurred in recent years, so developers may respond to demand for this product type. Market rate multi-family development usually generates very few school age children per unit, but a large number of new units or a concerted effort to add affordable units could contribute to District enrollment gains.

Tigard

In Tigard, less than 10 percent of land within the City is considered vacant and buildable. Based on the City’s 2009 buildable lands inventory (BLI), if the City developed its remaining residential lands, an additional 3,275 to 3,473 units could be built. These estimates include an allowance for additional projects on land not included in the BLI.⁵

⁵ Buildable Lands Report and Land Use Trends Analysis, Planning Commission Presentation, June 1, 2009.

In 2008 we conducted our own analysis using GIS shapefiles provided by the City of Tigard, including the 2007 BLI and platted subdivisions, as well as information from the City's web site about new subdivisions approved but not yet platted. Our results were similar. We estimated that a net housing gain of 1,077 units would occur based on approved land use applications that have been submitted since 2005, and that about 3,000 additional units could be built on remaining residential land, also allowing for a share of development that occurs on lands not included in the inventory. We also calculated that 86 percent of Tigard's buildable residential land is within the TTSD boundary.

King City

In King City, after the current developments that are underway are completed, there will only be a small amount of land available for future residential development. Including ongoing and potential new subdivisions, there may be capacity for a few hundred more homes within the City's current boundaries.

Tualatin

The City of Tualatin envisions only limited development under its current plans. At the beginning of the Tualatin Tomorrow strategic planning work in mid-2006, a community profile stated that "Tualatin is expected to grow to about 28,000 people at build-out, given the amount of land within its current urban planning area boundary."⁶

Given the 2010 population estimate of 26,160 in 2010, the expected population at build-out allows the City to add only 2,000 more residents.⁷ However, the possibility of future changes to the plans is acknowledged in the final vision, with action statements such as "consider a housing element for the Town Center plan, including guidelines and tools to promote development of a mix of higher-density and affordable housing," and "prioritize City efforts on orchestrating development of affordable housing throughout Tualatin."⁸

⁶ *Tualatin Community Profile and Trends Report*, July 2006. <http://www.tualatintomorrow.org/>

⁷ *2010 Preliminary Population Estimates*, Population Research Center, Portland State University. <http://www.pdx.edu/prc>.

⁸ *Community Vision and Strategic Action Plan*, June 2007. <http://www.tualatintomorrow.org/>

Future expansions of the City of Tualatin’s boundaries, if any, will have little effect on growth in the TTSD, since nearly all of the unincorporated areas adjacent to the City are outside of the TTSD’s boundaries. Tualatin’s contribution to TTSD’s growth will be from build-out of existing residential land and any infill and redevelopment.

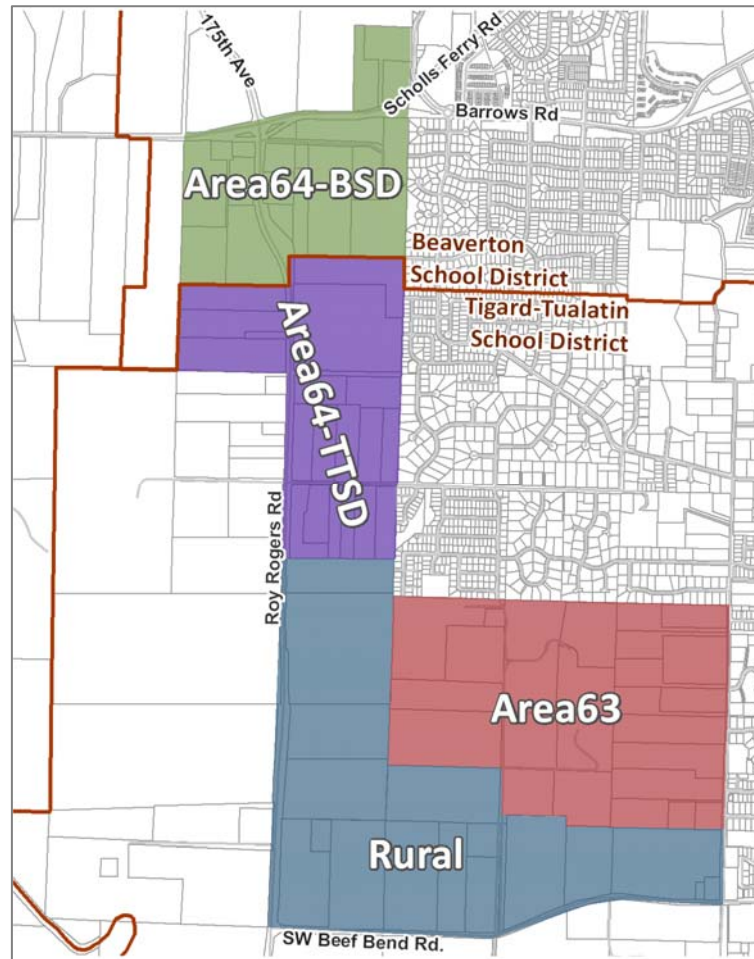
West Bull Mountain

In 2002, about 467 acres of the West Bull Mountain area were added to the Urban Growth Boundary (UGB). Over the past few years, Washington County and related entities have developed a Concept Plan for the UGB expansion areas, known as Areas 63 and 64, and an adjacent 248 acre rural area. The plan, reflecting the community's vision for how the area will develop over the next 20+ years, has been completed and is pending adoption by the County Board of Commissioners. Most of the plan area lies within the existing boundaries of the Tigard-Tualatin School District; just over 100 acres of the 714 acre planning area is within the Beaverton School District (see Map 1). While many details are uncertain about future development in this area, information in the September 2010 release of the final draft of the “West Bull Mountain Concept Plan” and associated reports can be used to estimate potential future TTSD enrollment generated within the area.

The plan delineates future housing into three basic categories — high, medium, and low density. The draft Concept Plan itself provides a detailed map showing the proposed distribution of each residential and commercial category across the plan area as well as gross and net acreages for each category. Net acreages were processed to remove unbuildable land on steep slopes, wetlands and designated rights of way. In order to retain consistency with the Concept Plan, the net acreages within the TTSD portion of the plan area have been analyzed here for their expected student generation.⁹

⁹ In order to apply the student generation numbers discussed above to each of these regions, PRC used the map image within the Concept Plan to develop the total share for each land use type within each of 4 regions – Area 63, Area 64 (BSD), Area 64 (TTSD), and the rural area. These shares were developed by geo-referencing the map image within the plan and using “heads-up” GIS digitization to obtain the total area of high, medium and low density development in each area. For example, if one region contained 10 acres of high density development compared to 100 acres in the total West Bull Mountain Concept Plan area, its share would be 10%. These shares were then multiplied by the total “net acreage” values within the Concept Plan to calculate an estimated acreage by land use for each of the regions.

Map 1. West Bull Mountain Concept Plan Area



Each of the housing densities is likely to yield different levels of student generation per housing unit. In order to estimate the likely student count by housing unit, adjacent neighborhoods within the existing Alberta Rider and Woodward elementary attendance areas were used as a model. Fall 2010 student generation rates (SGRs) were calculated using a GIS layer of student points and taxlot data, resulting in an average number of students per housing unit value for existing housing categories resembling the categories within the Concept Plan: high (apartments and condominium buildings) medium (attached single family residences and plexes), and low (detached single family residences) densities.

The estimated range of housing units, one scenario of potential student generation rates, and the resulting number of potential TTSD students are shown in Table 12. A total of

750 to 1,000 TTSD students could reside in the plan area if it is fully built according to the planned densities, using the SGRs shown in the table. The potential range of students by school level (K-5, 6-8, and 9-12) is shown in Table 13.

**Table 12
Potential TTSD Students
West Bull Mountain Plan at Build-out**

	Dwelling Unit Range	Estimated TTSD Students Per Unit	Estimated Number of TTSD K-12 Students
Areas 63 & 64*			
High Density	239-298	0.26	63-78
Medium Density	552-773	0.16	91-127
Low Density	663-928	0.58	387-541
63 & 64 Total	1,453-1,999		540-747
Rural Area			
High Density	114-143	0.26	30-37
Medium Density	751-1,052	0.16	124-173
Low Density	73-102	0.58	42-59
Rural Area Total	938-1,296		196-270
Plan Area Totals	2,391-3,295		736-1,017

Sources: Data compiled by PSU-PRC based on West Bull Mountain Concept Plan, using TTSD student data for existing homes in Alberta Rider and Woodward areas and geographic shapefiles from Metro RLIS.

1. Excludes areas within Beaverton School District
2. Areas may not add to total due to rounding

**Table 13
Potential TTSD Students by Grade Level
West Bull Mountain Plan at Build-out**

	K-5	6-8	9-12	K-12
Areas 63 & 64¹	260-359	132-182	149-206	540-747
Rural Area	91-125	50-68	56-77	196-270
Plan Area Totals²	351-484	181-250	204-283	736-1,017

Sources: Data compiled by PSU-PRC based on West Bull Mountain Concept Plan, using TTSD student data for existing homes in Alberta Rider and Woodward areas and geographic shapefiles from Metro RLIS.

1. Excludes Areas Within Beaverton School District
2. Areas may not add to total due to rounding

The SGRs could have also been presented in ranges, resulting in more variation in the number of potential TTSD students. For low density, or single family detached homes on large lots, SGRs are fairly predictable, typically in the range of 0.50 to 0.65 K-12 students per home in Portland suburban areas. The medium density SGRs are the lowest shown in the table, because they are based on existing row homes and plexes, which currently house fewer children, on average, than detached homes. The greatest variation in student generation occurs in high density housing, depending on the characteristics of individual developments. PRC has observed actual student generation rates ranging from 0.01 for market rate one bedroom condos to 2.00 for income restricted three and four bedroom rentals.

The completion and adoption of the Concept Plan is an important step, but there is much more planning to do before the area can be developed. Preparation of a Community Plan, with official zoning designations, and finance and transportation plans, are expected to take at least another two years to complete. Key questions remain about transportation development and the provision of water, parks, and other infrastructure. It may be six to seven more years before the first new homes are occupied in the area. Areas 63 and 64 are grouped separately from the rural area in both tables, because the initial development is likely to occur in the area already within the UGB, followed by the rural area that may be added to the UGB in the future. The enrollment forecasts presented in this report take a moderate approach by assuming that residential development begins in West Bull Mountain within the 10 year horizon, but that the pace of development does not accelerate compared with the potential short to mid-range growth on the developable land that now exists in the District.

ENROLLMENT FORECASTS

District-wide Long-range Forecast Methodology

To ensure that enrollment forecasts are consistent with the dynamics of likely population growth within the District, we combine the grade progression enrollment model with a demographic cohort-component model used to forecast population for the District by age and sex. The components of population change are births, deaths, and migration. Using age-specific fertility rates, age-sex specific mortality rates, age-sex specific migration rates, estimates of recent net migration levels, and forecasts of future migration levels, each component is applied to the base year population in a manner that simulates the actual dynamics of population change.

The 1990 and 2000 Census results are used as a baseline for the population forecasts. By “surviving” the 1990 population and 1990s births (estimating the population in each age group that would survive to the year 2000) and comparing the “survived” population to the actual 2000 population by age group, we are able to estimate the overall level of net migration between 1990 and 2000 as well as net migration by gender and age cohort. The net migration data was used to develop initial net migration rates, which were used as a baseline for rates used to forecast net migration for the 2000 to 2020 period.

We estimated the number of births to women residing within the District each year from 1989 to 2007, using data from the Oregon Department of Human Services, Center for Health Statistics. Detailed information including the age of mothers enabled us to calculate fertility rates by age group for both 1990 and 2000. We adjusted the future fertility rates to reflect trends of decreasing fertility rates for women under age 25 and increases for women age 30 and older. These trends are based on state and national observations, as well as the number of births by age of mother occurring within the District during the 2001 to 2005 period for which detailed birth data is available.

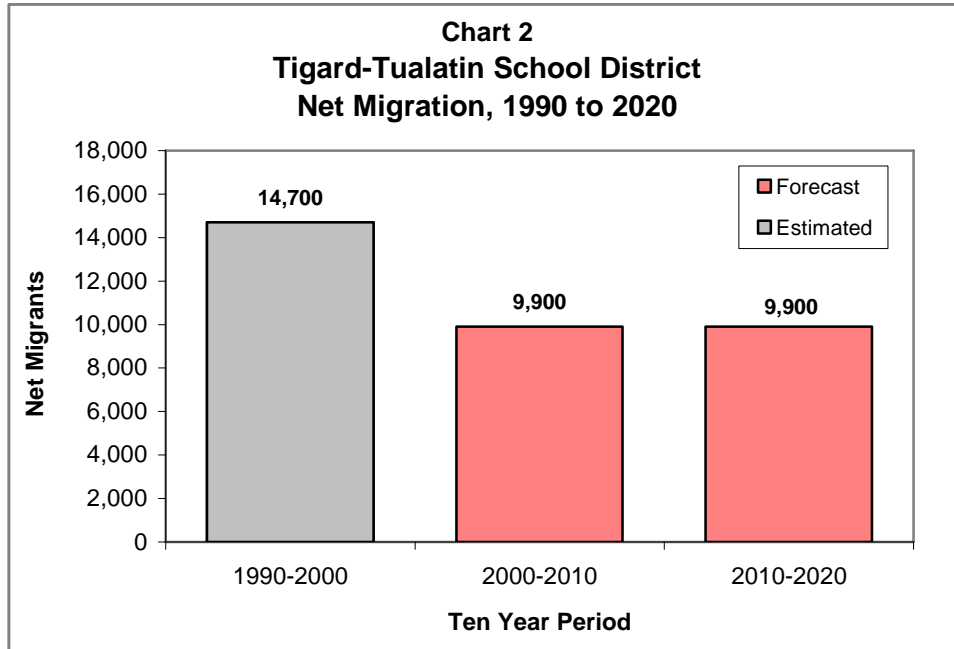
Historic school enrollment is linked to the population forecast in two ways. First, the kindergarten and first grade enrollments at the time of the most recent census (the 1999-

2000 school year) are compared to the population at the appropriate ages counted in the census. The “capture rate,” or ratio of enrollment to population, is an estimate of the share of area children who are enrolled in TTSD schools. Assumptions for capture rates based on census data are used to bring new kindergarten and first grade students into the District’s enrollment. If there is evidence that capture rates have changed since the time of the census, they may be adjusted in the forecast.

The other way that historic population and enrollment are linked is through migration. Annual changes in school enrollment by cohort closely follow trends in the net migration of children in the District’s population. Once the students are in first grade, a set of baseline GPRs are used to move students from one grade to the next. These rates, usually 1.00 for elementary grades, represent a scenario under which there is no change due to migration. Enrollment change beyond the baseline is added (or subtracted, if appropriate) at each grade level depending on the migration levels of the overall population by single years of age.

Population Forecast

Since the end of the 2000 to 2010 forecast period is approaching, there is a substantial amount of data available to compare to the 1990 to 2000 baseline period, including several years of school enrollment, birth, and housing development data. All indicate that population gains within the District in the current decade will be slightly lower than in the 1990s, and that most of the difference will be due to lower levels of net migration (people moving in minus those moving out). The population has continued to grow due to natural increase (births minus deaths). As the overall population grows and new housing development within the District boundaries remains at or below its recent levels, population growth due to net migration is forecast to be similar in the 2010 to 2020 period. Chart 2 shows the 1990 to 2000 estimate and 2000 to 2020 forecasts of TTSD population growth attributable to net migration.



Although very little growth in the young adult population is expected due to net migration, the young adult population will increase because of overall population growth and the larger baby boom “echo” cohort born in the 1980s and 1990s. This increase causes the number of births within the TTSD to increase throughout the forecast period in spite of stable or declining fertility rates. Table 14 shows historic births from 2000 to 2007 as well as forecasts from 2008 until 2015, the period that will have an impact on the enrollment forecasts presented in this study.

Table 14
Estimated and Forecast Births
Tigard-Tualatin School District

Year	Births
2000	1,063
2001	1,082
2002	1,116
2003	1,110
2004	1,154
2005	1,158
2006 (preliminary)	1,208
2007 (preliminary)	1,201
2008 (forecast)	1,224
2009 (forecast)	1,247
2010 (forecast)	1,236
2011 (forecast)	1,236
2012 (forecast)	1,239
2013 (forecast)	1,246
2014 (forecast)	1,260
2015 (forecast)	1,279

Source: 1990-2007 birth data from Oregon Center for Health Statistics allocated to TTSD boundary by PSU-PRC. 2008-2015 forecasts, PSU-PRC.

The district-wide population forecast by age group is presented in Table 15. The forecast for 2020 population in the TTSD is 100,819, an increase of 30,044 persons from the 2000 Census (1.8 percent average annual growth). The 2000 to 2020 growth rate of 42 percent for the District is similar to the 47 percent growth in the State of Oregon Office of Economic Analysis’ most recent forecast for Washington County. School-age population (5 to 17) is forecast to increase at a slower rate than overall population. The 4,055 person growth in school-age population amounts to 32 percent in the 20 year period, or 1.4 percent annually. By 2020, the fastest growing age groups are the “baby boom” generation ages 55 to 74. Population age 55 and older in the District is forecast to double between 2000 and 2020.

Table 15
Population by Age Group
Tigard-Tualatin School District, 1990 to 2020

	1990 Census	2000 Census	2010 Forecast	2020 Forecast	2000 to 2020 Change	
					Number	Percent
Under Age 5	3,934	4,977	6,050	6,663	1,686	34%
Age 5 to 9	3,744	5,049	5,704	6,528	1,479	29%
Age 10 to 14	3,255	4,896	5,384	6,584	1,688	34%
Age 15 to 17	1,761	2,890	3,266	3,778	888	31%
Age 18 to 19	1,074	1,618	2,071	2,208	590	36%
Age 20 to 24	3,190	4,433	5,121	5,413	980	22%
Age 25 to 29	4,509	5,475	5,918	6,749	1,274	23%
Age 30 to 34	5,159	5,477	6,054	6,685	1,208	22%
Age 35 to 39	5,018	5,916	7,059	7,349	1,433	24%
Age 40 to 44	4,404	6,143	6,819	7,356	1,213	20%
Age 45 to 49	3,045	5,723	6,311	7,639	1,916	33%
Age 50 to 54	2,046	4,532	6,162	6,774	2,242	49%
Age 55 to 59	1,655	3,137	5,706	6,216	3,079	98%
Age 60 to 64	1,710	2,183	4,480	6,061	3,878	178%
Age 65 to 69	1,753	1,722	2,964	5,412	3,690	214%
Age 70 to 74	1,709	1,791	2,066	3,975	2,184	122%
Age 75 to 79	1,614	1,856	1,579	2,428	572	31%
Age 80 to 84	1,131	1,590	1,431	1,446	-144	-9%
Age 85 and over	942	1,367	1,661	1,555	188	14%
Total Population	51,653	70,775	85,805	100,819	30,044	42%
Total age 5 to 17	8,760	12,835	14,354	16,890	4,055	32%
share age 5 to 17	17.0%	18.1%	16.7%	16.8%		

	1990-2000	2000-2010	2010-2020
Population Change	19,122	15,030	15,014
Percent	37%	21%	17%
Average Annual	3.2%	1.9%	1.6%

Source: U.S. Census Bureau, 1990 and 2000 Censuses; data aggregated to TTSD boundary by Portland State University Population Research Center. PSU-PRC Forecasts, 2010 and 2020.

District-wide Enrollment Forecast

Chart 3 compares the historic and forecast number of births in the District with the historic and forecast number of TTSD kindergarten students. Births correspond to kindergarten cohorts (September to August). Although many children move into and out of the District between birth and age five, and not all District residents attend TTSD kindergartens, the trend in kindergarten enrollment has generally followed the trend in the birth cohort. Fall 2007 and 2009 were exceptions, because kindergarten enrollment fell in spite of corresponding increases in births. Over the past 10 years, the gap between births and kindergarten enrollment has grown as a consequence of lower net migration, declining capture rates, or some combination of the two factors. Kindergarten and first grade capture rates are shown in Table 16. The higher rates for first grade reflect the fact that additional residents enter TTSD schools after completing their kindergarten year in private schools.

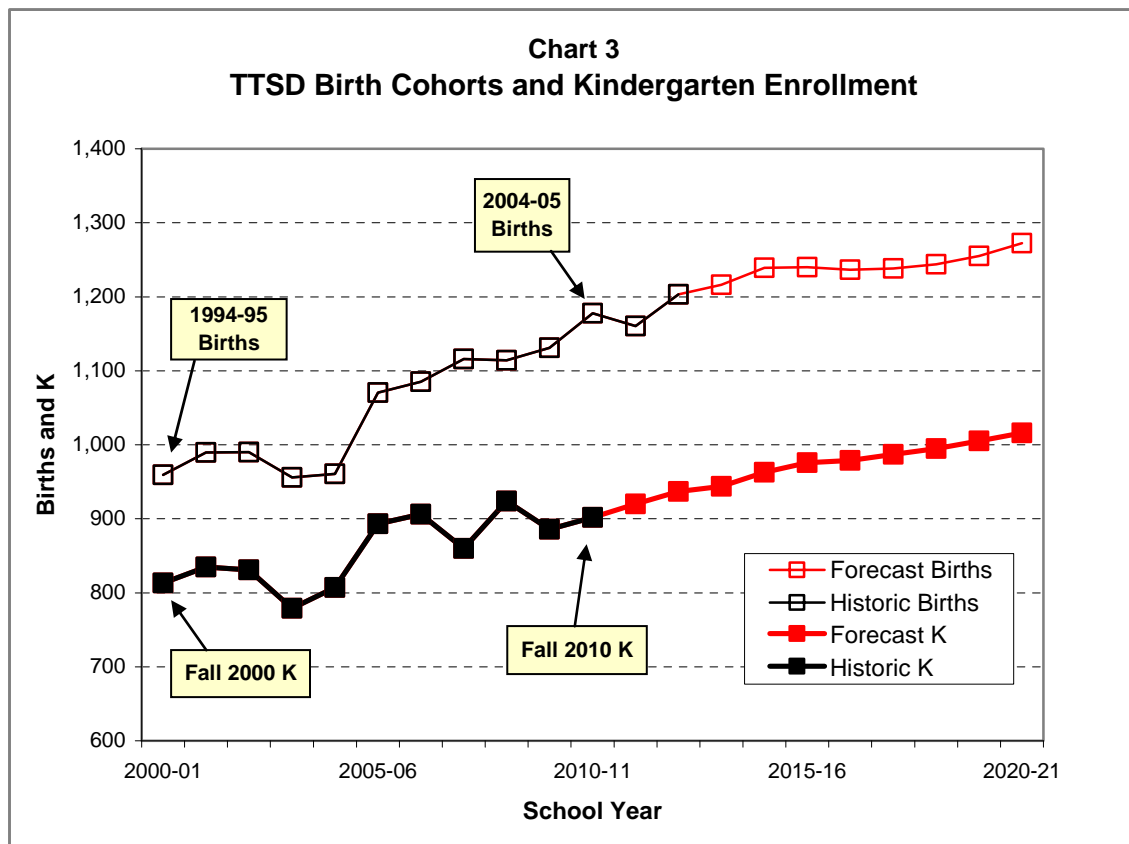


Table 16
Estimated and Forecast Capture Rates*
Tigard-Tualatin School District

School Year	Kindergarten	Grade 1
1989-1990 (census)	0.83	0.88
1999-2000 (census)	0.82	0.87
2020-2021 (forecast)	0.77	0.81

**The ratio of enrollment in District schools to total population in the District.*

The District’s growth has been fueled by migration, as there have consistently been more households moving in than out. This migration has contributed to the long term growth in District births and subsequent kindergarten enrollments¹, as was shown in Chart 3. Table 17 illustrates how the TTSD also gains students due to migration at nearly every grade level. Over the last 10 years, average GPRs for each grade from 2nd to 8th have ranged from 1.00 to 1.02, indicating growth of about one percent more students each year

Table 17
Grade Progression Rates¹
Tigard-Tualatin S.D. History and Forecast

Grade Transition	Historic Average: 2000-01 to 2010-11	Baseline (without the influence of migration)	Forecast Average: 2010-11 to 2020-21
K-1	1.09	-- ²	1.05
1-2	1.01	1.00	1.01
2-3	1.00	1.00	1.01
3-4	1.00	1.00	1.01
4-5	1.02	1.00	1.01
5-6	1.01	0.99	1.00
6-7	1.01	1.00	1.01
7-8	1.01	1.00	1.01
8-9	1.05	1.03	1.04
9-10	1.00	1.00	1.01
10-11	0.98	0.98	0.99
11-12	0.95	1.00	1.01

1. Ratio of enrollment in an individual grade to enrollment in the previous grade the previous year.

2. The enrollment forecast model uses capture rates for first grade; K-1 baseline GPRs are not used.

attributable to migration of school-age children. The forecast also includes enrollment growth due to migration, at slightly lower rates than in the past.

In the next two years, little or no K-12 growth is expected due to the severe housing downturn and regional job losses. However, over the 10 year forecast period, K-12 enrollment is forecast to increase by 1,267 students (10 percent), exceeding the increase of 888 students experienced in the past 10 years. K-5 enrollments begin to grow significantly in 2013-14, while modest growth is expected for secondary enrollments until mid-decade (2015-16), after which their growth accelerates. There will be annual fluctuations that no forecast can anticipate; a one or two year deviation from the forecast does not mean that the forecast trend will be inaccurate in the long run.

Table 18 contains grade level forecasts for the Tigard-Tualatin School District for each year from 2011-12 to 2020-21. The forecasts are also summarized by grade level groups (K-5, 6-8, and 9-12).

**Table 18
Tigard-Tualatin School District, Enrollment Forecasts, 2011-12 to 2020-21**

Grade	Actual	Forecast									
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
K	902	920	937	944	963	976	979	987	995	1,005	1,016
1	896	928	955	983	993	1,013	1,026	1,030	1,038	1,047	1,054
2	949	898	932	964	996	1,007	1,026	1,040	1,044	1,052	1,057
3	909	951	902	941	977	1,010	1,020	1,040	1,054	1,058	1,062
4	1,001	911	955	910	953	990	1,022	1,033	1,053	1,067	1,068
5	985	1,003	915	963	921	965	1,001	1,034	1,046	1,066	1,076
6	904	977	997	914	965	923	966	1,003	1,036	1,048	1,064
7	958	906	982	1,007	927	978	935	979	1,017	1,050	1,058
8	937	960	910	991	1,020	939	990	947	992	1,030	1,060
9	1,028	966	993	945	1,033	1,063	978	1,032	987	1,034	1,070
10	951	1,029	970	1,001	956	1,045	1,075	990	1,044	999	1,043
11	978	933	1,012	958	992	948	1,035	1,066	982	1,035	987
12	993	979	936	1,020	969	1,004	958	1,047	1,078	993	1,043
US*	2	2	2	2	2	2	2	2	2	2	2
Total	12,393	12,363	12,398	12,543	12,667	12,863	13,013	13,230	13,368	13,486	13,660
<i>Annual change</i>		-30 -0.2%	35 0.3%	145 1.2%	124 1.0%	196 1.5%	150 1.2%	217 1.7%	138 1.0%	118 0.9%	174 1.3%
K-5	5,642	5,611	5,596	5,705	5,803	5,961	6,074	6,164	6,230	6,295	6,333
6-8	2,799	2,843	2,889	2,912	2,912	2,840	2,891	2,929	3,045	3,128	3,182
9-12	3,952	3,909	3,913	3,926	3,952	4,062	4,048	4,137	4,093	4,063	4,145

	5 Year Growth: 2010-11 to 2015-16		5 Year Growth: 2015-16 to 2020-21		10 Year Growth: 2010-11 to 2020-21	
	Growth	Pct.	Growth	Pct.	Growth	Pct.
K-5	319	6%	372	6%	691	12%
6-8	41	1%	342	12%	383	14%
9-12	110	3%	83	2%	193	5%
Total	470	4%	797	6%	1,267	10%

*Note: "US" are ungraded secondary students; included in grade 9-12 totals

Population Research Center, Portland State University, December 2010

Individual School Forecasts

Forecasts for individual schools are prepared under a scenario in which current boundaries and grade configurations remain constant. Of course, school districts typically respond to enrollment change in various ways that might alter the status quo, such as attendance area boundary changes, building new schools, or offering special programs. However, the individual school forecasts depict what future enrollments might be if today's facilities and boundaries were unchanged.

The methodology for the individual school forecasts relies on unique sets of grade progression rates for each school, and the ratio of kindergarten enrollment to lagged births within the school's attendance area. New kindergarten classes were forecast each year based on recent trends and birth cohorts within elementary attendance areas. Subsequent grades were forecast using GPRs based initially on recent rates and adjusted based on expected levels of housing growth. The final forecasts for individual schools are controlled to match the district-wide forecasts.

Among elementary schools, Alberta Rider and Woodward's attendance areas contain the greatest amount of buildable residential land within the City of Tigard. Primarily zoned R-7 for homes with a minimum lot size of 5,000 square feet, these areas contain residential land zoned at a higher density than most existing neighborhoods in the area. They also include the TTSD portion of the West Bull Mountain area. The two schools will experience the largest increases among elementary schools over the next 10 years if their boundaries were to remain unchanged.

Middle school enrollment growth is concentrated at Twality due to growth in all of its feeder elementary schools, as well as ongoing new housing development. Tigard High School's enrollment forecast is fairly stable, but significant growth is forecast for Tualatin High School after 2013-14, as a consequence of the growth at its feeder middle school, Twality.

Table 19 presents the enrollment forecasts for each school, grouped by school level (elementary, middle, and high).

Table 19
Enrollment Forecasts for Individual Schools, 2011-12 to 2020-21

School	Actual 2010-11	Forecast										Change 2010-11- 2020-21
		2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	
Alberta Rider	579	596	576	608	626	639	668	683	702	718	732	153
Bridgeport	549	556	554	566	569	580	583	588	592	596	596	47
Byrom	624	595	590	589	594	621	621	627	625	626	623	-1
C.F. Tigard	547	551	531	537	529	542	557	561	567	571	575	28
Deer Creek	556	540	538	563	582	608	615	625	630	637	641	85
Durham	548	554	564	561	571	577	583	587	588	592	595	47
Metzger	574	559	561	557	570	586	595	604	607	611	614	40
Templeton	614	623	643	665	690	704	698	705	709	712	713	99
Tualatin	584	588	595	597	602	614	620	626	629	632	630	46
Woodward	467	449	444	462	470	490	534	558	581	600	614	147
Elementary Totals	5,642	5,611	5,596	5,705	5,803	5,961	6,074	6,164	6,230	6,295	6,333	691
Fowler M.S.	823	816	807	809	826	795	774	763	792	845	868	45
Hazelbrook M.S.	959	989	969	1,015	1,008	969	981	978	1,028	1,035	1,051	92
Twality M.S.	1,012	1,033	1,108	1,083	1,073	1,071	1,131	1,183	1,220	1,243	1,258	246
Middle School Totals	2,794	2,838	2,884	2,907	2,907	2,835	2,886	2,924	3,040	3,123	3,177	383
Tigard H.S.	2,046	2,009	1,982	1,988	1,963	2,024	2,024	2,061	2,057	2,018	2,069	23
Tualatin H.S.	1,854	1,848	1,879	1,886	1,937	1,986	1,972	2,024	1,984	1,993	2,024	170
Durham Center (7 th -12 th)	57	57	57	57	57	57	57	57	57	57	57	0
High School Totals	3,957	3,914	3,918	3,931	3,957	4,067	4,053	4,142	4,098	4,068	4,150	193
District Totals	12,393	12,363	12,398	12,543	12,667	12,863	13,013	13,230	13,368	13,486	13,660	1,267

Population Research Center, Portland State University, December 2010

**Table 20
Facility Capacity and Enrollment, 2010-11 and 2020-21**

School	2010-11				2020-21	
	Capacity Excluding portables	Capacity Including Portables	2010-11 Enrollment	Available Capacity (excluding portables) ¹	2020-21 Forecast Enrollment	Available Capacity (excluding portables) ²
Alberta Rider	624	n/a	579	45	732	-108
Bridgeport	572	624	549	23	596	-24
Byrom	650	754	624	26	623	27
C.F. Tigard	624	n/a	547	77	575	49
Deer Creek	624	n/a	556	68	641	-17
Durham	598	n/a	548	50	595	3
Metzger	546	598	574	-28	614	-68
Templeton	598	650	614	-16	713	-115
Tualatin	598	n/a	584	14	630	-32
Woodward	624	728	467	157	614	10
Elementary Totals	6,058	6,422	5,642	416	6,333	-275
Fowler M.S.	983	n/a	823	160	868	115
Hazelbrook M.S.	1,040	n/a	959	81	1,051	-11
Twality M.S.	942	1,084	1,012	-70	1,258	-316
Middle School Totals	2,965	3,107	2,794	171	3,177	-212
Tigard H.S.	1,776	1,898	2,046	-270	2,069	-293
Tualatin H.S.	1,888	n/a	1,854	34	2,024	-136
Durham Center	105	n/a	57	48	57	48
High School Totals	3,769	3,891	3,957	-188	4,150	-381
District Totals	12,792	13,420	12,393	399	13,660	-868

1. 2010-11 Capacity (without portables) minus October 1, 2010 enrollment.

2. 2010-11 Capacity (without portables) minus 2020-21 forecast enrollment.

Sources: TTSD, Facilities and Capacity Assessment; PSU Population Research Center enrollment forecasts.

The capacity figures in Table 20 are from the TTSD's November 2009 Facilities and Capacity Assessment. They are compared with both the base year (2010-11) and end year (2020-21) of the enrollment forecast. The forecast indicates that there will be district-wide capacity shortfalls at the elementary, middle school, and high school levels.

FORECAST ERROR AND UNCERTAINTY

In these forecasts, district-wide elementary enrollments are expected to grow by about 700 students in the 10 year forecast period, more than in the past decade. District middle schools are expected to add a total of nearly 400 students in the next 10 years, and high schools are also forecast to add about 200 students. However, forecasts should be understood to represent a range of outcomes even though discrete numbers are provided.

In general, forecast error varies according to the size of the population being forecast and the length of the forecast horizon. The smaller the population and the longer the forecast period, the larger the error is likely to be. In particular, the school level forecasts depend on assumptions about the distribution of housing and population growth in small areas within the District over a 10 year period, so the error is likely greater than the District-wide forecast error. The forecasts should be used as only one of many tools in the planning process.

Due to the nature of forecasting, there is no way to estimate a confidence interval as one might for data collected from a survey. The best way to measure potential forecast error is to compare actual enrollments with previous forecasts that were conducted using similar data and methodologies. In Table 21 on the next page, actual TTSD enrollment by grade level in Fall 2010 is compared with the 2010-11 forecasts that were prepared one year earlier, as well as those prepared two and three years earlier. Similarly, Table 22 compares enrollment forecasts for individual schools. As a measure of average error for grade levels and for individual school enrollments, the mean absolute percent error (MAPE) is included in the tables.

Basically flat K-12 enrollment was forecast one year ago for Fall 2010. However, actual enrollment decreased by 74 students. If the expansion of MITCH had been incorporated into the forecast, the errors would have been smaller for 1st, 6th, 7th, and 8th grades, and for the K-12 total. Even with smaller enrollments at those grades, the one year K-12 forecast was within 76 students, or 0.6 percent, of actual enrollment. Forecasts prepared

two and three years ago were about 400 students, or three percent higher than actual Fall 2010 K-12 enrollment because they did not anticipate the severity of the current recession.

Table 21
Fall 2010 Enrollment Compared to Previous Forecasts
By Grade Level

Grade	Actual	One year forecast ¹			Two year forecast ²			Three year forecast ³		
		Fcst.	Diff.	Error	Fcst.	Diff.	Error	Fcst.	Diff.	Error
K	902	913	11	1.2%	949	47	5.2%	933	31	3.4%
1 ⁴	896	949	53	5.9%	999	103	11.5%	1000	104	11.6%
2	949	976	27	2.8%	998	49	5.2%	1002	53	5.6%
3	909	931	22	2.4%	941	32	3.5%	961	52	5.7%
4	1001	1012	11	1.1%	1033	32	3.2%	1013	12	1.2%
5	985	974	-11	-1.1%	1031	46	4.7%	1047	62	6.3%
6 ⁴	904	926	22	2.4%	939	35	3.9%	931	27	3.0%
7 ⁴	958	971	13	1.4%	1012	54	5.6%	990	32	3.3%
8 ⁴	937	973	36	3.8%	996	59	6.3%	972	35	3.7%
9	1028	1021	-7	-0.7%	1042	14	1.4%	1045	17	1.7%
10	951	938	-13	-1.4%	973	22	2.3%	997	46	4.8%
11	978	941	-37	-3.8%	937	-41	-4.2%	960	-18	-1.8%
12	993	939	-54	-5.4%	938	-55	-5.5%	940	-53	-5.3%
US ⁵	2	5	3		2	0		6	4	
Total	12,393	12,469	76	0.6%	12,790	397	3.2%	12,797	404	3.3%
MAPE⁶				2.6%			4.8%			4.4%

1. Forecast for 2010-11 by PSU-PRC, baseline 2009-10 enrollment. December 2009.

2. Forecast for 2010-11 by PSU-PRC, baseline 2008-09 enrollment. December 2008.

3. Forecast for 2010-11 by PSU-PRC, baseline 2007-08 enrollment. December 2007.

4. Forecasts did not include the impact of MITCH Charter School adding middle grades and an additional first grade class. This expansion likely resulted in 12-14 fewer 6th-8th grade students per grade and at least 14 fewer first grade students attending District-run schools.

5. Ungraded secondary enrollment

6. Mean absolute percent error for individual grades K-12.

Table 22
Fall 2010 Enrollment Compared to Previous Forecasts
By Individual School

School	Actual	One year forecast ¹			Two year forecast ²			Three year forecast ³		
		Fcst.	Diff.	Error	Fcst.	Diff.	Error	Fcst.	Diff.	Error
Alberta Rider	579	591	12	2.1%	629	50	8.6%	606	27	4.7%
Bridgeport	549	559	10	1.8%	578	29	5.3%	541	-8	-1.5%
Byrom	624	629	5	0.8%	661	37	5.9%	685	61	9.8%
C. F. Tigard	547	585	38	6.9%	574	27	4.9%	600	53	9.7%
Deer Creek	556	574	18	3.2%	568	12	2.2%	664	108	19.4%
Durham	548	555	7	1.3%	554	6	1.1%	503	-45	-8.2%
Metzger	574	600	26	4.5%	608	34	5.9%	619	45	7.8%
Templeton	614	596	-18	-2.9%	623	9	1.5%	583	-31	-5.0%
Tualatin Elem.	584	573	-11	-1.9%	607	23	3.9%	603	19	3.3%
Woodward	467	493	26	5.6%	549	82	17.6%	552	85	18.2%
Elementaries	5,642	5,755	113	2.0%	5,951	309	5.5%	5,956	314	5.6%
Fowler	823	851	28	3.4%	858	35	4.3%	861	38	4.6%
Hazelbrook	959	971	12	1.3%	987	28	2.9%	985	26	2.7%
Twality	1,012	1,044	32	3.2%	1,098	86	8.5%	1,043	31	3.1%
Middle Schools⁴	2,794	2,866	72	2.6%	2,943	149	5.3%	2,889	95	3.4%
Tigard HS	2,046	1,976	-70	-3.4%	1,972	-74	-3.6%	1,965	-81	-4.0%
Tualatin HS	1,854	1,808	-46	-2.5%	1,854	0	0.0%	1,915	61	3.3%
Durham Center	57	64	7	12.3%	70	13	22.8%	72	15	26.3%
High Schools	3,957	3,848	-109	-2.8%	3,896	-61	-1.5%	3,952	-5	-0.1%
District	12,393	12,469	76	0.6%	12,790	397	3.2%	12,797	404	3.3%
MAPE⁵				3.0%			5.1%			7.0%

1. Forecast for 2010-11 by PSU-PRC, baseline 2009-10 enrollment. December 2009.

2. Forecast for 2010-11 by PSU-PRC, baseline 2008-09 enrollment. December 2008.

3. Forecast for 2010-11 by PSU-PRC, baseline 2007-08 enrollment. December 2007.

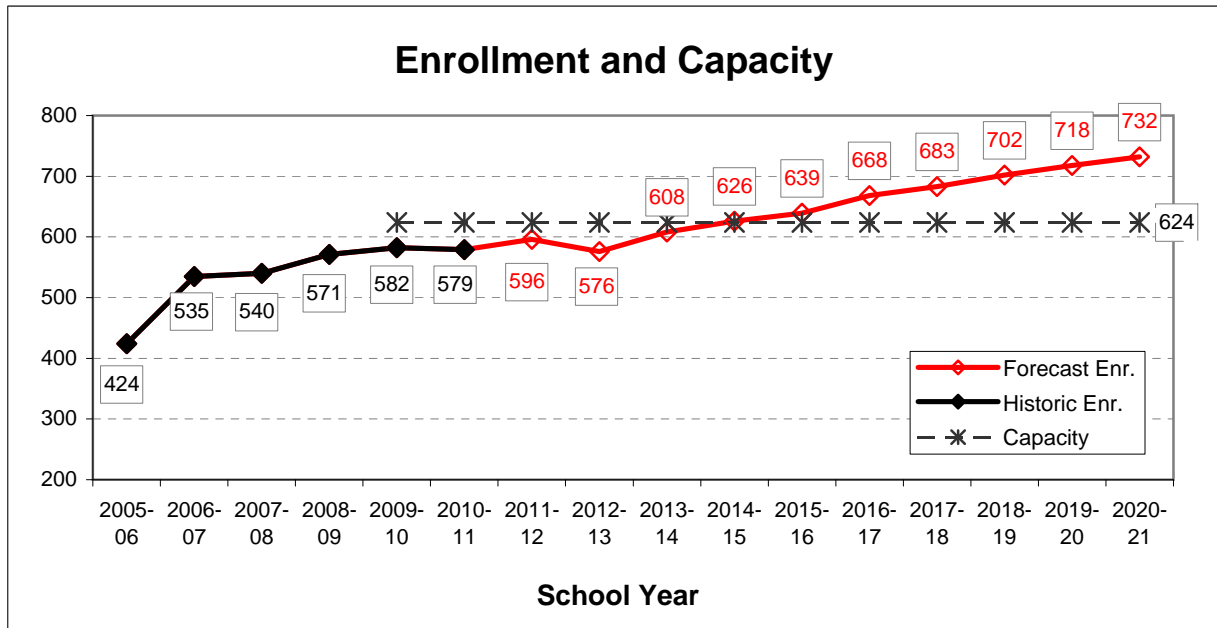
4. Forecasts did not include the impact of MITCH Charter School adding middle grades. This expansion likely resulted in 35-45 fewer students attending District-run middle schools.

5. Mean absolute percent error for individual schools.

APPENDIX

ENROLLMENT, CAPACITY, AND HOUSING DEVELOPMENT PROFILES FOR INDIVIDUAL SCHOOLS

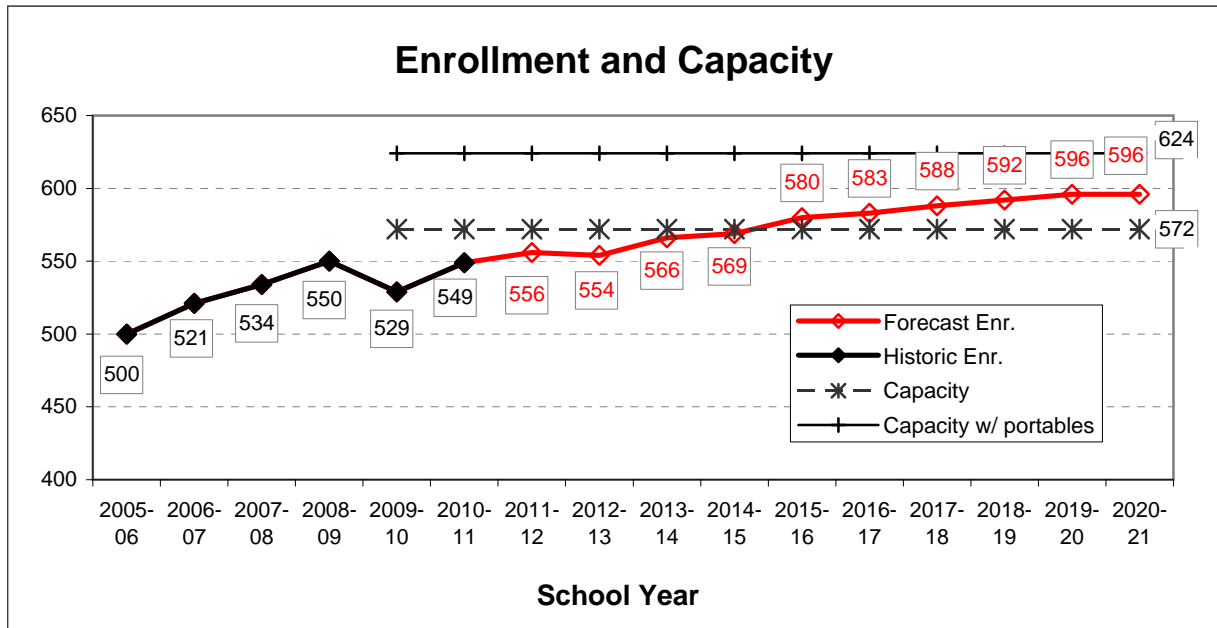
Alberta Rider Elementary School



Note: School opened in 2005.

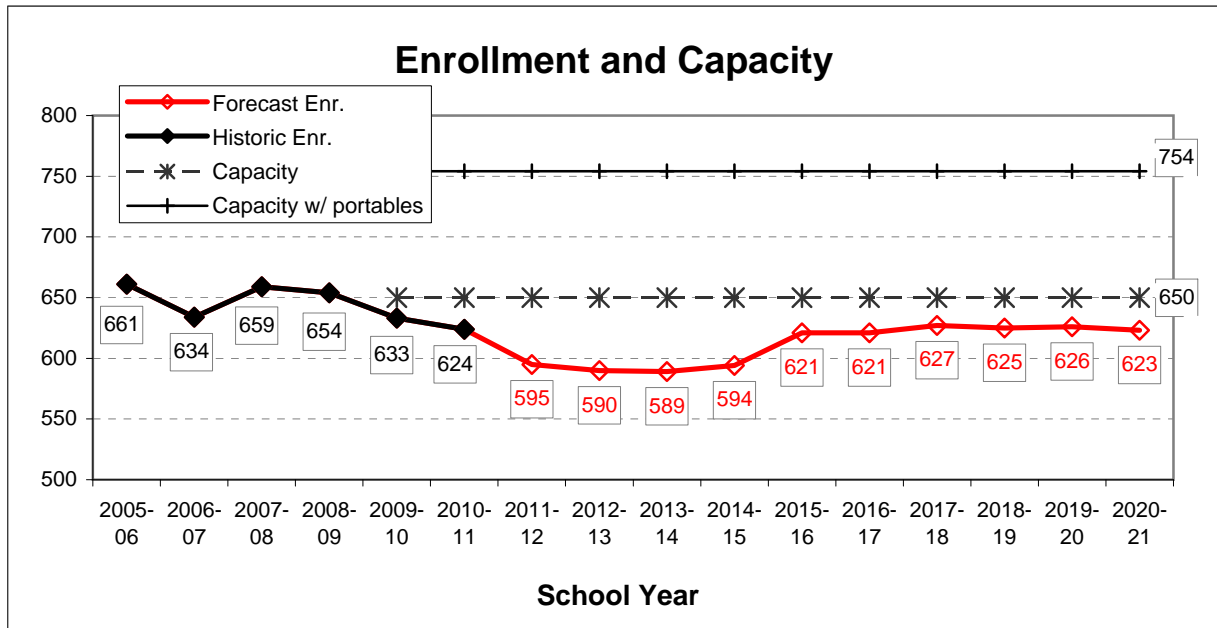
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	424	579	639	732
Change		155	60	93

Bridgeport Elementary School



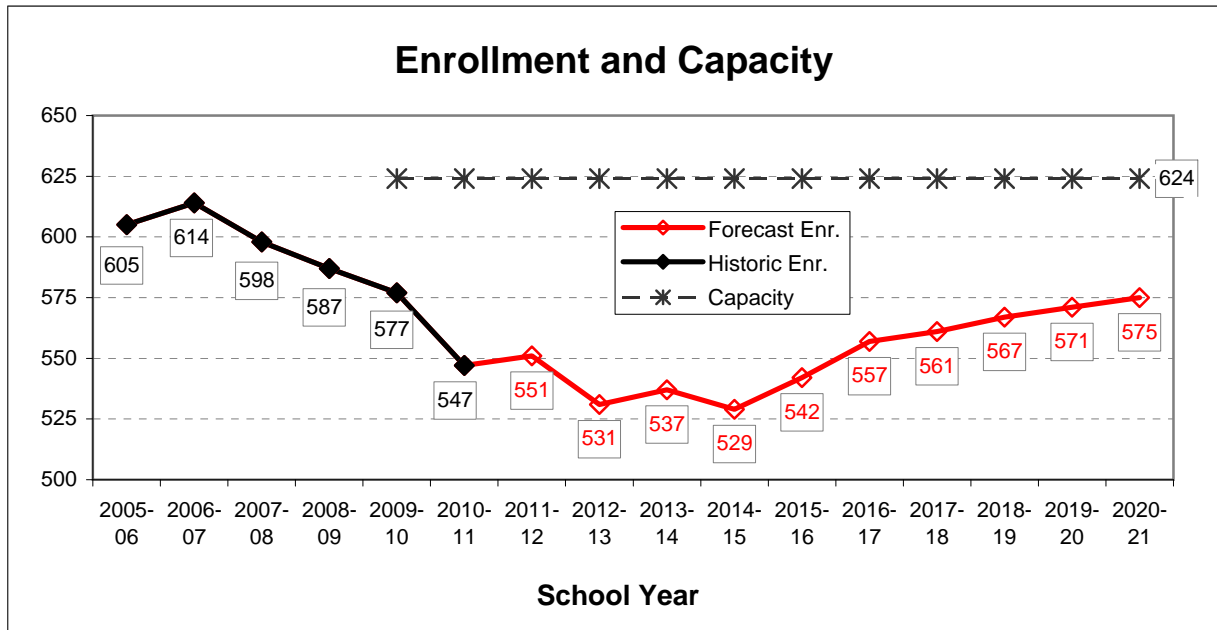
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	500	549	580	596
Change		49	31	16

Edward Byrom Elementary School



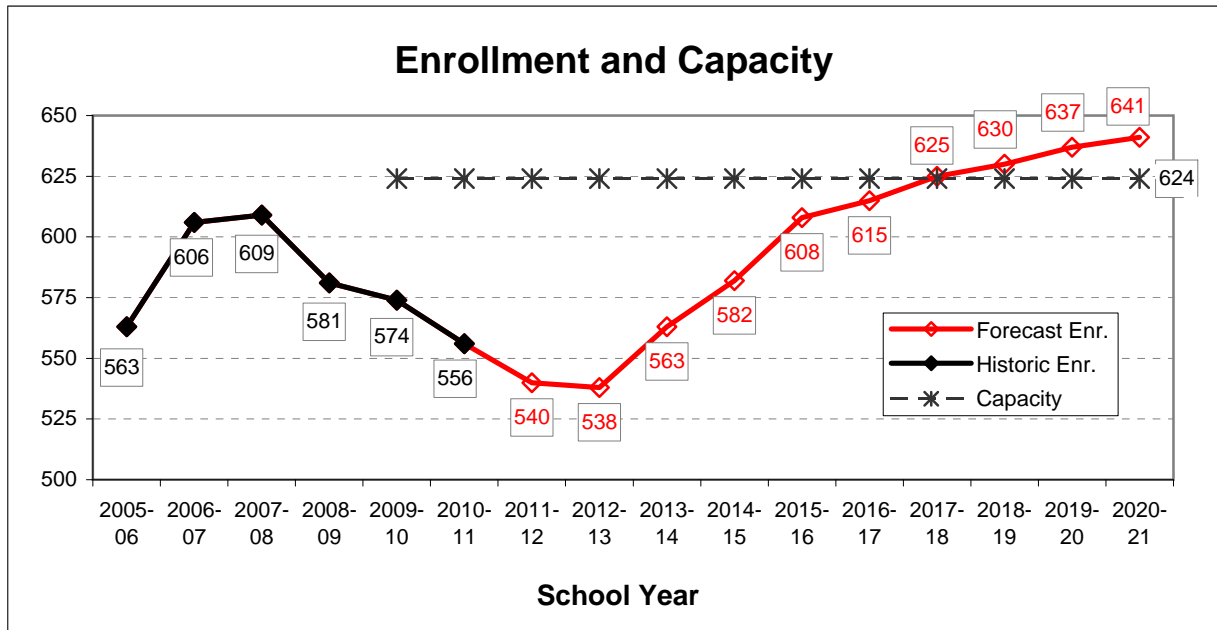
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	661	624	621	623
Change		-37	-3	2

Charles F. Tigard Elementary School



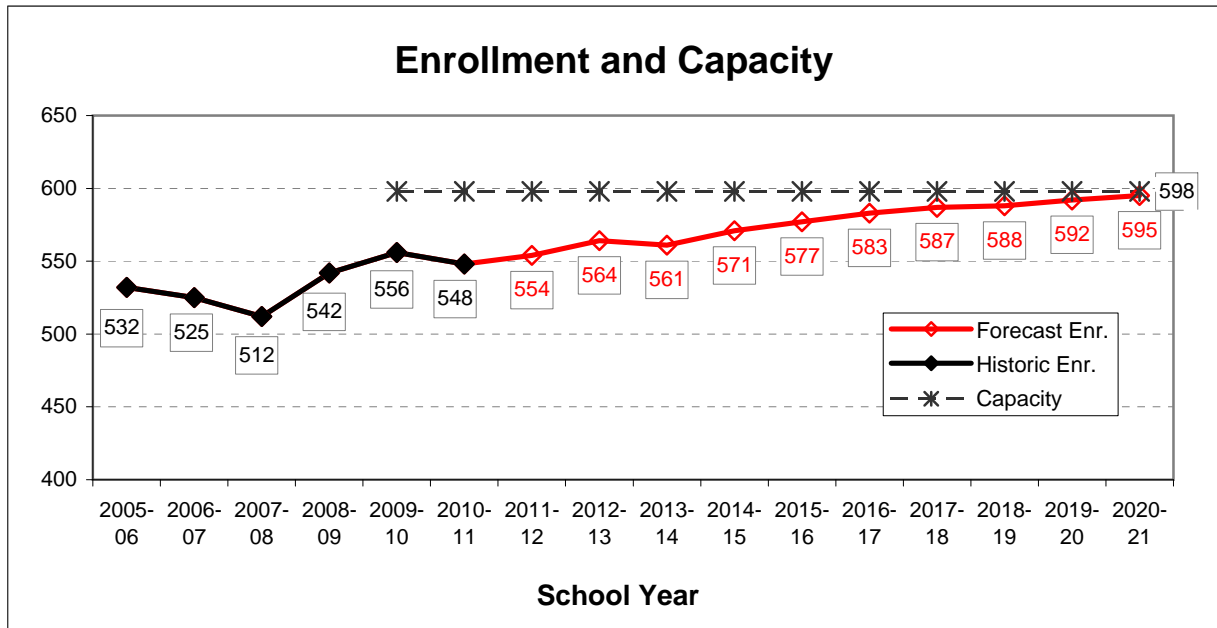
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	605	547	542	575
Change		-58	-5	33

Deer Creek Elementary School



Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	563	556	608	641
Change		-7	52	33

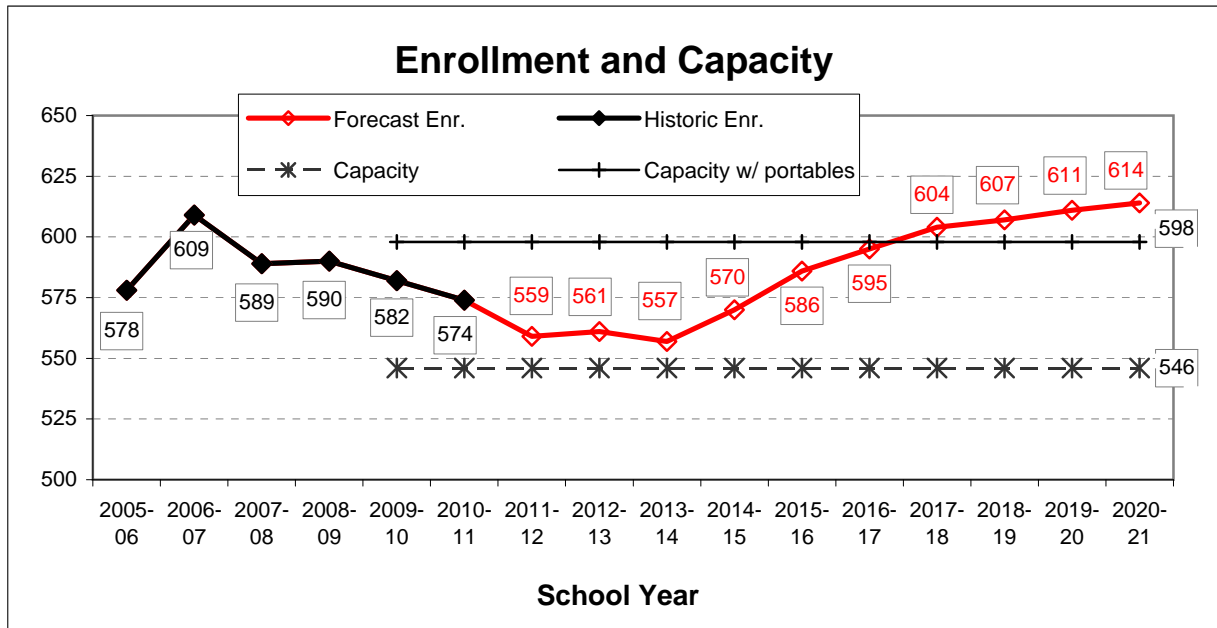
Durham Elementary School



Note: In 2006 a phased-in boundary change began that assigns a portion of the attendance area from Metzger to Durham.

Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	532	548	577	595
Change		16	29	18

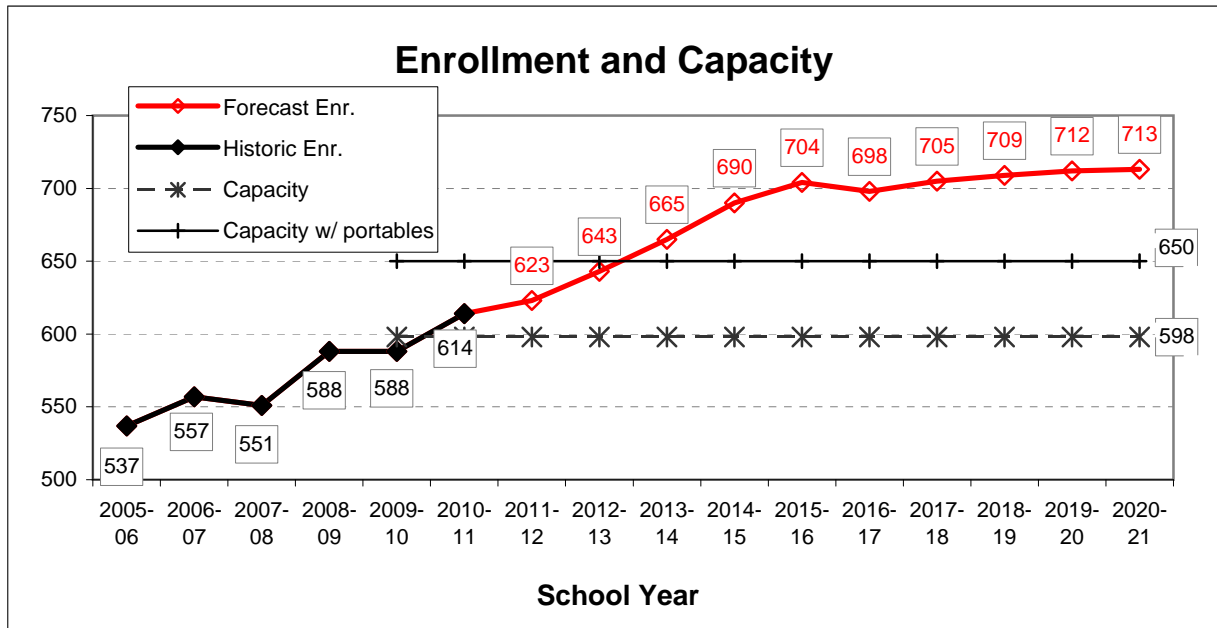
Metzger Elementary School



Note: In 2006 a phased-in boundary change began that assigns a portion of the former attendance area to Durham.

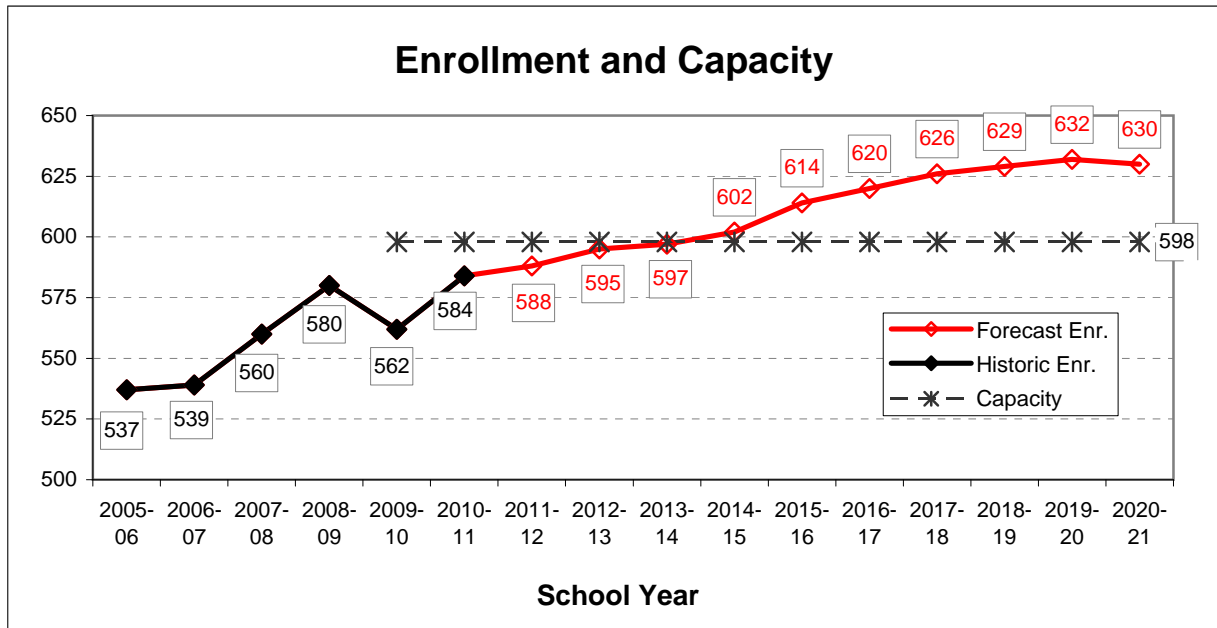
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	578	574	586	614
Change		-4	12	28

James Templeton Elementary School



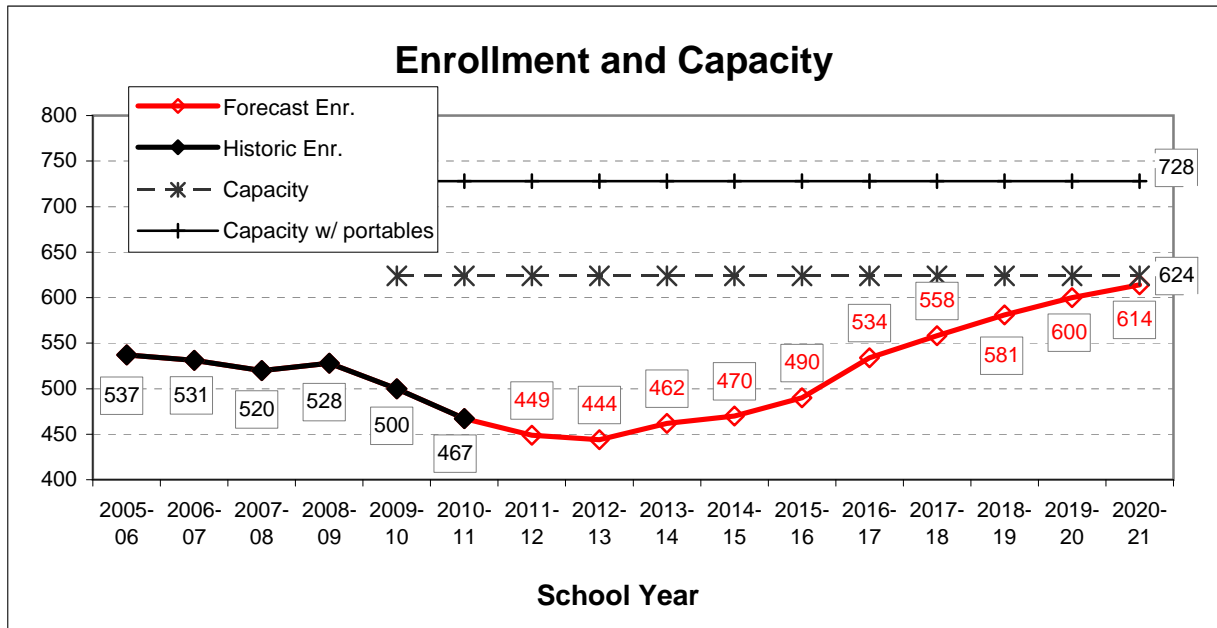
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	537	614	704	713
Change		77	90	9

Tualatin Elementary School



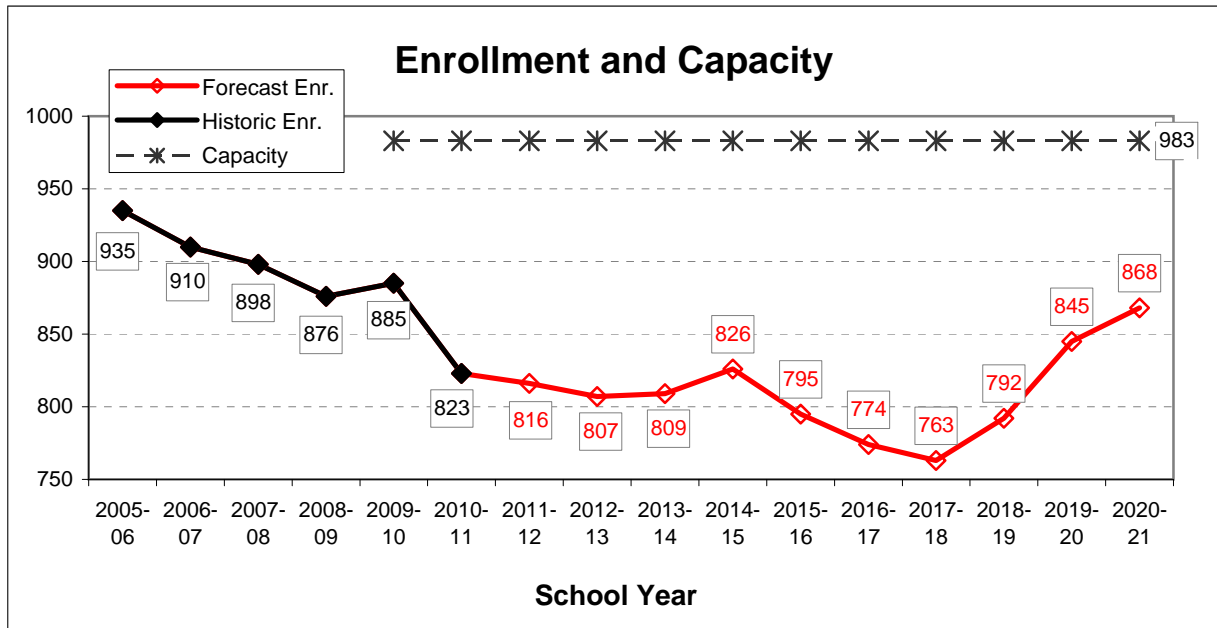
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	537	584	614	630
Change		47	30	16

Mary Woodward Elementary School



Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	537	467	490	614
Change		-70	23	124

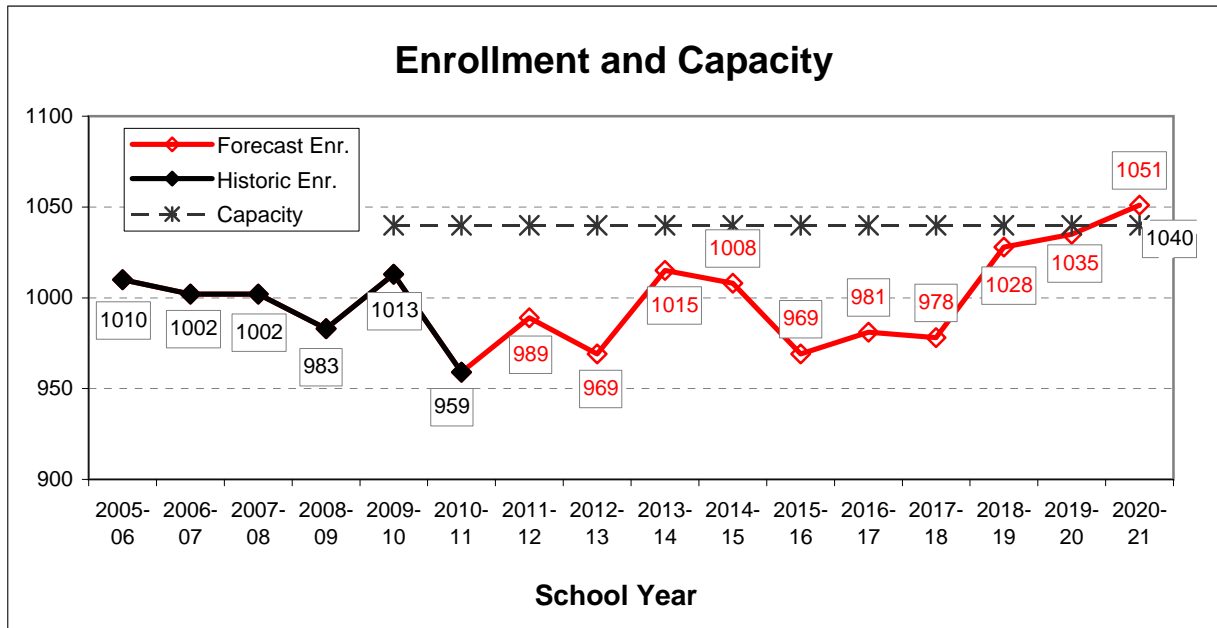
Fowler Middle School



Note: In 2006 a phased-in boundary change began that assigns a portion of the attendance area to Twality.

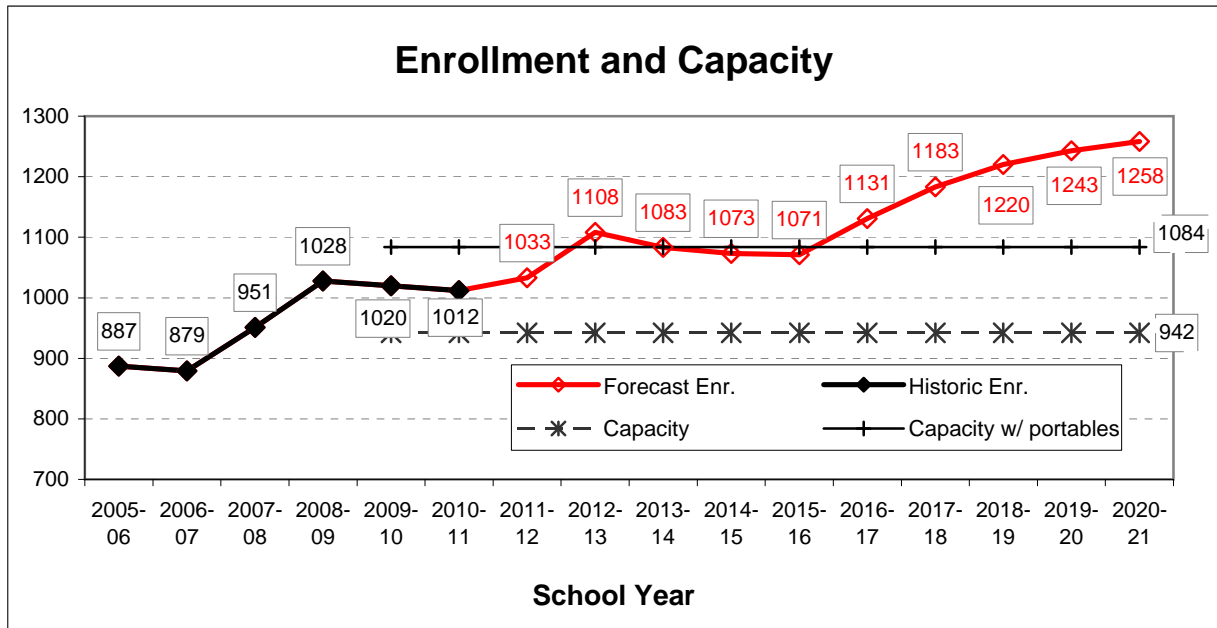
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	935	823	795	868
Change		-112	-28	73

Hazelbrook Middle School



Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	1010	959	969	1051
Change		-51	10	82

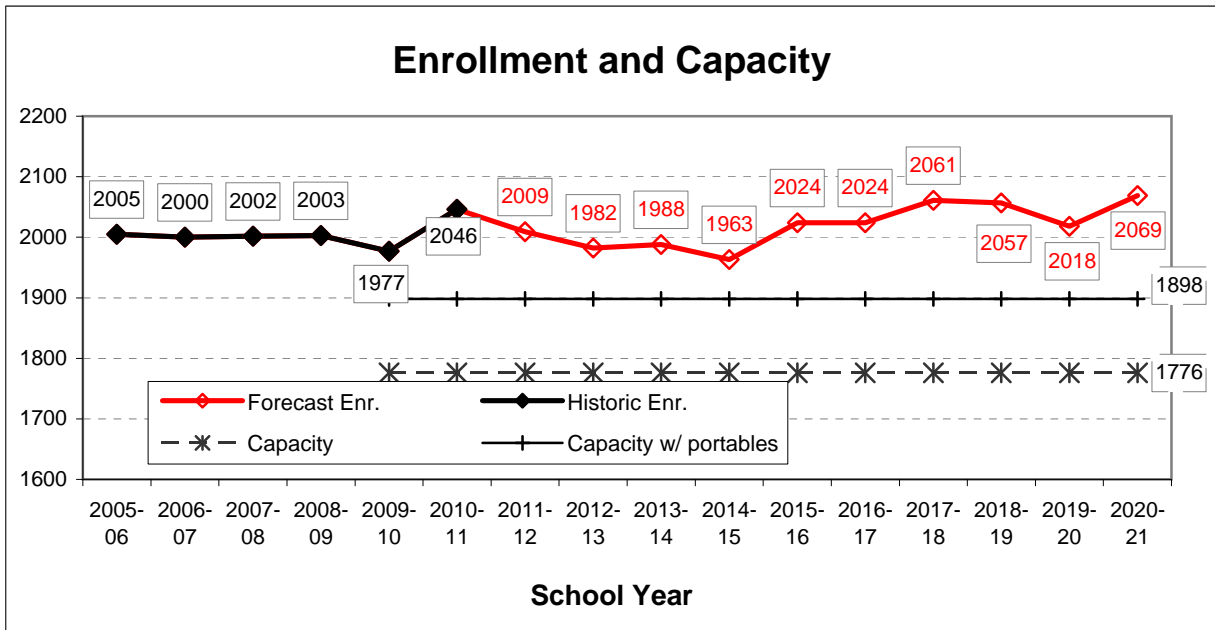
Twality Middle School



In 2006 a phased-in boundary change began that assigns a portion of Fowler's former attendance area to Twality.

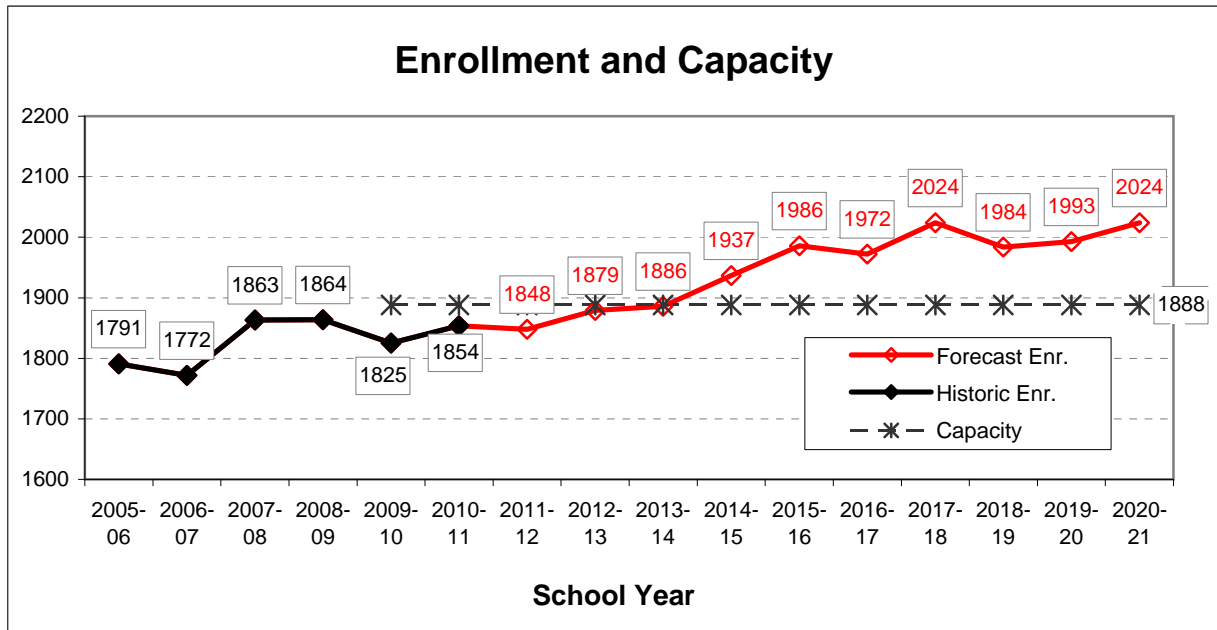
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	887	1012	1071	1258
Change		125	59	187

Tigard High School



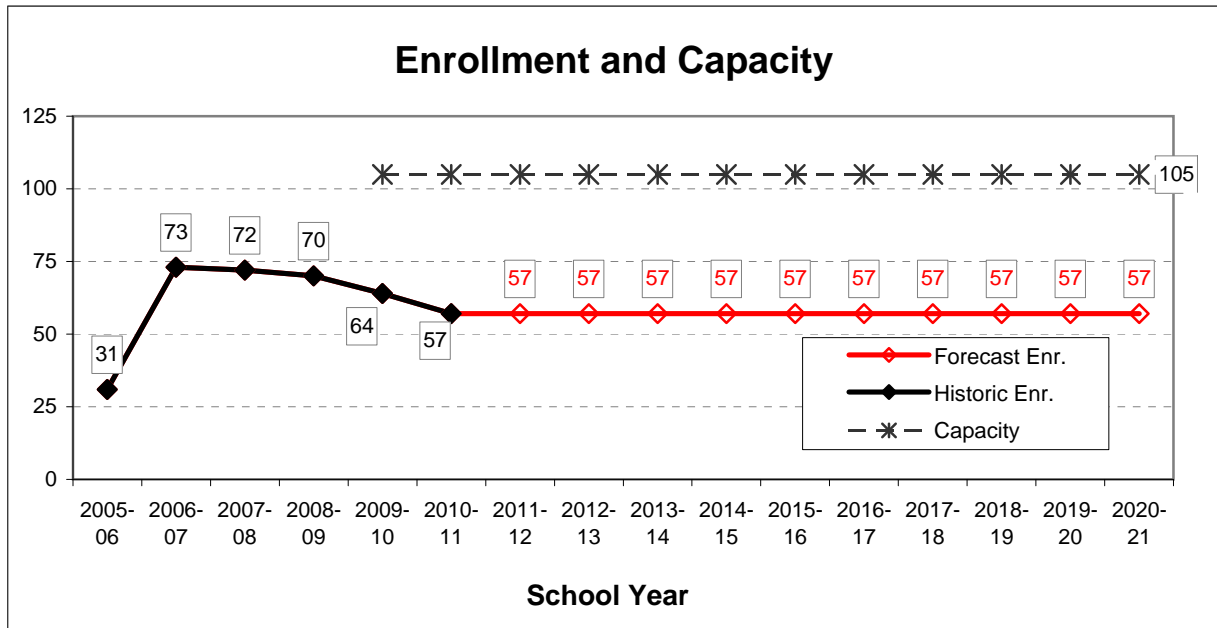
Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	2005	2046	2024	2069
Change		41	-22	45

Tualatin High School



Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	1791	1854	1986	2024
Change		63	132	38

Durham Center



Enrollment History and Forecast				
	History		Forecast	
	2005-10	2010-11	2015-16	2020-21
Total enrollment	31	57	57	57
Change		26	0	0