MEMORANDUM

To:	Jon Poolman	Date:	July 15, 2022
	Executive Director of Finance		
	Lakewood District	Project No.:	F1867.01.004
From:	Tyler Vick		
	Managing Director		
	Jerry Oelerich		
	Senior Analyst/Demographer		
Re:	2022–23 to 2027–28 Enrollment Forecasts Report—Lakewood School District		

At the request of the Lakewood School District (District/LWSD), FLO Analytics (FLO) has prepared forecasts of future student enrollment for grades kindergarten (K) through 12 for school years 2022–23 to 2027–28. The study was completed through two main tasks: (1) Student Enrollment Assessment and (2) Student Enrollment Forecasting. The resulting district-wide enrollment forecasts represent the total number of full-time equivalent (FTE) students living both within and outside the district boundary and attending district schools and programs. These forecasts are provided as a district-wide total and per grade group. FLO also prepared more granular building and program attendance forecasts that include district-wide totals per individual grade and the number of students anticipated to attend each of the district's elementary, middle, and high schools/programs.

Student Enrollment Assessment

FLO analyzed historical and current student enrollment for the District. This task involved standardizing and merging historical FTE enrollment data provided by the District and evaluating historical grade progression ratios (GPRs). For the purposes of our analysis and reporting, students attending their school's online academy in 2021–22 were grouped with the students attending that school in-person. We also acquired the most recent data from the state sources that are listed in the Data Sources section below, in order to inform adjustments to key demographic and land use assumptions developed in support of FLO's longer-range 2020–21 to 2029–30 (ten-year) forecasts (based on October 2019 FTE enrollment data).

Enrollment Forecasts

Demographic and Land Use Assumptions

Two years ago, FLO prepared a ten-year student enrollment forecast (both headcount and FTE) for the 2020–21 to 2029–30 school years. That longer-range ten-year forecast study included a detailed demographic and land use analysis to evaluate population and residential development trends within the district that may affect student enrollment. This included FLO-conducted interviews with planners from Snohomish County and the communities of Lake Goodwin, Lakewood, Smokey

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Point, Arlington, and Marysville, as well as a comprehensive assessment of parcels, zoning, comprehensive plans, and building permits. The results of this analysis, in conjunction with FLO's assessment of historical student enrollment trends across time, were used to shape birth and K forecasts, as well as GPRs over the forecast horizon.

In this District-requested shorter-range six-year FTE enrollment forecast update, we leveraged the results of the detailed demographic and land use analysis from the 2020–21 to 2029–30 ten-year forecast study. Specifically, the prior population and housing growth assumptions/findings were used as a baseline and adjusted according to since-published birth, total population, and total housing unit data for both the district and the county.

Based on overarching population and housing trends, along with projected rates of development that we assessed during preparation of the 2020–21 to 2029–30 ten-year forecasts, we estimated the number of housing units that would be constructed during the 2019–20 to 2024–25 period would be approximately 950 units. Data from the Washington State Office of Financial Management (OFM) indicate 438 new housing units were added between 2019 and 2020 (the last year for which data are available), which was the highest number for this decade. While we don't expect this level to be sustained, it does generally support birth, K, and GPR forecasts indicative of a growing community.

Births and Kindergarten

The number of students enrolled in a district is largely influenced by the number of school-aged children residing within the district boundary. FLO compares historical Washington State Department of Health (DOH) birth data (i.e., live births within the district) to historical K class sizes to determine annual K percent of births values (i.e., the number of kindergarteners who enrolled with the District divided by the number of live births in the district five years prior). These values, combined with age-group-specific population projections of childbearing-aged women residing in the county, allow us to forecast the number of anticipated births in the district, and thus the number of kindergarteners anticipated in future school years. Figure 1 depicts the number of live births in the district, K class sizes that include all enrolled students, and resulting ratios of kindergarteners to births, including both historical values and FLO forecasts.

Grade Progression Ratios

The progression of students from one grade to the next is a significant determinant of future enrollment, and therefore plays a significant role in FLO's forecasting process. FLO assesses how cohort sizes change over time by calculating GPRs—the ratio of enrollment in a specific grade in a given year to the enrollment of the same age cohort in the previous year. For instance, when 150 kindergarteners in 2017 become 140 1st graders in 2018, the GPR is 0.93. GPRs quantify how cohort sizes change as students progress to subsequent grades by considering that not all students advance to the next grade and that new students join existing cohorts. A GPR value greater than 1 indicates that the student cohort increased in size from one grade to the next. Such a result may be due to students moving into the district or students choosing to transfer into the district from other districts or nonpublic schools. Conversely, a GPR value less than 1 indicates that the student cohort decreased in size from one grade to the next. This may be due to students moving out of the district, students choosing to transfer to other districts or nonpublic schools, or students not advancing to the next grade.

Figure 2 depicts the GPRs for all students enrolled in the District from 2017–18 to 2021–22. The two- and three-year GPR averages incorporate the 2020–21 and 2021–22 GPRs and were not used in the forecasting process. In order to mitigate the irregular effect of COVID-19 on the transition of

students from one grade to another (2019–20 to 2020–21 and 2020–21 to 2021–22), a set of forecasted GPRs was developed to incorporate into the district-wide forecasting process. Although enrollment at the District appears to have been less impacted by COVID-19 than many other districts in the region (with only 2020–21 K enrollment having been clearly impacted), the GPRs used for this short-range forecast update were heavily influenced by the three-year average ending in the 2019–20 GPR set.

Summary

Figure 3 provides annual district-wide building attendance forecasts (FTE) per individual grade and per grade group, while Figure 4 provides annual forecasts (also FTE) of students attending each of the elementary, middle, and high school buildings/programs.

- Between the 2021–22 and 2027–28 school years, district-wide building enrollment (FTE) is forecasted to increase from 2,517.30 to 2,790.81, or by 10.9 percent

- Disaggregated to grade groups, the annual district-wide building attendance forecasts represent the following enrollment changes:

    - K–5 enrollment from 1,134.52 to 1,250.17 (10.2 percent increase)
    - 6–8 enrollment from 584.08 to 697.90 (19.5 percent increase)
    - 9–12 enrollment from 798.70 to 842.75 (5.5 percent increase)

Comparison to Previously Prepared Forecasts

Figure 5 compares, district-wide, the current 2022–23 to 2027–28 six-year forecasts (based on October 2021 FTE enrollment) to the subset of FLO's 2020–21 to 2029–30 ten-year forecasts covering the same period (based on October 2019 FTE enrollment). The primary differences between the two can be attributed to two factors: (1) higher birth and K forecasts as well as higher K percent of births values in this updated forecast set, and (2) downward adjustments to some of the GPRs used in the development of the 2020–21 to 2029–30 ten-year forecasts based on further review of historical GPRs and enrollment patterns.

First, in terms of births, actual district births in 2018 and 2019 were higher than we forecasted previously by an average of 12 births/year. This not only results in higher corresponding K forecasts in this update for 2023–24 and 2024–25, but also resulted in a higher forecast this year for 2020 births (actual totals at the district level have not yet been reported by DOH). District birth totals have been more stable since 2016 compared to the county, state, and the country, all of which have been steadily declining. We also assumed a higher K percent of births for the current forecast set (101.8 percent) due to the strong signs of housing growth between OFM's 2019 and 2020 estimates for the district, as well the recovery in the metric to 103.1 percent in 2021–22 following the recent historical low of 83.0 percent in 2020–21 (primarily due to impacts from COVID-19).

Further analysis followed by discussions with the District indicated that the GPRs assumed for the 1–2, 3–4, and 6–7 grade transitions were higher than historically indicated. Subsequently, downward adjustments were made to these GPRs in order to better represent historical trends. This action offsets the higher birth and K forecasts in this forecast and is the primary basis for the differences exhibited between the current 2022–23 to 2027–28 six-year forecasts and prior 2020–21 to 2029–30 ten-year forecasts through 2027–28.

Methods

Demographic Terms

While both projections and forecasts represent future enrollment, the methods of prediction differ. Enrollment projections are based on past and current patterns of change and the expectation that these trends will continue. For example, historical enrollment data for an ES shows an increase from 250 students in 2017 to 265 students in 2018 and to 275 students in 2019. The average rate of change observed over the past three years could be used to prepare a projection of enrollment in 2020, assuming that the trend of growth continues into the future. In other words, a projection does not predict future trends or what will actually occur, but rather indicates what would happen if the past and current trends that underpin the projection continue into the future. In this sense, projections are strictly mathematical.

In comparison, forecasts are based on past and current patterns of change, but also incorporate predictions of how trends may change in the future. So that practitioners may evaluate a range of potential outcomes, it is common for multiple sets of projections to be prepared, capturing a range of scenarios, such as decreasing enrollment due to declining fertility rates or rapid enrollment growth due to residential development and in-migration. Sets of projections differ based on the modification of one or more variables, including birth rates, student generation or yield rates per housing type, and rates of residential housing development. Forecasts represent the set of projections that is deemed most likely to materialize, based on the analysis and decision-making of practitioners. In this sense, forecasts represent the art of the science of demography.

Forecasting Methodologies

General Methods

As discussed in FLO's 2020–21 to 2029–30 ten-year forecast report, we use a combination of the demographic cohort-component model to forecast population for the district by age and sex, and the enrollment rate method, which advances each age cohort through successive grade levels. In the former, the components of population change are births, deaths, and migration.

As mentioned in the Demographic and Land Use Assumptions section above, this shorter-range six-year FTE forecast update leveraged the results of the detailed demographic and land use analysis from the 2020–21 to 2029–30 ten-year forecast study by assessing the prior population and housing growth assumptions/findings and adjusting according to since-published birth, total population, and total housing unit data for both the district and the county. This was an appropriate approach because this forecast update is for a shorter six-year horizon, and a short amount of time has passed (two years) since the more detailed study. Additionally, as noted earlier, enrollment at the District appears to have been less impacted by COVID-19 than many other districts in the region.

Data Sources

- FLO used the following data sources to inform student enrollment forecasts:

- LWSD 2016–17 to 2021–22 enrollment reports (FTE)

- Washington State DOH birth data

- Washington State OFM population and housing unit estimates, and county population forecasts

- ESRI 2021/2026 U.S. Demographics data

- FLO-conducted interviews with planners from Snohomish County and the communities of Lake Goodwin, Lakewood, Smokey Point, Arlington, and Marysville (conducted in late 2019/early 2020 to support FLO's 2020–21 to 2029–30 ten-year forecasts)

- County and/or municipal parcels, zoning, comprehensive plans, specific area plans, and building permits (evaluated in late 2019/early 2020 to support FLO's 2020–21 to 2029–30 ten-year forecasts)

- U.S. Census Bureau and American Community Survey enumerations and estimates

- 2020 Statewide Urban Growth Areas and 2020 City Limits from Washington State Department of Ecology

Accuracy

Enrollment projections and forecasts are expected values based on assessment of current and past data, and as such, should be considered a planning tool, rather than steadfast numbers for the allocation of future resources. Unlike measurable data, such as the results of a survey, projections and forecasts do not allow for the estimation of a confidence interval to measure accuracy. The best way to measure error is to compare actual enrollment with previously prepared projections or forecasts that were conducted using similar data and methodologies. Finally, when considering confidence and accuracy, the appropriate use of projections and forecasts includes an understanding that there is likely to be some degree of variation from the anticipated values. It is important that stakeholders monitor and manage the changing conditions that will affect future populations, and that projections or forecasts be updated either at a regular frequency, or when deviation of actual enrollment from the projections or forecasts is significant and/or develops into a sustained trend.

Figure 1: District Birth Rates

Birth Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 (Forecasts →)	2021	2022
District Births	164	171	166	185	153	181	180	189	181	176	172	180

K Year	2016	2017	2018	2019	2020	2021	2022 (Forecasts →)	2023	2024	2025	2026	2027
K Total (FTE)	162.00	174.40	177.15	185.72	127.02	186.60	183.17	192.32	184.18	179.10	175.02	183.17
K % of Births	98.8%	102.0%	106.7%	100.4%	83.0%	103.1%	101.8%	101.8%	101.8%	101.8%	101.8%	101.8%

Shown are 2010 to 2019 historical data from DOH on live births to mothers residing in the District, and historical District K totals (FTE) for the 2015–2020 school years. The metric "K % of Births" is calculated by dividing each K class by the live birth total five years earlier (e.g., 2020 K class divided by 2015 births). 2020 to 2022 births, which inform K classes beginning with the 2025–26 school year, were projected based on a review of the historical birth data, forecasted population of females of child-bearing age throughout the county, and county and state trends in fertility. Forecasts of future K class sizes were then developed by employing forecasts of trends in "K % of Births". Note that birth values reported by WA DOH represent the January 1st through December 31st calendar year, and therefore do not align directly with K enrollment 5 years later (i.e., August cutoff for being age 5 to enroll in K in the fall).

Figure 2: Grade Progression Ratios

Grade Progression	2017-18	2018-19	2019-20	2020-21	2021-22	3-year Avg	2-year Avg	Forecast GPR
K-1	1.09	1.02	1.03	1.02	1.21	1.09	1.12	1.04
1-2	1.08	1.08	1.00	0.94	1.09	1.01	1.01	1.06
2-3	1.05	0.96	1.02	1.03	1.10	1.05	1.06	1.06
3-4	1.02	1.00	1.08	0.97	1.07	1.04	1.02	1.05
4-5	1.02	0.97	0.99	1.01	1.08	1.03	1.05	1.02
5-6	1.05	1.05	1.05	1.02	1.08	1.05	1.05	1.05
6-7	0.96	1.08	1.09	0.99	0.98	1.02	0.99	1.03
7-8	1.02	1.06	1.04	1.06	0.94	1.01	1.00	1.03
8-9	0.94	1.05	1.04	1.08	1.01	1.04	1.04	1.04
9-10	1.03	0.97	1.01	0.95	0.96	0.97	0.96	1.00
10-11	0.90	0.88	0.91	0.87	0.97	0.92	0.92	0.91
11-12	0.93	0.83	0.79	0.87	0.98	0.88	0.92	0.88

2017–18 to 2021–22 Grade Progression Ratios (GPR) based on Lakewood School District October FTE enrollment. GPRs are calculated as the ratio of enrollment in a specific grade in a given year, to the enrollment of the same age cohort in the previous year. For instance, when 150 kindergarteners in 2017 become 140 first graders in 2018, a GPR of 0.93 is yielded. GPRs quantify how cohort sizes change as students progress to subsequent grades by considering that not all students advance to the next grade and new students join existing cohorts. A GPR value greater than 1.0 indicates that the student cohort increased in size from one grade to the next. Such a result may be due to students moving into the district, students choosing to transfer into the district from other districts (public or private). Conversely, a GPR value less than 1.0 indicates that the student cohort decreased in size from one grade to the next. This may be due to students moving out of the district, students choosing to transfer to other districts, or students not advancing to the next grade.

Figure 3: Building Attendance Enrollment Forecasts (FTE) by Individual Grade

Grade	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
K	162.00	174.40	177.15	185.72	127.02	186.60	183.17	192.32	184.18	179.10	175.02	183.17
1	159.00	176.00	177.72	182.27	189.08	154.32	193.71	190.59	200.58	192.53	187.64	183.80
2	166.45	172.03	190.00	177.00	171.56	205.77	162.42	204.34	201.50	212.55	204.48	199.74
3	226.05	174.00	166.00	194.00	183.09	187.89	215.85	170.77	215.34	212.83	225.00	216.95
4	174.00	230.30	174.36	179.00	189.00	195.38	195.70	225.35	178.69	225.84	223.72	237.06
5	182.00	177.00	222.27	173.00	181.00	204.56	198.04	198.84	229.50	182.41	231.08	229.45
6	181.00	190.60	186.00	232.92	175.91	195.00	214.39	207.87	209.02	241.62	192.34	244.03
7	202.00	174.00	205.55	203.19	230.90	173.00	199.17	219.32	212.98	214.50	248.34	197.99
8	187.00	206.00	185.00	213.00	214.72	216.08	175.10	203.94	224.92	218.77	220.67	255.88
9	198.40	175.20	216.52	191.54	229.00	216.28	220.69	180.80	212.88	234.95	228.70	230.86
10	168.80	205.20	170.52	219.09	182.00	220.04	215.22	215.39	180.20	212.34	234.55	228.49
11	165.00	152.60	179.82	154.76	190.73	176.22	199.21	195.02	195.35	163.58	192.92	213.29
12	144.60	152.80	126.27	141.69	134.84	186.16	154.68	175.02	171.49	171.94	144.11	170.11

Total Attendance (Building Attendance)		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	K-5	1,069.50	1,103.73	1,107.50	1,090.99	1,040.75	1,134.52	1,148.89	1,182.20	1,209.78	1,205.25	1,246.95	1,250.16
	6-8	570.00	570.60	576.55	649.11	621.53	584.08	588.66	631.13	646.93	674.89	661.34	697.90
	9-12	676.80	685.80	693.13	707.08	736.57	798.70	789.80	766.23	759.91	782.81	800.28	842.75
	K-12	2,316.30	2,360.13	2,377.18	2,447.18	2,398.85	2,517.30	2,527.35	2,579.56	2,616.63	2,662.94	2,708.57	2,790.81

Lakewood School District October 2016–17 to 2021–22 enrollment (FTE) and FLO 2022–23 to 2027–28 enrollment forecasts.

Figure 4: Building Attendance Enrollment Forecasts (FTE) by School/Program

Building/Program	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Cougar Creek ES	362.05	400.10	418.43	386.86	364.64	377.80	378.03	393.85	406.29	418.58	433.81	434.37
English Crossing ES	322.00	325.63	322.00	332.63	320.00	330.91	332.09	338.62	345.52	340.28	355.14	361.00
Lakewood ES	385.45	378.00	367.07	371.50	356.11	425.81	438.77	449.73	457.98	446.39	458.01	454.80
Lakewood MS	570.00	570.60	576.55	649.11	621.53	584.08	588.66	631.13	646.93	674.89	661.34	697.90
Lakewood HS	676.80	685.80	693.13	707.08	736.57	798.70	789.80	766.23	759.91	782.81	800.28	842.75
K-12	*2,316.30*	*2,360.13*	*2,377.18*	*2,447.18*	*2,398.85*	*2,517.30*	*2,527.35*	*2,579.56*	*2,616.63*	*2,662.94*	*2,708.57*	*2,790.81*

Lakewood School District October 2016–17 to 2021–22 enrollment (FTE) and FLO 2022–23 to 2027–28 enrollment forecasts.

Figure 5: Comparison between Current and Prior Building Attendance Enrollment Forecasts (FTE) by Grade

Grade	Current (Based on Oct 2021 FTE Data)						Prior (Based on Oct 2019 FTE Data)						Difference between Forecasts					
	2022	2023	2024	2025	2026	2027	2022	2023	2024	2025	2026	2027	2022	2023	2024	2025	2026	2027
K	183.17	192.32	184.18	179.10	175.02	183.17	168.53	158.27	164.80	169.46	172.26	174.12	14.64	34.06	19.39	9.64	2.77	9.04
1	193.71	190.59	200.58	192.53	187.64	183.80	175.84	173.93	163.00	169.52	174.60	177.66	17.87	16.66	37.57	23.01	13.04	6.13
2	162.42	204.34	201.50	212.55	204.48	199.74	168.72	204.50	202.39	189.31	196.83	202.79	-6.30	-0.15	-0.89	23.24	7.65	-3.05
3	215.85	170.77	215.34	212.83	225.00	216.95	218.89	173.87	211.26	208.67	195.12	202.93	-3.03	-3.10	4.07	4.16	29.88	14.03
4	195.70	225.35	178.69	225.84	223.72	237.06	236.05	251.85	201.86	243.47	240.65	225.52	-40.34	-26.50	-23.17	-17.63	-16.93	11.54
5	198.04	198.84	229.50	182.41	231.08	229.45	192.47	232.99	247.61	196.11	239.45	236.75	5.57	-34.15	-18.12	-13.70	-8.37	-7.29
6	214.39	207.87	209.02	241.62	192.34	244.03	218.28	203.02	246.86	258.55	205.16	252.71	-3.89	4.85	-37.84	-16.93	-12.82	-8.68
7	199.17	219.32	212.98	214.50	248.34	197.99	192.58	232.08	215.32	259.50	272.61	215.83	6.59	-12.76	-2.34	-45.00	-24.27	-17.84
8	175.10	203.94	224.92	218.77	220.67	255.88	195.98	206.20	248.41	227.16	274.58	289.34	-20.88	-2.25	-23.48	-8.39	-53.91	-33.46
9	220.69	180.80	212.88	234.95	228.70	230.86	259.31	199.51	211.25	253.84	228.99	271.40	-38.62	-18.70	1.63	-18.89	-0.29	-40.54
10	215.22	215.39	180.20	212.34	234.55	228.49	228.42	281.99	217.54	229.40	275.34	242.54	-13.20	-66.61	-37.34	-17.06	-40.79	-14.05
11	199.21	195.02	195.35	163.58	192.92	213.29	196.45	201.39	249.47	190.91	201.63	231.99	2.76	-6.37	-54.13	-27.33	-8.71	-18.70
12	154.68	175.02	171.49	171.94	144.11	170.11	152.26	172.13	176.58	215.88	167.36	168.06	2.42	2.89	-5.09	-43.95	-23.25	2.05
K-5	1,148.89	1,182.20	1,209.78	1,205.25	1,246.95	1,250.16	1,160.49	1,195.40	1,190.92	1,176.53	1,218.91	1,219.77	-11.59	-13.19	18.86	28.72	28.04	30.39
6-8	588.66	631.13	646.93	674.89	661.34	697.90	606.83	641.30	710.59	745.21	752.34	757.87	-18.18	-10.17	-63.66	-70.33	-90.99	-59.98
9-12	789.80	766.23	759.91	782.81	800.28	842.75	836.44	855.01	854.84	890.03	873.31	913.99	-46.64	-88.79	-94.93	-107.22	-73.04	-71.24
K-12	2,527.35	2,579.56	2,616.63	2,662.94	2,708.57	2,790.81	2,603.76	2,691.71	2,756.35	2,811.77	2,844.56	2,891.63	-76.41	-112.15	-139.72	-148.83	-135.99	-100.82

Shown are the annualized (2022–23 to 2027–28) current and prior October FTE by grade enrollment forecasts as well as the differences between the two forecast results.