BEAVERTON SCHOOL DISTRICT

BOARD MEETING DATE
October 10, 2017

WE EXPECT EXCELLENCE WE INNOVATE WE EMBRACE EQUITY WE COLLABORATE

Futures Study Final Report

POLICY ISSUE / SITUATION:

The Beaverton School District (District) is the third largest school district in the State of Oregon and has historically been one of the fastest growing. The District has commissioned an analysis of future residential growth, educational models and facilities models over the next half-decade. The resulting report, the Long-Range Futures Study, presents the results of that analysis, including scenarios and implications for consideration by the Board and Administration in future planning and policy work.

BACKGROUND INFORMATION:

The District has a current School Facility Plan that complies with ORS 195.110. This plan was adopted in 2010 and provides a ten-year outlook for facility needs as well as describing school facility and campus requirements. As well, District voters approved a $680 million school construction bond program in 2014 that is providing funding for a number of new, reconstructed, and updated facilities throughout the District.

The Long-Range Futures Study is looking beyond the ten-year requirements of ORS 195.110 and examining how the District could develop in the longer term as population growth continues within its service boundary. The Study is also looking at education trends and how education may be delivered in the future. The purpose of the Study is to not replicate or replace the School Facilities Plan but to help inform the District on future strategic decision making.

At the School Board's work session on April 4th, 2017 the consultant team and District staff summarized the major themes of the Futures Study, and discussed potential implications to be developed in the final report. District staff and the consultant team have completed the final report for the Futures Study project, and have submitted it for the School Board's consideration.

RECOMMENDATION:

It is recommended that the School Board take the following steps at the work session on the Long-Range Futures Study project:

1. Listen to the presentation on the Study's objectives, scenario findings and resulting implications for consideration in future District planning and policy development
2. Participate in a discussion with the staff and consultant team on implications and potential future steps

District Goal: WE empower all students to achieve post-high school success.

Futures Study

Quality Education in a Changing World

Beaverton School District | Fall 2017


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Acknowledgements

This report was prepared for the Beaverton School District by a team of consultants led by ECONorthwest. For ECONorthwest, Terry Moore (project director) and Alexandra Reese (project manager) are the reports primary authors. Robert McCracken (Beaverton School District) and Frank Angelo (Angelo Planning Group) were key coordinators and reviewers for the District. Many organizations and people contributed significantly to its content.

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Summary

The Why and How of this Study

In 2014, the Beaverton School District passed what was at the time the largest capital bond program for school construction in the history of Oregon. That program will fund facility needs for the next 8–10 years.

The District is now evaluating its needs beyond that period. It is conducting an evaluation unlike any it has done previously. This evaluation, the *Futures Study*, looks at how District facilities and services might evolve over the next 20–50 years.

The District assumes that Washington County will continue to grow: there will be more economic activity, development, housing, people, and students. The growth generates a need (demand) for educational services. To deliver those services, the District must have (supply) both programs and facilities. Thus, this Study explores possible futures by focusing on three categories of driving forces:

1. **Growth of Enrolled Students.** The demand and need for facilities is a function of the number of students the District must serve, their characteristics, and their location.
1. **Education Models.** In this Study, an education model refers to the curriculum, teaching methods, supporting technology, and student schedule (when they are in the classroom by time of day, day of the week, and season).
1. **Facility Needs.** The ultimate output of this project is a thoughtful description of new facilities that might be needed: What types, where, and when?

These forces interact. For example, facility needs will change given different assumptions about development and operations (e.g., new methods for delivering educational services, new forms of school facilities, or new partnerships for sharing facilities). This Study tries to describe some of the important interactions by creating four *scenarios* for future conditions (Chapter 5) that are built from different assumptions about these forces (Chapters 3 and 4). That analysis is a necessary foundation for the main purpose of the Study: to describe what these forces and long-run changes might imply about actions (programs, policies, and investment decisions) the District will be considering over the next 5–10 years (Chapter 6).

Findings

More Students

All recent planning efforts in the Portland metropolitan area expect the region to grow, and expect Washington County and the Beaverton area to grow at rates faster than the regional average.

This Study's expected-growth forecast is that, over the next 50 years, K-12 enrollment in the District will increase by about 15,000 students, from roughly 40,000 to 55,000 students. The Study's high-growth forecast estimates that the District will add almost 19,000 students (a result of assumptions of (1) higher economic and household growth, and (2) adding two years of pre-kindergarten education). District-wide growth in enrollment will occur faster at first: about two-thirds of the forecasted growth for 50 years happens in the first 20 years. Sub-areas of the District grow at different rates: more urbanized areas in the central part of the

District have slow growth (in some cases, the number of school-aged children declines); less-developed areas in the north, east, and southeast (primarily in Urban Reserve areas) account for most of the growth.

Changing Education Models

The types of education models that the District adopts in the future will impact the amount of space required per student, and the characteristics of that space. Current discussion about education models suggest future direction: early learning, college and career readiness, new school models, blended and online learning, personalized learning, and competency-based education.

The precise mix of education models that the District adopts is unpredictable. But many of them require more team space and flexible space, and different models are likely, both sequentially and simultaneously. Those likelihoods lead to a more certain conclusion about new facilities: they should be designed to be easily adaptable for different uses.

Possible Futures

Four scenarios describe how different forces affecting education in the District might change over the next 50 years. Four forces of change shape each scenario: student enrollment, District funding, competition for students, and the flexibility of the District's education and facility models.

The scenario evaluations suggest that the District is, all things considered, set up relatively well for the future. If funding levels stay comparable to those of the last 10–20 years, the District can probably continue to deliver K-12 education services to students in typical suburban facilities, *assuming* it can shift boundaries to maximize the use of existing facilities. A continuation of the status quo may not, however, be enough for the District to thrive. Making investments in universal pre-K and personalized or other specialized education would require investments beyond the projected resources of the District.

Summary of Scenario Definitions

Future Conditions	Scenario 1: Business as Usual	Scenario 2: High Growth	Scenario 3: Increased Innovation	Scenario 4: Constrained Funding
Enrollment Growth	Expected	High	Expected	Expected
Funding per Student	Expected	Expected	Expected	Low
External Competition	Expected	Expected	High	Expected
Flexibility of Education and Facility Models	Expected	Expected	High	High

Source: ECONorthwest

Implications

Chapter 6 of this Study goes into detail about the possible implications of the scenarios for District programs, policies, and facility investments. It groups those implications into two broad categories: (1) Planning and Policy (with sub-categories for Land Use Regulation and Growth, Education Models and Technological Innovation, Funding, Property and Facilities, Engagement and Partnerships) and (2) Facility Management. The first category is more general and sometimes focuses on longer-run and more speculative policy choices. The second category goes deeper into suggestions about facility management that can be implemented now and over the next 5 years.

1. Introduction

1.0 Introduction

This Study takes a long-run (50-year) look at forces that will affect the ability of the Beaverton School District to carry out its mission:

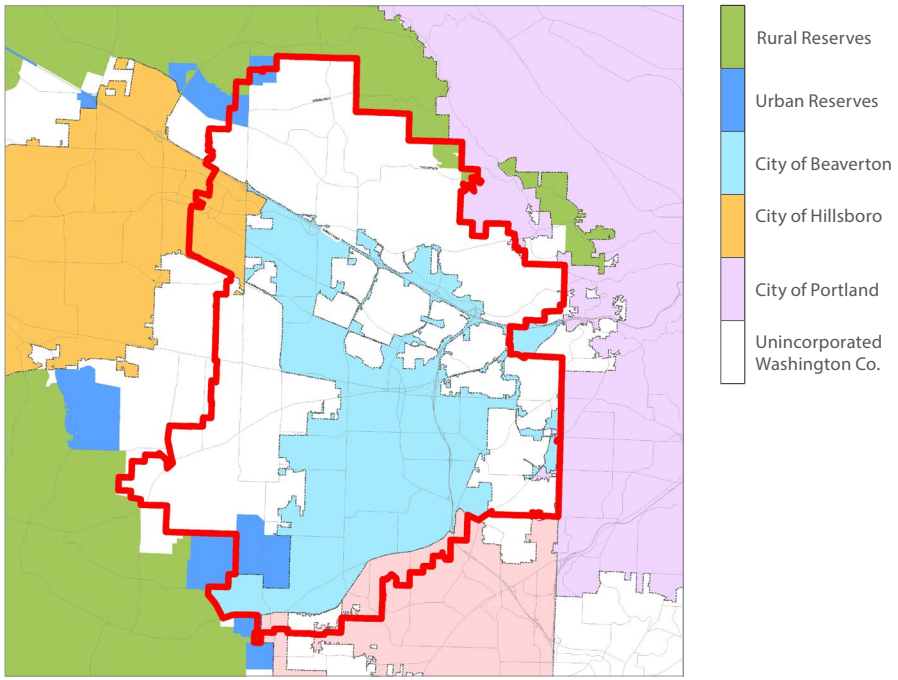
Engage our students in rigorous and joyful learning experiences that meet their individual needs so they may thrive, contribute, compete, and excel.

The Study considers changes in (1) the number and location of students, (2) the educational models and technologies by which education will be delivered, and (3) the type, size, number, and location of facilities necessary to support those students, educational models, and technologies. The purpose of the study is not to propose new policy, but to inform future discussion by the Beaverton School Board of Directors and Administration about policies related to educational models and facilities—particularly about the capital improvement planning for facilities.

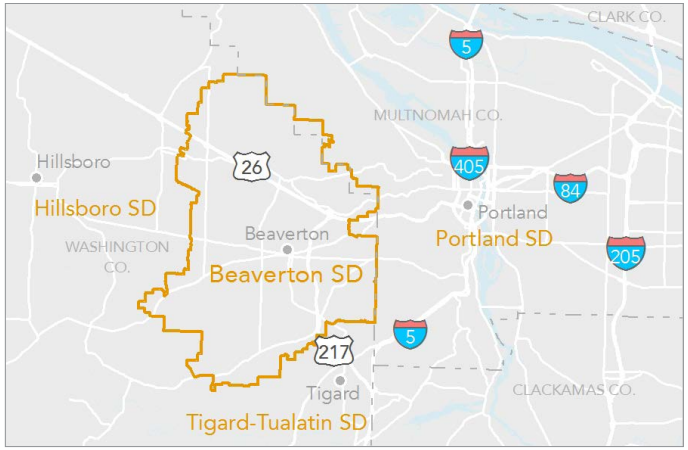
In 2014, the Beaverton School District passed, what was at the time, the largest capital bond program for school construction in the history of Oregon. That program will fund facility needs for the next 8–10 years.[1]

The District is now evaluating its needs beyond that period. It is conducting an evaluation unlike any it has done previously. This *Futures Study* looks at how District facilities and services might evolve over the next 20–50 years.

Exhibit 1-1. Beaverton School District Context Maps



Source: Beaverton School District



Source: ECONorthwest

[1] See: https://www.beaverton.k12.or.us/district/bond-measure-information

Beaverton Schools at a Glance

The unified Beaverton School District was founded in July 1960. It educates more than 40,000 students in 53 schools, the third-largest school district in Oregon. Beaverton schools are dedicated to providing outstanding, challenging educational opportunities that prepare all students to be college and career ready. (Beaverton School District website)

The Beaverton School District serves one of Oregon's fastest growing regions. That growth was at its highest during the 1990s, as Nike, Intel, and the regional economy expanded, drawing families to the District. From 1990 to 2000, the total population of the District grew by 40%, compared to 20% for the state as a whole. Growth slowed during the subsequent recession, but exceeded rates for the State.

As this Study shows, the District will likely continue to grow at a relatively rapid rate. Changes in the type and location of families and their expectations around education will require the District to craft new and innovative facility solutions to serve them.

The District assumes that Washington County will continue to grow: there will be more economic activity, development, housing, people, and students. The District wants to know: How many students will it have? Where will they live? What education programs, technology, and facilities will it deliver to them? The *Futures Study* explores these questions by focusing on three categories of driving forces:

1. **Growth of Enrolled Students.** The demand and need for facilities is a function of the number of students the District must serve and their characteristics. How many students are likely to live in the District in the future? Where will they locate, and how will their numbers and locations affect decisions about facility investment?
2. **Education Models.** In this Study, an education model refers to the curriculum, teaching methods, supporting technology, and student schedule (when they are in the classroom by time of day, day of the week, and season). What educational models and trends should the District pay attention to? Technology, classroom techniques, and staff and facility management techniques are changing rapidly and likely to change even faster in the future. A longer-run view considers how these factors might change and, in doing so, impact the number, type, and location of facility space required.
3. **Facility Needs.** The ultimate output of this project is a thoughtful description of new facilities that might be needed: What types, where, and when? How might those needs change given different assumptions about development and operations (e.g., new methods for delivering educational services, new forms of school facilities, or new partnerships for sharing facilities)?

This report is not a policy document. It is a planning study that provides data and analysis to inform future discussion among the District Board, its staff, partner agencies, parents, and the general public about how to deliver quality education to District students. In particular, the Board and staff believe that this long-run (50-year) look at the future will provide information relevant to the investment decision the District must make for a mid-run horizon (10 years).

This 50-year look at potential changes to forces that could substantially change how education is defined and delivered make this report different from the long-range facility plans required by state law. The District already has such a facilities plan and is implementing much of it through the 2014 Bond Program. This report will be a background document that provides context for the District's next facilities plan.

This report has five additional chapters, supported by several appendices:

- **Chapter 2, Approach to the Study**: The methods used for creating and evaluating the facility requirements of different growth scenarios.
- **Chapter 3, Forecasts of Students**: Estimates of the number of school-aged children and students, by age/grade level, by location, from now until 2065.
- **Chapter 4, Educational Models**: Descriptions of different programs—education models—the District might use to deliver education to its students and what those models might imply about the size and design of facilities.
- **Chapter 5, Scenario Evaluation**: Description of four potential futures (scenarios) for the District, as characterized by enrollment, funding, competition for students, and education model and facility policy.
- **Chapter 6, Implications for Facility Planning**: Implications of the results of the scenario evaluation for decisions the District will be making in the next five to ten years about educational models and facility improvements.
- **Chapter 7, Supporting Information**: A list and brief description of technical reports that provide more information about the data, analysis, and conclusions relating to the three main driving forces evaluated in this Study:
  - Appendix A, Demographics and Development (written by ECONorthwest)
  - Appendix B, Education Models (written by Getting Smart)
  - Appendix C, Facility Evaluation (written by Mahlum Architects)

2. Study Framework

2.0 Study Framework

That the future is uncertain is a truism. No one who worked on this Study believes it is possible to accurately predict over a 50-year period the likely amount and type of future growth in Washington County. They do believe, however, that a thoughtful identification and consideration of key forces affecting future growth will improve District decision-making in the interim.

This Study explores a range of possible futures using *scenarios*, which are different combinations of key driving forces that suggest different futures for District facility investment. The main forces that define the four scenarios evaluated are student enrollment, District funding, education model innovation, and the flexibility of District facility policy.

This chapter describes the *framework* for the *Futures Study*. Chapters 3–5 and the appendices provide detail on data and methods.

2.1 Overview of Long-Run Scenario Planning

Humans have tried to forecast the future for millennia. They have achieved varying levels of success. Forecasts of scientific phenomena—such as the day, hour, and location of a solar eclipse—are astoundingly accurate. Forecasts of activities that involve human behavior, such as recessions, are not.

The rapidity of technological change adds to the difficulty of forecasting. One cannot predict with certainty what technologies will come to fruition and how they will shape the world.

Rapid change has not been the historical norm for education in the U.S. For 200 years, until very recently, K-12 education meant primarily: 10–40 students of the same age sitting in desks, facing

What You See May Not Be What You Get

In 1898, urban planning experts met in New York to discuss the Great Manure Crisis that threatened NYC, London, and other major metropolitan areas: the huge number of horses on the streets were producing so much manure that the *Times* newspaper predicted, "In 50 years, every street in London will be buried under nine feet of manure." Attendees could not come up with a solution at this conference; Carl Benz had just invented the first gasoline engine, but it had barely penetrated the market. Just 15 years after the conference, automobiles largely replaced horse-drawn vehicles, putting an end to the crisis.

a blackboard or whiteboard, looking at books, and listening to a single teacher lecturing on the topic being studied, with summers off. In the last 20 years, however, a combination of new technologies, performance measurement, competition, and fiscal limitations have accelerated change. Bigger changes seem likely, but they could go in many directions.

Scenario planning is a planning tool that acknowledges and responds to uncertainty. Planners identify drivers of change that will impact the future (e.g., technology), and then create several stories of how the future might look based on different trends for those drivers. Those stories are called scenarios. The purpose of developing multiple scenarios is to understand different paths forward and how one can shape those paths and their outcomes.

2.2 Scenario Planning in This Study

This *Futures Study* uses scenarios to consider possible futures for the Beaverton School District and what those futures imply about choices the District may make now and into the future. This study focuses on possible futures and implications for school district facilities.

This Study creates and evaluates scenarios in three steps:

1. **Identify the primary forces of change.** Chapter 1 briefly described the three broad categories of forces:
   - *Changes in school enrollment.* The number of school-aged children that enroll in the District is the primary driver of demand for new facilities. Chapter 3 and Appendix A describe the methods used to forecast school enrollment. In summary, ECONorthwest started with data, assumptions, and models it had developed to create long-run demographic and development forecasts for Washington County's Transportation Future Study (WCTFS) and then converted those forecasts into number of enrolled students in the District by age and location.
   - *Changes in educational models and technologies.* How the District provides education services has direct implications for the number and type of facilities required. Some models require more collaborative space in addition to classrooms, thus increasing facility demand. Other models, such as online learning, move students out of the classroom, thus decreasing facility demand. Technology is critical to the adoption of many of these options. Chapter 4 and Appendix B describe how educational models and technologies might change and how that might affect the number and type of facilities needed.
   - *Changes in facilities.* Facilities are the focus of this Study. Chapter 5 and Appendix C provide more detail on the number of facilities required by type and by area for each scenario. These sections also provide detail on facility characteristics and system-wide costs.
2. **Create scenarios based on different combinations of assumptions about those forces.** Each force in Step 1 could change in many ways. It is beyond the capacity of this Study (or any study) to consider all the ways in which each force might change and all the combinations of those changes. The Study must limit the number of combinations (scenarios) to enable a meaningful discussion of how they compare and what one can

learn from those similarities and differences. The construction of scenarios must (1) have an understandable theme, and (2) result in substantially different scenarios to more clearly illustrate facility differences. Chapter 5 describes the four scenarios used in this Study.

3. **Describe the potential implications of the scenarios on the District's investment and policy decisions.** This Study is *not* a policy document—it does not make policy. Its purpose is to inform future discussions (short-term and long-term) about facility needs and decisions about facility investments. Chapter 6 contains the consultants' ideas about those implications.

Students at the Maker Space at Scholls Heights Elementary.

3. Forecasts of Students

3.0 Forecasts of Students

The number, type, and location of new school facilities depend directly on the number and location of students. A forecast of enrollment is fundamental to an investigation of future facility needs and options.

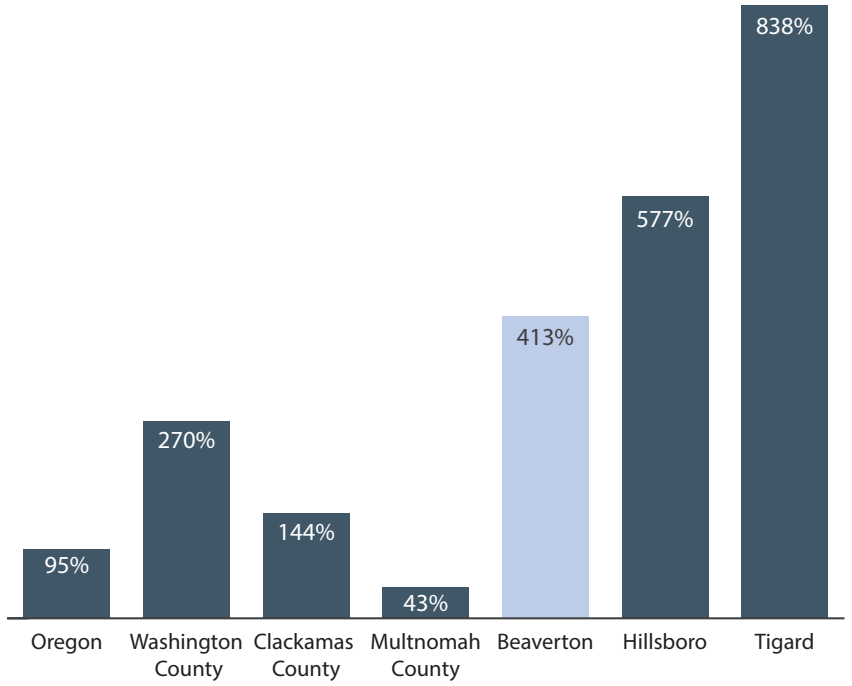
This Study's expected-growth forecast is that over the next 50 years, K-12 enrollment in the District will increase by about 15,000 students, from roughly 40,000 to 55,000 students. The Study's high-growth forecast estimates that the District will add almost 19,000 students. District-wide growth in enrollment will occur faster at first: about two-thirds of the forecasted growth for 50 years happens in the first 20 years. Sub-areas of the District grow at different rates. This chapter shows and explains the differences.

3.1 Context

The need for school facilities derives directly from the number of students the District must serve. How many students are likely to live within the District in the future?

Some context helps in answering that question. The service area of Beaverton School District is located mainly in the City of Beaverton and includes a sizable portion of urban, unincorporated Washington County and small portions of some adjacent cities (Tigard, Portland, and Hillsboro). Exhibit 3-1 compares historical and relative population growth for jurisdictions in and around the District boundaries. Over the last 50 years, the rates of growth in the Beaverton area (Beaverton, Hillsboro, and Tigard) have been among the fastest in the Portland metropolitan area. Washington County has grown faster than other counties that compose the Portland region, and the Portland region has grown faster than the state.

Exhibit 3-1. Percent Change in Population, Jurisdictions in and around the District, 1970–2016



Source: Population Research Center, Portland State University

Note: Exhibit 1-1 shows that the boundaries of the Beaverton School District include (1) almost all of the City of Beaverton, and (2) small parts of the Cities of Hillsboro and Tigard, and that about half of the land in the District is in Washington County but not in a city. Thus, though Exhibit 3-1 does not give an estimated growth rate for the District, its does illustrate how much faster all the jurisdictions that compose it are growing than other counties in the region and the state.

All recent planning efforts in the Portland metropolitan area expect the region to grow and expect Washington County and the Beaverton area to grow at rates faster than the regional average. Those expectations are based on many factors, including the dominance of Washington County in high-tech industry, the quality of life and services the County offers (including the quality of K-12 education in the Beaverton School District), and the relative availability of buildable compared to Multnomah County (land that is vacant and serviceable at a reasonable cost).

Students are members of households. The number of households in a region grows slowly and predictably if there is no in-migration. But household growth in Oregon is less predictable—about 70% of Oregon's population growth has come from in-migration over the last 50 years.

In-migration rates vary for many reasons, including national and local economic conditions, perceptions about the region's desirability as a place to live and work, and the relative cost of living. Because housing and transportation are the biggest costs in most household budgets, local policies about patterns of land development have an influence on not only the amount of household growth but also its location.

Just describing all the variables that influence household growth is difficult; specifying the direction and magnitude of their influences on one another is much harder. Harder still is making long-run predictions of growth for small areas (like the Beaverton School District). One can easily hypothesize dozens of changes in society, demographics, technology, the economy, the environment, and government institutions that could be combined in millions of ways.

In the last 10 years, the planning profession has paid more attention to a fundamental dilemma: technology and globalization can lead to very big effects on the economy and the environment in the long-run, but the ability to predict the long-run future with confidence is limited. In response to faster and bigger change, the profession is shifting from *single predictions* of a future (with high and low variations) to *multiple simulations* of futures.

3.2 Forecasting Methods

These considerations influenced the forecasting methods used in this Study. In summary, this Study creates "expected growth" and "high growth" forecasts of student enrolled in District schools, and disaggregates those forecasts by (1) age and grade of student, (2) subareas of the District, and (3) year (in five-year increments, for 50 years).

The development of each forecast occurred in two phases:[2]

- *Estimate school-aged children living in District boundaries*. The Study based this estimation on a forecast that Washington County developed using MetroScope[3] for Washington County Transportation Futures Study (WCTFS). This forecast estimated the future number, type, location, and composition (e.g., size and age of household head) of households in the District. The Study then used Census data on the average number of school-age children in households of different sizes in Washington County

[2]Appendix A provides additional documentation to describe our methods, including further detail to explain these steps.
[3]Metroscope is a regional model of development maintained by Metro, the regional planning agency.

to estimate the number of children living in those households. The high-growth forecast has more school-aged children than the expected-growth forecast which comes primarily from two assumptions: (1) more population growth, in general, in the District (driven by assumptions about more economic growth and an accompanying residential growth); and (2) a District decision to provide earlier (pre-K) education to an age-group not currently in District schools.

- *Convert school-aged children to students enrolled in the District, by grade, by location.* The Study used "capture rates" for District schools to get from population to enrollment. It calculated a capture rate for each school in the District by dividing the number of children enrolled in a given school by the number of appropriately aged children living in the attainment area of said school. The Study then multiplied the number of appropriately aged children in each attendance area by the capture rate of the school in that attendance area to estimate enrollment.

3.3 Forecasts of Student Enrollment: Expected-Growth Scenario

Future residential development patterns directly affect the number and location of new school-aged children and the new facilities they require. To forecast future residential development, by type and location, this Study used conversations with regional and county planners and a model of the relationships among population and employment growth and new development. The models used to make detailed forecasts of growth were based on some key assumptions, including some about how and when different parts of the District would develop and why.

In the **Bethany area**, Washington County planning staff expect Urban Reserves to be brought into the Urban Growth Boundary and zoned for significantly higher-density residential development than currently exists. They expect about 4,000 new housing units to be built in the North Bethany area, which extends into the northern tip of the Sunset/Cedar Mill area. They expect this development will be largely complete by 2035.

The County expects the remainder of the **Sunset/Cedar Mill area** and all of the **Cedar Hills/Garden Home** area to see infill development in older neighborhoods.

The **Cooper Mountain/Sexton Mountain** area contains two areas expected to see significant development in the next ten years. City planners expect the southern tip of the area, River Terrace, will add about 2,500 new housing units. Only a portion of this growth will occur in BSD boundaries; the rest will occur in Tigard School District boundaries. City planners expect the area immediately north of that, South Cooper Mountain, to add another 3,000 units, mostly within the next ten years.

Most of the **Aloha/Elmonica** area consists of older neighborhoods with scattered infill potential. The one exception is the Amberglen area, where County planners expect intense development and up to 6,000 new units of mostly multi family housing, some of which will be in the Hillsboro School District. On the map of student growth from 2015–2065 (Exhibit 3-5), Amberglen is the dark area in the northwest of the Aloha/Elmonica area. Amberglen currently is mostly in industrial and office uses.

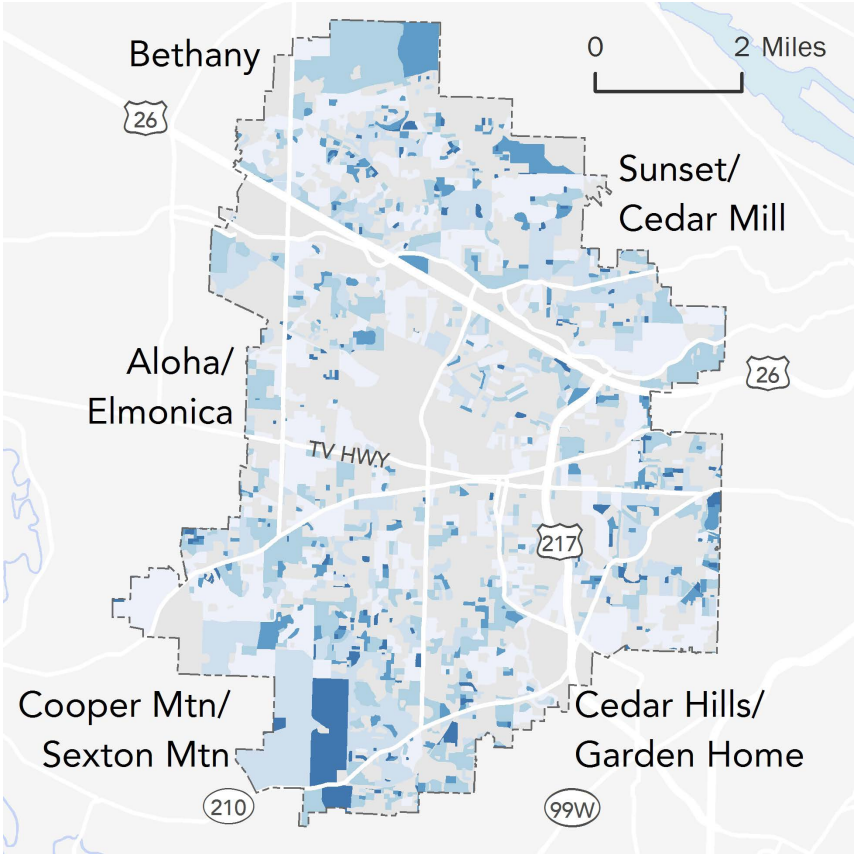
In 2015, the District had 38,889 enrolled students in K-12 (kindergarten through high school). This Study forecasts that over the next 50 years, enrollment in the District will grow by 14,444 students to a total of 53,333 K-12 students. About two-thirds of that growth happens in the next 20 years.

Exhibit 3-2 through 3-5 show *growth* in K-12 school-aged children in the District for four periods. The first three exhibits show different time slices of growth between 2015 and 2065: from (1) 2015 to 2025; (2) 2025 to 2035; and (3) 2035 to 2065. The fourth sums up all the growth from those three periods to show total growth between 2015 and 2065. The exhibits show *school-aged children*[4] *per square mile.*[5] The blue shading indicates the amount of growth; darker blue means more growth. [6]

Legend

Growth per sq. mi.
- 5 - 150
- 151 - 300
- 301 - 700
- 701 - 1,500
- > 1,500
- Negative or no growth

Exhibit 3-2. Projected Growth in Number of K-12 School-aged Children per Square Mile, Beaverton School District, 2015–2025



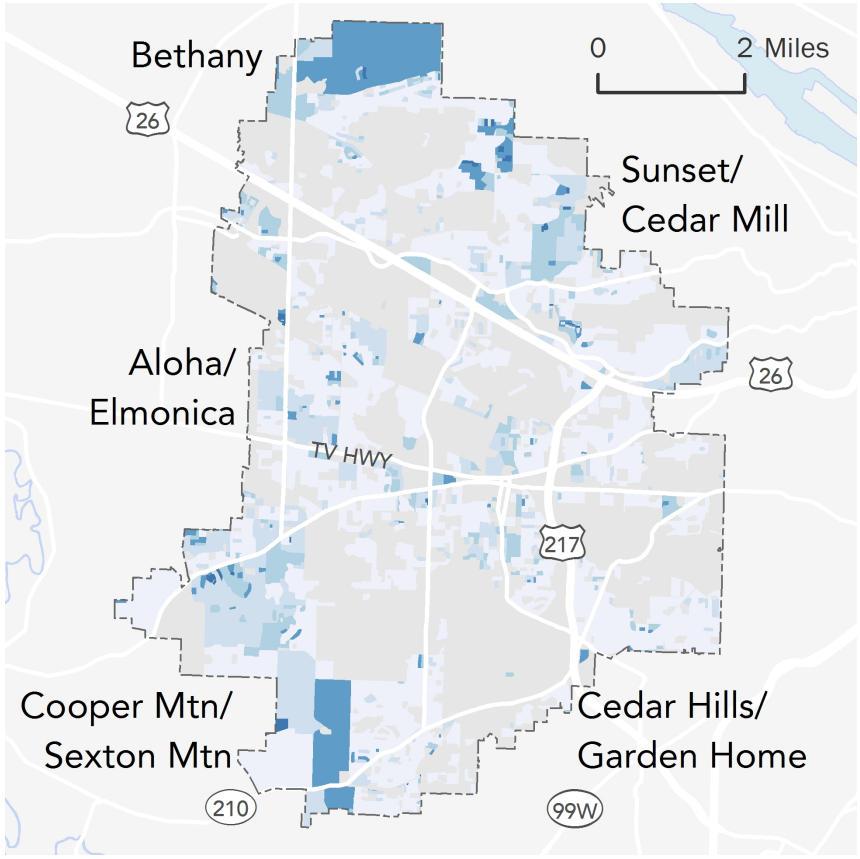
Source: ECONorthwest

[4]The number of students is highly correlated with the number of school-aged children, but it is not identical. Some school-aged children that live in the District do not attend District schools; some students attending District schools do not live in District boundaries. For purposes of forecasting, more and better data are available about households and their composition (e.g., age of household members) than are available about students by District. Thus, this Study uses school-aged children for its forecasts of growth. As a gross and approximate average, the relationship between the number of school-aged children (K-12) that live in the Beaverton District to the number of students enrolled in the District is about 90%.

[5]The data are based on U.S. Census data for "block groups." Boundaries of blocks and block groups are set so that they have about the same amount of population. Thus, urban block groups are small and undeveloped block groups at the urban fringe are large. Showing the absolute number of new school-aged children by block group would over emphasize increases at the urban fringe. Thus, the data were converted to "per square mile," but they are still displayed based on block group boundaries.

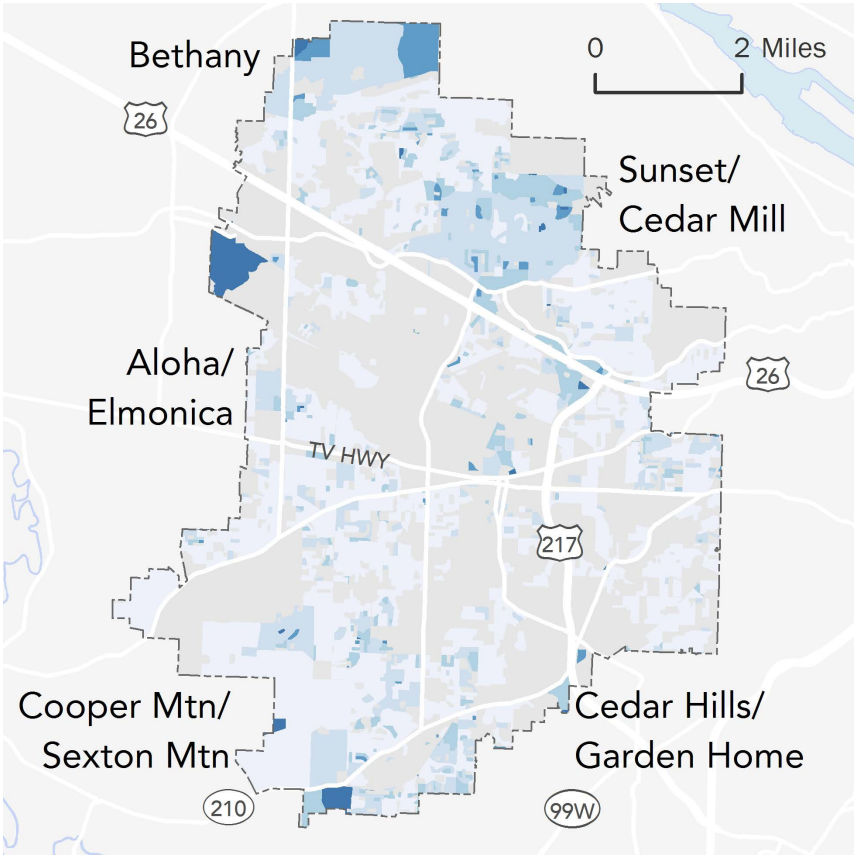
[6]Appendix A contains more detail (e.g., tables showing forecasted growth of school-aged children by age, year, and location). Chapter 7 explains how to get that appendix.

Exhibit 3-3. Projected Growth in Number of K-12 School-aged Children per Square Mile, Beaverton School District, 2025–2035



Source: ECONorthwest

Exhibit 3-4. Projected Growth in Number of K-12 School-aged Children per Square Mile, Beaverton School District, 2035–2065



Source: ECONorthwest

Exhibits 3-2 to 3-4 illustrate that growth is not uniformly distributed over time or space:

- District-wide growth in enrollment will occur faster at first. Exhibits 3-2 and 3-3 cover only 10 years of growth each (2015–25 and 2025–35); Exhibit 3-4 covers 30 years of growth. About two-thirds of the forecasted growth for 50 years happens in the first 20 years. One way to get a feeling for that difference in growth is to ask, how many years does it take for the District to add another 1,000 school-aged children? Between now and 2035 it takes, on average, about two years. Between 2035 and 2065 it takes, on average, about six years.
- More urbanized areas in the central part of the District have slow growth (in some cases, the number of school-aged children declines). Less developed areas in the north, east, and southeast (primarily in Urban Reserve areas) account for most of the growth.

These patterns were not unexpected by the District staff and Board. A key reason for this Study was the District's expectation of a future mismatch between the locations of existing schools and the homes of future school-aged children. For example, the Cedar Hills/Garden Home area has the largest share of students in 2015. Although it will add students over the course of the next 50 years, its share of students will drop by almost a quarter. In contrast, enrollment in schools in the Cooper Mountain/Sexton Mountain area will grow much faster than the District overall, due largely to the recently opened Mountainside High School. Its enrollment more than doubles over the 50-year forecast period. This Study examines that issue more in Chapters 5 and 6.

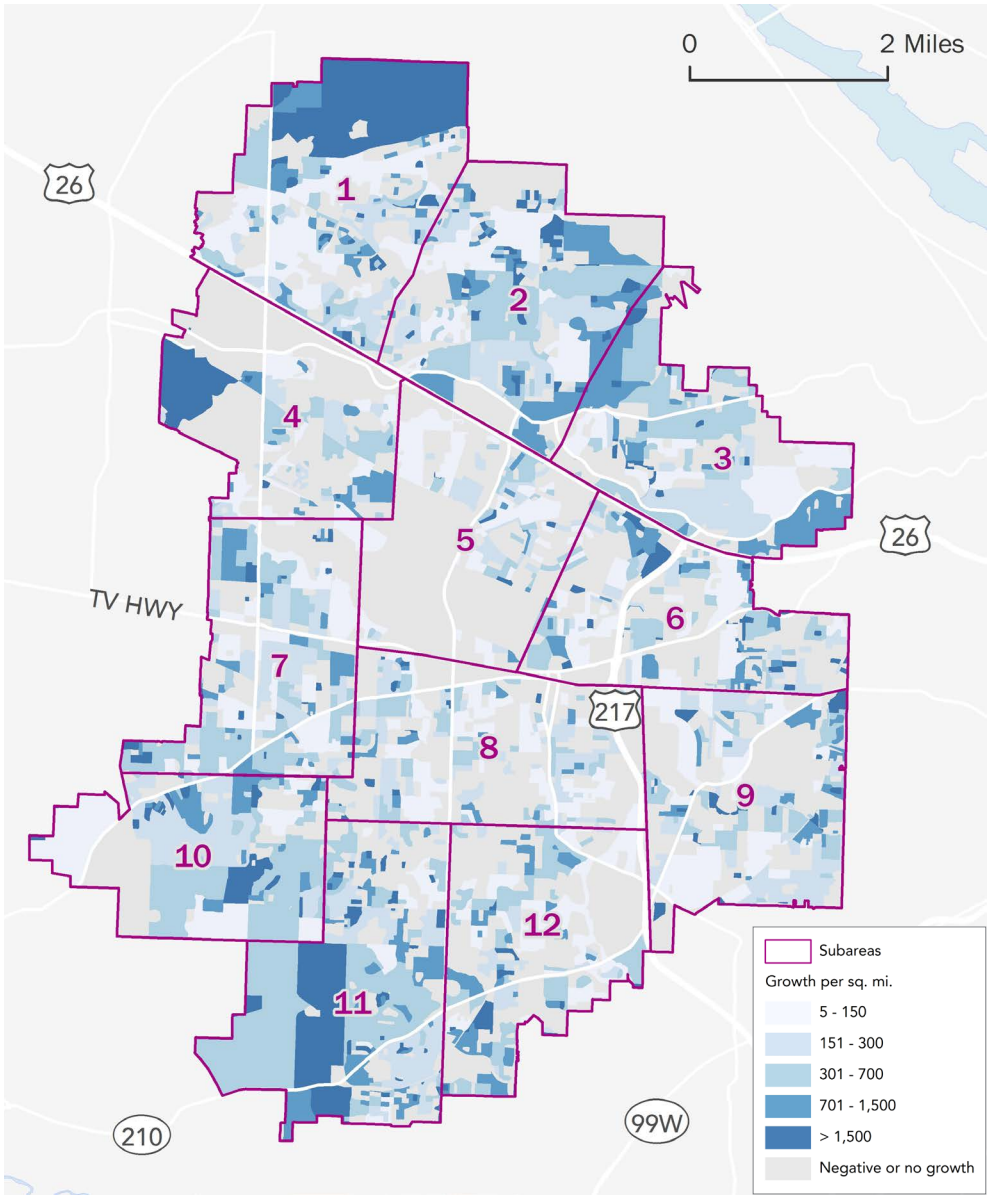
Exhibit 3-5 sums up all the growth shown in Exhibits 3-2, 3-3, and 3-4. It shows total (cumulative) growth in school-aged children for 50 years, from 2015 to 2065.

In an attempt to make the growth and its implications understandable, the consultant team overlaid a rough grid on the District map, dividing it in 12 areas (labeled 1 to 12) that are roughly square and about the same size (on the order of four to five square miles each). The boundaries are arbitrary: they have no cultural, political, and technical basis; they are just another way of illustrating where in the District our forecasts suggest growth will occur.

The table in Exhibit 3-5 summarizes all the information in Exhibits 3-2–3-5. Its 12 rows correspond to the 12 analysis areas on the map. It has four columns corresponding to the four time periods in Exhibits 3-2–3-5. The shading in each column indicates each area's relative ranking on the amount of growth during each period; darker shades indicate a higher ranking (i.e., more growth).[7]

[7]In analytical terms, for each period the 12 areas get allocated into one of four quartiles (three areas to each quartile) based on their ranking, which is based on their forecasted amount of growth during the period.

Exhibit 3-5. Projected Growth in Number of K-12 School-aged Children per Square Mile, Beaverton School District, 2015–2065



Source: ECONorthwest

Relative Amount of Growth in Number of School-aged Children (K-12), for 12 Analysis Zones, for Various Periods, 2015–2065

Area #	2015–'25	2025–'35	2035–'65	2015–'65	Total Growth
1					3,835
2					2,206
3					1,567
4					971
5					-384
6					1,028
7					1,263
8					319
9					567
10					1,808
11					4,851
12					512

Shading in each column indicates each area's relative ranking on the amount of growth during each period (darker shades = higher ranking = more growth).

Among the things the table illustrates:

- Together, areas 11 and 1 account for 47% of the growth in school-aged children in the District. Both of them are one of the three biggest growth areas in every analysis period.
- Over 40% of the growth in school-aged children between 2015 and 2016 occurs north of Sunset Highway (areas 1, 2, and 3). Almost half is expected in the areas on the District's eastern border, south of Sunset Highway (areas 4, 7, 10, 11). Together, these seven areas account for about 60% of the land in the District, but about 90% of the growth in school-aged children.
- Area 5 has negative growth. Together, areas 5, 8, 9, and 12 cover about one third of the District's area but account for only 6% of the growth in school-aged children.
- The timing of growth varies by area. Some grow consistently (e.g., areas 1, 2, 3, 11). Some grow more later (e.g., areas 4 and 6). Some bounce around (e.g., areas 6, 7, 9, and 12).

3.4 Forecasts of Student Enrollment: High-Growth Scenario

ECONorthwest created a second growth forecast: one that simply assumed more economic activity, which would create more jobs, which would attract more households, which would increase the number of school-aged children.

If more households in the District were the only source of new enrollment, the effects on the increases in District enrollment would be on the order of 10% or less. But another source of enrollment growth is possible—even likely. The District may choose (as some school districts around that country already have) to offer education to school-aged children *before* kindergarten. A large volume of research from many fields emphasizes the key role of early learning in future success in the school and workplace.

In other words, there are not more children in the District, but there are more school-aged children because the definition of "school-aged" has been expanded. If, as an example, the District chose to provide two years of pre-K education, that would be equivalent to adding two grade levels to the existing 13 grade levels (K-12). That increases school-aged children to be served by roughly 15%.

Higher growth (more school-aged children, students, and demand for space) gets incorporated into two scenarios in Chapter 5. Scenario 2 assumes universal pre-K and applies elementary school ratios of students to school-aged children to estimate almost 4,600 new pre-K students enrolled in 2065. Scenario 3 assumes that only half the eligible age group choose to attend District facilities (about 2,300 new pre-K students enrolled in 2065).

3.5 Comparisons to Other Forecasts

A common method for assessing a forecast is to compare it to (1) prior forecasts of the same variable for the same area, or (2) related and accepted regional forecasts of economic (employment) and demographic (population and household) growth. The consultants reviewed three forecasts that are relevant:

- Washington County's Transportation Futures Study (WCTFS) is the most recent and detailed forecast of employment, population, and development in Washington County, and the

only one that goes out 50 years. Because this *Futures Study* for the Beaverton School District relies on data and models from the WCTFS for its forecast, the forecasts in the Study are entirely consistent with the ones in the WCTFS.

- Metro, the regional planning authority, develops the region's official forecasts of population, employment, and development. The WCTFS used Metro's forecast as its base, so there is a direct relationship between the forecast developed for this Study and the Metro forecast.
- In 2012, Portland State University (PSU) did a forecast of students for the Beaverton School District. The difference in forecasts for 2025 (the last year of the PSU forecast) is 472 students, about 1% of total estimated enrollment in that year. Over the period of overlap for the two forecasts, PSU estimated an average annual growth rate of 0.9%, compared to this Study's estimate of 1.2% per year.

Beaverton High School graduates.

4. Education Models

4.0 Education Models

The types of education models that the District adopts in the future will impact the amount of space required per student and the characteristics of that space. Current discussion about education models suggest future directions: early learning, college and career readiness, new school models, blended and online learning, personalized learning, and competency-based education.

The precise mix of education models that the District adopts is unpredictable. But many of them require more team space and flexible space, and different models are likely, both sequentially and simultaneously. Those likelihoods lead to a more certain conclusion about new facilities: they should be designed to be easily adaptable for different uses.

Healthy communities require healthy local schools. They not only provide education for students but also are hubs for culture and community development. Going forward, school districts will expand the options, opportunities, and services they provide. What learning will look like 50 years from now is more speculation than prediction, but there are many forces that will shape education service delivery.

Technological change is the most important driver of these forces (see Appendix B for others). Technological innovation will continue to shape the economy and, in turn, the conditions for which school districts must prepare students. The jobs and workplaces of tomorrow will look very different from those of today. The economy will continue to get more competitive: students will need to be agile, have high emotional intelligence, and be adept at project-based work to succeed. This competition will emphasize *early learning*, *college and career readiness*, and *new school models*.

Technological innovation will also change how students learn. Districts will use technology, like *blended and online learning environments*, to facilitate *personalized learning*. If each student can learn at his or her pace, then districts can also offer *competency-based education*, which allows students to progress by mastery of content rather than age cohort. These innovations will upend a standard teaching model that is centuries old: classrooms of students grouped by age, all of whom are learning a single standardized curriculum.

Although these trends affect districts everywhere, their responses vary and will continue to. There is no single package of education models that will work for all districts. This chapter provides an overview of six education models that the consulting team considered in its creation of scenarios (Chapter 5):

- Early learning
- College and career readiness
- New school models
- Blended and online learning
- Personalized learning
- Competency-based education

4.1 Early Learning

Early learning refers to the formal and informal experiences, activities, and supports for children from birth through age eight that are designed to improve their health, social-emotional, and cognitive outcomes. Preschool, pre-K, and childcare programs are the most common and visible early learning programs. More recently, two other early learning opportunities are gaining attention:

- **Infant and toddler development programs**, which typically aim to improve parent-child interactions and toddler health
- **Pre-K through 3rd education programs**, which create alignment between early learning programs and the primary grades.

Historically, preschool and pre-K programs have required families to pay tuition. That trend is changing. Oregon and other states have expanded free, public pre-K programs. Research around the importance of early education (and the gap that is already set in place by kindergarten for those students without access to strong early learning opportunities—either at home or at preschool) point to the need for publicly funded options for families. The Oregon Legislature enacted the Preschool Promise program in 2015, which provides funding to school districts, private providers, and community-based programs to expand the number of preschool slots across the State.

4.2 College and Career Readiness

College and career readiness refers to the content knowledge, skills, and habits that students must possess to be successful in quality postsecondary education or training programs. A student who participates in a program for college or career readiness can qualify for entry-level, credit-bearing college courses without the need for remedial or developmental coursework. These programs typically fall into one of three categories:

- **Early College** refers to programs that blend high school and college content into a single program. Early college students can complete up to two years of college credit and earn an associate's degree as part of their high school curriculum. Research shows that a greater percent of students in early college schools finish high school and complete college credentials.[8]
- **Dual-Credit Programs** allow high school students to enroll in college courses for both high school and college credit.
- **Career and Technical Education (CTE)** programs provide technical skills training to high school students. Some schools provide this training in specialized on-site facilities. Others have community partnerships that allow students to access this training off-site in partner facilities.

4.3 New School Models

Examples of new school models that have emerged over the last 20 years:

- **Charter Schools** are public schools that families choose for their children. These schools have charters to which they are accountable; they are free from many of the regulations imposed on standard district schools.
- **Microschools**, broadly defined, are schools with small populations (normally fewer than 100 students). Typically, public microschools have a more specific definition as a "school within a school." In this context, microschool concepts can be as simple as a principal supporting teacher-leaders in trying a new approach, such as delivering content in an interdisciplinary, blended, project-based environment.
- **Community Schools** are places and partnerships between schools and community resources that provide students a package of integrated academic, health, and social services.

[8]See http://www.air.org/sites/default/files/AIR_ECHSI_Impact_Study_Report-_NSC_Update_01-14-14.pdf

4.4 Blended and Online Learning

New technology has created the ability for any student with an internet connection to learn any subject at any time. While it may feel far-fetched, there are examples both nationally and internationally of access to online learning resources causing a radical shift in how students learn. In traditional school environments, blended and online learning have allowed districts, schools, and teachers to expand and customize the learning experience. The two learning models differ in their shares of online vs. in-person learning:

- **Blended Learning**[9] occurs when schools combine the best of face-to-face and online learning in a blended environment. Students in blended learning environments have more control over the path, time, place, and pace of their learning. In formal programs, they normally do some of their learning independently, online, and in a place of their choosing, but do the rest in a supervised, brick-and-mortar learning environment.
- **Online Learning**[10] refers to teacher-led education that takes place over the internet, using a web-based educational delivery system that connects a teacher and student who are separated geographically.

4.5 Personalized Learning

According to the U.S. Department of Education's National Education Technology Plan, "personalized learning" refers to programs that are designed to meet each student's individual needs for content and pace. Good personalized learning also includes daily engagement with powerful learning experiences, flexibility in path and pace, and the application of data to inform the individual learning trajectory of each student.

The personalization of the learning experience means that districts can provide education services in more diverse settings. Blended and online learning are examples. Others include project-based learning, place-based education, and internships.

4.6 Competency-Based Education

The term "competency-based education"[11] refers to a systems model in which (1) teaching and learning models emphasize advancement through content mastery, and (2) schools provide timely and differentiated support for individual advancement. When executed well, a competency-based structure provides the flexibility and personalization required to support each individual in the attainment of his or her highest potential.

[9]As defined by the Christensen Institute for Disruptive Innovation: https://www.christenseninstitute.org/blended-learning-definitions-and-models/
[10]As defined by http://www.kpk12.com/reports/
[11]As defined by Competency Works: https://www.competencyworks.org/

5. Scenario Evaluation

5.0 Scenario Evaluation

Four scenarios describe how different forces affecting education in the District might change over the next 50 years. Four forces of change shape each scenario: student enrollment, District funding, competition for students, the flexibility of the District's education and facility models. Each scenario explores a different combination of assumptions about these forces and suggests how the District could respond so that it continues to deliver high-quality facilities to its students.

The scenarios imply that the District is moving in a positive direction. The question is not how will it survive, but how will it thrive. The scenarios suggest some challenges and opportunities for the District to address as it explores this question. Those challenges and opportunities fall into five categories, which flow into Chapter 6, Implications: land use regulation and growth, education and technological innovation, funding, property and facilities, and engagement and partnerships.

Scenarios facilitate an exploration of challenges and opportunities the District might face over the next 50 years and their implications for the District's short-term facility planning. This chapter defines scenarios and evaluates their impacts on the type, location, and costs of facilities. It creates a snapshot of facilities 50 years in the future. The next chapter takes a practical step back toward the present: it discusses possible implications of the evaluation for decisions the District will make about facility investments over the next 5 to 10 years.

This chapter has four sections:

1. **Principles**
   What are the purpose statements that guide District policy decisions and, in turn, the development of scenarios?
2. **Overview of the Scenarios and Evaluation Methods Used in This Study**
   What are the four scenarios explored in the Study?
3. **Specification and Evaluation of the Scenarios**
   What assumptions about driving forces define each scenario, and how do the scenarios play out in terms of facilities?
4. **Summary Comparison of Opportunities and Challenges**
   How do the scenarios compare to one another on key dimensions?

5.1 Principles

The District has four "Pillars of Learning:" principles that guide its strategic plan and policy decisions. These principles are broad; none directly addresses school facilities.

This Study assumes that the District will only adopt education and facility policies that are consistent with these principles. The consultant team attempted to develop scenarios that satisfy District principles. Scenarios 1–3 do so with different combinations of education and facility models. Scenario 4 does not fully satisfy the principles because it is designed to test the District's ability to provide services in a funding crisis.

5.2 Overview of the Scenarios and Evaluation Methods Used in This Study

A scenario is a snapshot of what the District might look like (students, learning models, facilities) in 50 years. That future is shaped by a set of external conditions over which the District has little or no control (enrollment growth, funding per student, and external competition) and by internal conditions that the District does control (especially educational and facility policies). This section provides an overview of the scenario definitions and the methodology used to evaluate them.

Scenario Definitions

This Study uses four scenarios to explore the long-run future of educational needs and facility delivery in the District. Each makes the simplifying assumption that all student growth and relocation, and all facility building to accommodate those students, happen overnight.

Thus, each scenario examines the question: If all the students that are expected to be in the District 50 years from now were here tomorrow—and given assumptions about funding, District education model policy, and certain external forces—what facilities would the District build to accommodate those students?

This Study defines each scenario by assumptions about expected, low, or high levels for four categories of future conditions:

- **Student enrollment**: How many students will attend a District school? (See Chapter 3 and Appendix A for more information about growth in school-aged children and enrollment.)
- **District funding**: How much funding will the District have from both its operating levy and capital bonds? (See sidebar at right.)
- **Competition for students**: How stiff is the competition for school-aged children in the District from other public and private schools?
- **District policy flexibility**: Can the District adopt education or facility policies that differ from those in place today? (See Chapter 4 and Appendix B for more information about educational models.)

Forecasting District Bond Revenues

ECONorthwest estimated total capital funding available to the District from 2015–2065 using historical data from the District on annual, per student bond revenues and the student forecasts presented in Chapter 3.

ECONorthwest used students as the independent variable, as opposed to assessed value. Creating a forecast of assessed value would require assumptions about the value of new development in each year of the forecast period. Assumptions about the amount and value of development, and public taxation and fee policy, could vary widely. Over 50 years, predictions of assessed value would be little more than guesses, and the best guesses would be for assessments that would be highly correlated with population growth, which correlates with student growth.

ECONorthwest estimated annual bond revenues per student by summing the present value of bonds issued over a specific time period, dividing that total by the average number of students during that time period, and dividing that figure by the number of years in the time period. ECONorthwest used bond issues from 2000–2014 as a basis for its forecasts. The 2014 bond issue funded eight years of capital projects, so this analysis used a time period of 22 years. ECONorthwest calculated the average number of students using BSD enrollment data for 2000 and the forecast data for 2020 and 2025.

ECONorthwest then multiplied the annual, per student bond revenue by the projected number of students each year to estimate the total bond revenues that would be available to BSD from 2015–2065 under base-case conditions. The bond revenues vary among scenarios, in accordance with the number of students. Because the Study makes the simplifying assumption that "all growth (and, thus, all need for new and upgraded facilities) occurs overnight," it does not attempt to model the details of the timing of new bonds. That assumption would be compatible with an assumption, over time, that bond revenues are approved and available on a schedule that allows the District to construct new facilities to match growth.

According to BSD, the District uses one-third of all bond revenues for modernization or upgrades. Therefore, ECONorthwest assumed only two-thirds of forecast bond revenues were available for replacement or new schools.

Exhibit 5-1 summarizes the scenario definitions. The top row lists the four scenarios as column headings. The left column lists as row headings the "Future Conditions" that define characteristics. The orange boxes highlight the difference in a future condition that is the primary difference between one scenario and the other three. The difference is by row: for example, Scenario 2 has "high" enrollment growth; the other three have "expected" growth.

Exhibit 5-1. Summary of Scenario Definitions

Future Conditions	Scenario 1: Business as Usual	Scenario 2: High Growth	Scenario 3: Increased Innovation	Scenario 4: Constrained Funding
Enrollment Growth	Expected	High	Expected	Expected
Funding per Student	Expected	Expected	Expected	Low
External Competition	Expected	Expected	High	Expected
Flexibility of Education and Facility Models	Expected	Expected	High	High

Source: ECONorthwest

Expected means "a continuation of what is happening now and recent trends." For example, the use of "expected" education model in Scenario 1 does not mean that the District will not move toward more flexible education models; it means that the District will not make radical changes to current practices or trends. *Low* or *high* are relative to *expected*.

Scenario 1, Business as Usual, is defined by "expected" future conditions for all four conditions. It differs from the other scenarios in that it holds education model and facility policy as expected, and all others allow high flexibility.

Scenarios 2, 3, and 4 are variations of the base case: enrollment, funding, competition, or policy flexibility can be low or high relative to the expected outcome under Scenario 1. Scenarios 2, 3, and 4 all allow a change from expected in two characteristics. One characteristic, the flexibility of education model and facility policy, is rated as high (i.e., more flexible than expected under Scenario 1) for all three scenarios. The District will need to adapt these policies to respond to the opportunities and challenges presented by other factors (e.g., lower than expected funding per student). Additionally, Scenarios 2, 3, and 4 each vary a different second characteristic (enrollment, funding, or competition) to isolate the impacts of a change in that characteristic.

Overview of Scenario Evaluation Methods

The definition of each scenario suggests the context in which the District must build and maintain facilities to deliver education services. The evaluation of each scenario is defined by the *facility model* the District adopts and the *cost of that model relative to expected funding*. The Study used a five-step method to develop facility models for the scenarios. This section describes those criteria generally; the facility models for each scenario provide detail on those criteria.

Step 1: Evaluate Need

How many seats will the District need to add under each scenario? The consultant team did an extensive assessment of demographics and development to create enrollment projections by attendance area. It compared these projections by attendance area to information about the capacity of each school in the District *today*. That comparison allowed a calculation of the *surplus or deficit of seats for each school in 2065* (assuming, for starters, that no new facilities or expansions are built).

The consultant team distributed option school students from the Summa Program and Rachel Carson School to the schools where those programs live. Exhibit 5-2 shows all District schools, by type. This map will be a useful reference for the rest of Chapters 5 and 6.

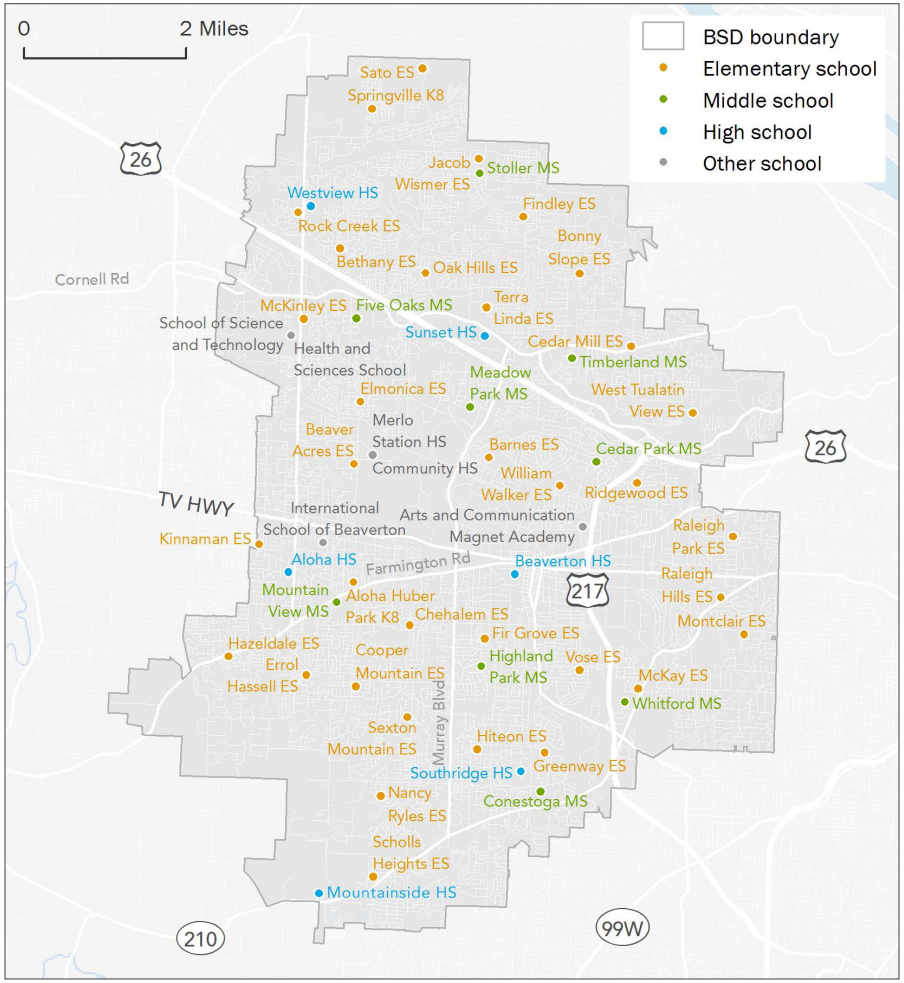
Step 2: Replace Schools

Regardless of how many new students come to the District over the next 50 years, the District will need to replace schools that are too old to be efficiently maintained. Older schools in the District are typically smaller than newer schools; thus, the replacement of these facilities typically adds some new seats to the District's total.

The Study assumes that the District builds all new schools at target student capacities: elementary, 750; K-8, 750 (includes 500 for elementary levels and 250 for middle levels); middle, 1,100; high, 2,200. It assumes that the District right-sizes option schools that have their own facilities to fit projected enrollment.

The consultant team used three criteria to determine if and when to replace schools: (1) Does the scenario allow replacements? (2) What is the school age? (3) What is the permanent and portable capacity of that school?

Exhibit 5-2. Beaverton School District Schools



Step 3: Shift Students

The distribution of students across the District looks different in 50 years:

- The highest growth areas are in the periphery of the District where regional and County forecasts expect new development to occur. Since those areas have little or no residential development today, the existing schools in those areas do not have sufficient capacity to serve expected enrollment in 2065.
- The lower growth areas are where high concentrations of District students live today. Thus, schools in some areas of the district—particularly those on the eastern side—have a surplus of capacity to serve expected enrollment in 2065.

In short, there is a mismatch between the location of school capacity and enrollment in 2065.

This Study makes a key assumption: *that the District will shift attendance areas boundaries when appropriate to balance capacity.* For Scenarios 1–3, the Study places two restrictions on how much the District can change attendance area boundaries. It assumes that the District will strive to not require either: (1) K-5 students to cross highways 26 or 217 if they do not do so already, or (2) any student to travel past a school that is at capacity to attend another school farther away. For Scenario 4, it assumes that the District will transport students as far as necessary to get them to a school that has capacity.

Step 4: Add or Remove Capacity

There is no scenario in which the District can accommodate all new students by a combination of (1) replacing old schools with new, larger schools, and (2) shifting students to neighboring schools. The District must add capacity to accommodate new students. Scenarios 1–3 build new schools *at target capacity* to accommodate new students. Scenario 4, because of assumed financial constraints, adds portables at existing schools.

Step 5: Evaluate Costs

The Study quantitatively evaluates the capital cost of each model and qualitatively describes the impact of that model on operations costs. It uses land acquisition and building costs for elementary, middle, and high schools from BSD. They reflect recent acquisition and development costs.[12]

This Study simplifies the analysis by implicitly assuming all the student growth happens overnight and asks the question: What facilities would the District have to build to accommodate all that growth? Thus, the Study does not need to make any inflation adjustments and presents all costs and revenues in 2017 dollars. Based on research, it assumes the same costs per student for replacement/redevelopment of schools and new schools.

5.3 Specification and Evaluation of Scenarios

Descriptions of each scenario follow. Each first defines the scenario and then discusses (1) the education model, (2) the facility model, and (3) the opportunities and challenges.

[12] Beaverton School District, April 2017, "Bond Program Status Report," available at: https://www.beaverton.k12.or.us/depts/facilities/Bond%20Accountability%20Committee/2017/4.26.17/Report%20to%20BAC%20-%20March%202017.pdf

Scenario 1: Business as Usual

This Scenario explores the impacts on the District of extending current education models and facility policies forward 50 years. It is defined by expected enrollment growth, competition from other education institutions, and education model and facility policy innovation. These choices increase inflation-adjusted cost per student because the cost of land acquisition increases. Two factors drive this cost increase: (1) a land supply limited by the urban growth boundary, and (2) an assumption that a primarily suburban model of school development continues.

Education Model

This Scenario assumes that the District will continue its current rate of innovation and response to new developments in the field of learning. In the near term, the District will continue to advance current innovative programs, such as the Future Ready Initiative, PCC partnerships, and internship programs. Over the long term, the District will move toward two education models:

- **Blended Learning** refers to a formal education program in which students learn both face-to-face in a supervised learning environment away from home and online. This model allows students some control over time, place, path, and pace. All components of each student's learning path within a course or subject are connected to provide an integrated learning experience.
- **Personalized Learning** is a model that paces learning to a student's needs, learning preferences, and unique interests. It includes daily engagement with powerful learning experiences, flexibility in path and pace, and the application of data to inform the individual learning trajectory of each student.

The Study assumes that this package of education models does not impact the average amount of space per student by facility type.

Facility Model

This Scenario assumes the District will continue to build schools like those it builds today. Exhibit 5-3 summarizes key characteristics of those facilities.

Exhibit 5-3. Scenario 1 Facility Characteristics

	Elementary	Middle	High
Target Capacity Size	750	1,100	2,200
Site, Acres	10	20	40
Building, Square Feet	92,000	167,000	320,000
Site Cost Per Acre	$675,000	$675,000	$675,000
Total Land Cost	$6,750,000	$13,500,000	$27,000,000
Building Per Square Feet Cost	$449	$367	$568
Total Cost	$38,575,000	$61,371,000	$181,735,000

Source: ECONorthwest with data from BSD

Exhibit 5-4 describes key assumptions used in each step of facility model development for this Scenario and the results of those steps. It moves sequentially through the steps to show the work. That means Step 4 reverses some of the school replacements assumed in Step 2, as the District does not in fact need the capacity.

This Scenario does allow the District to shift school boundaries so that it can use existing schools before adding new ones. Since most of the population growth will likely occur in the north and south of the District, school boundaries will likely need to shift to the northwest or southwest. Those shifts would cause schools to be in the periphery of their respective attendance areas.

Under Scenario 1, the District would need to **replace 25 schools and build 3 new schools. The total cost of this model would be $1.8 billion dollars.** Given this Study's estimate that total bond revenues for new construction would be around $2.2 billion in this scenario, **the District *could* afford to deliver facilities under this scenario.** Doing so assumes that the District can: (1) continue to collect an average of $1,375 per student in bond revenues each year, (2) dedicate two thirds of those bond revenues toward new construction, and (3) acquire land for new facilities at an average price of $675,000 per acre.

Discussion of the Results

The main benefit of a business-as-usual approach to facility development is that it already has the general support of the community. Therefore, the District can expect residents—unless their average service preferences or economic circumstances shift significantly—to support future capital bonds.

An ongoing concern of the District, and one reason for this Study, is that acquiring land for new schools could get increasingly expensive. Exhibit 5-4 provides some perspective. Yes, $17 million is a lot of money, and the real number (depending on market conditions and public policy) could easily be higher. But the cost of land is only 1% of the cost of new buildings because most of the new buildings are replacements of schools on sites the District already owns. Doubling the land cost would double its share to 2% and still leave the District well within the funding estimate.

Exhibit 5-4. Scenario 1 Facility Model Steps and Results

Key Assumptions for Each Step	Elementary	K–8	Middle	High	Option	Total
Step 1: Evaluate Need						
Evaluate existing school capacity (permanent and portable seats)	19,833	2,630	9,536	12,972	2,497	47,468
Calculate 2065 enrollment under normal growth scenario	21,437	4,521	9,836	13,933	3,607	53,333
Capacity Deficit	(1,604)	(1,891)	(300)	(961)	(1,110)	(5,865)
Step 2: Replace Schools						
Replace ES, MS, and HS at target capacity; replace option schools at necessary capacity						
Replace if built before 1966	11	1	4	2	2	20
Replace if built between 1966 and 1986, and 100 seats under target capacity	8	0	0	0	1	9
Total Replaced Schools	**19**	**1**	**4**	**2**	**3**	**29**
Step 3: Shift Students						
Do not allow students to cross Hwys 26 or 217, unless already doing so						
Do not allow students to travel past an at-capacity school to attend one further away						
Step 4: Add/Remove Capacity						
Eliminate school replacement from Step 2, if built before 1966 and 1986, and the District does not need the extra capacity	(3)	0	0	0	0	(3)
Eliminate school if District does not need the capacity in that area	(1)	0	0	0	0	(1)
Add new schools for ES, MS, and HS at target capacity	2	0	0	1	0	3
Total replaced plus new schools	**17**	**1**	**4**	**3**	**3**	**28**
Step 5: Evaluate Costs						
Land acquisition cost for new schools	$18,225,000	$0	$0	$37,125,000	$0	$55,350,000
Building cost for replacement and new schools	655,775,000	38,575,000	245,484,000	545,205,000	278,486,000	1,763,525,000
Total Cost	**$674,000,000**	**$38,575,000**	**$245,484,000**	**$582,330,000**	**$278,486,000**	**$1,818,875,000**

Source: ECONorthwest with data from BSD

Scenario 2: High Growth

This Scenario considers the District response to an increase in enrollment (demand) that is beyond the base case (Scenario 1). This increase will come from two sources: (1) higher-than-expected population growth (based on the Washington County Futures Study high-growth scenario), and (2) the addition of early childhood education. Under this scenario, the amount of external competition for students remains as expected. This scenario allows the District to choose facility models that diverge from those of today.

Education Model

The addition of **publicly provided, early childhood learning** is the big change in education model in this scenario. Research indicates that students with access to early childhood learning opportunities, either at home or at pre-school, perform stronger than those without access. This difference suggests the need for publicly funded early childhood education options. This scenario explores the impact on the District of offering early childhood learning opportunities.

Early learning refers to the formal and informal experiences, activities, and support systems for children from birth through age eight that are designed to improve their health, social-emotional, and cognitive outcomes, thus providing a stronger foundation for future success. While pre school, pre-K, and child care programs are the most common and visible early learning programs, increasingly educators are addressing two other key areas: infant and toddler development (through programs that typically address parent-child interactions and infant-toddler health) and pre-K–3 education, which creates stronger alignment between early learning programs and the primary grades. This scenario focuses on the provision of pre school to all District children ages 3 and 4.

This Study assumes that the District would need to house pre-K students in elementary schools. Elementary schools would maintain a target capacity of 750 students, but, they would need to be larger to accommodate the additional space required for pre-K students. So the consultant estimates that each elementary school would need to add 6,000 square feet to each elementary school to accommodate a pre-K program.

Facility Model

This Scenario assumes the District will, for the most part, continue to build schools like those it builds today. Exhibit 5-5 summarizes key characteristics of those facilities.

Exhibit 5-5. Scenario 2 Facility Characteristics

	Elementary	Middle	High
Target Capacity Size	750	1,100	2,200
Site, Acres	10	20	40
Building, Square Feet	92,000	167,000	320,000
Site Cost Per Acre	$675,000	$675,000	$675,000
Total Land Cost	$6,750,000	$13,500,000	$27,000,000
Building Per Square Feet Cost	$449	$367	$568
Total Cost	$41,266,000	$61,371,000	$181,735,000

Source: ECONorthwest with data from BSD

Exhibit 5-6. Scenario 2 Facility Model Steps and Results

Key Assumptions for Each Step	Elementary	K-8	Middle	High	Option	Total
Step 1: Evaluate Need						
Evaluate existing school capacity (permanent and portable seats)	19,833	2,630	9,536	12,972	2,497	47,468
Calculate 2065 enrollment under normal growth scenario	26,567	6,108	10,485	15,367	3,884	62,411
Capacity Deficit	(6,734)	(3,478)	(949)	(2,395)	(1,387)	(14,943)
Step 2: Replace Schools						
Replace ES, MS, and HS at target capacity; replace option schools at necessary capacity						
Replace if built before 1966	11	1	4	2	2	20
Replace if built between 1966 and 1986, and 100 seats under target capacity	8	0	0	0	1	9
Total Replaced Schools	**19**	1	4	2	3	29
Step 3: Shift Students						
Do not allow students to cross Hwys 26 or 217, unless already doing so						
Do not allow students to travel past an at-capacity school to attend one further away						
Step 4: Add/Remove Capacity						
Eliminate school replacement from Step 2, if built before 1966 and 1986, and the District does not need the extra capacity	0	0	0	0	0	0
Eliminate school if District does not need the capacity in that area	0	0	0	0	0	0
Add new schools for ES, MS, and HS at target capacity	10	0	1	1	0	12
Total replaced plus new schools	**29**	**1**	**5**	**3**	**3**	**41**
Add 6,000 SF capacity at existing (not-replaced) ES to accommodate additional pre-K space						
Number of schools with added pre-K capacity	12					
Total added SF of pre-K space	**72,000 SF**					
Step 5: Evaluate Costs						
Land acquisition cost for new schools	$91,125,000	$0	$16,875,000	$37,125,000	$0	$145,125,000
Building cost for replacement and new schools	1,196,714,000	41,266,000	306,855,000	545,205,000	299,882,000	2,389,922,000
Total Cost	**$1,320,134,000**	**$41,266,000**	**$323,730,000**	**$582,330,000**	**$299,882,000**	**$2,567,342,000**

Source: ECONorthwest with data from BSD

The one exception is elementary schools. Pre-K students require additional space, which the consultant team estimates equate to the addition of 4 classrooms plus additional circulation and ancillary to the typical elementary school, or about 6,000 square feet of space. The Study assumes the District makes 6,000 6,000 square feet additions to elementary schools not replaced in this scenario at a cost of $449 per square foot.

Exhibit 5-6 describes key assumptions used in each step of facility model development for this Scenario and the results of those steps. It moves sequentially through the steps to show the work. That means Step 4 reverses some of the school replacements assumed in Step 2, as the District does not in fact need the capacity.

Under Scenario 2, the District would need to **replace 29 schools and build 12 new schools. The total cost of this model would be $2.6 billion dollars.** Given forecast bond revenues for new construction of $2.4 billion dollars, **the District could not afford to deliver facilities under this scenario, although the gap would be relatively small.** There are a number of strategies the District could use, such as increasing the capacity of new schools, increasing class sizes, or co-locating schools on the same grounds, which would help close the gap. Chapter 6 discusses these options in greater detail.

Discussion of the Results

There are two benefits associated with this model. The first is that it accommodates universal pre-K, which has been shown to improve education outcomes. The second is that it takes a business-as-usual approach to the types of facilities it builds. Since the community supports these types of facilities, the District can expect residents—unless their average service preferences or economic circumstances shift significantly—to support future capital bonds.

There are two challenges with this model. The first is that it assumes the District can make cost-effective additions to the 12 elementary schools that it does not replace. That is a blanket assumption that may not be true given a school's site size, existing building configuration, or other amenities. The District may need to turn to community partnerships for off-site pre-K facilities in neighborhoods where the schools cannot accommodate the building addition or reduce the number of students.

A second challenge with this model is that it increases per-student operating costs. The addition of pre-K slightly decreases the required student-to-teacher ratio for elementary schools. Facility additions to existing elementary schools that require pre-K students to travel between buildings compound the staff impact. The District would almost certainly need to increase its operating levy.

Scenario 3: Increased Competition

Increased competition for students might come from more microschools, charter schools, innovative programs at neighboring districts, private schools, or alternative learning paths. Under the best of circumstances, the District could retain its share of the school-aged population, but Getting Smart estimates that it could lose up to 30% of its current share based on its review of the performance of other districts. The scenario assumes that the District maintains its share of student by adopting innovative education models. Under this scenario, enrollment and funding are as expected and education model and facility policies are flexible.

Education Model

A **competency-based approach** is central to a highly innovative education system. In this approach, students make progress based on content mastery rather than age cohort. A competency-based approach enables **personalized learning** to provide flexibility and support to ensure mastery of the highest standards possible. With a clear and calibrated understanding of proficiency, learning can be tailored to each student's strengths, needs, and interests and can enable students to choose what, how, when, and where they learn.

Competency-based learning allows students to graduate early or transition into work-based or early college settings. The transition to other settings will increase the demand for District-provided **online learning, career and technical education, internships, and dual-enrollment programs**. The school may choose to form partnerships to offer these types of specialized programs, or it may do so through specialized District Schools and programs.

Specialized District schools or programs may take the form of charter schools, innovation schools, fully online schools, microschools, or specialized programs within a neighborhood school.

This model also includes several models discussed under other scenarios in this chapter: **personalized learning, blended learning,** and **early learning**.

This Scenario impacts facility demand for both elementary and high schools. The Study assumes that the District needs to house pre-K students in elementary schools. Elementary schools maintain a target capacity of 750, but they must be larger to accommodate the additional space required for pre-K students. The consultant team estimates that each elementary school must add 6,000 square feet to accommodate a pre-K program. The Study assumes that the addition of off-campus programs for high school students decreases BSD *high school facility demand* by 5–10%. It does, however, assume higher costs for more specialized facilities.

Facility Model

This Scenario assumes the District changes its facility model from that of today. Exhibit 5-7 summarizes key characteristics of those facilities.

Exhibit 5-7. Scenario 3 Facility Characteristics

	Elementary	Middle	High
Target Capacity Size	750	1,100	2,200
Site, Acres	8.5	17.5	37.5
Building, Square Feet	89,600	167,000	320,000
Site Cost Per Acre	$208,800	$208,800	$208,800
Total Land Cost	$1,774,800	$3654,000	$7,830,000
Building Per Square Feet Cost	$471	$386	$596
Total Cost	$42,199,300	$64,430,600	$190,822,100

Source: ECONorthwest with data from BSD

Like Scenario 2, this Scenario requires larger elementary school facilities to accommodate pre-K. Unlike other scenarios, this one assumes that the District provides a greater diversity of school facilities to accommodate more diverse programs. It is impossible to know precisely what these new facilities will look like, but the education model appendix provides some compelling examples of unique K-12 facilities that exist today. This Study deals with this uncertainty by adding a blanket increase of 5% to the building cost of replacement and new facilities. Exhibit 5-8 shows the results.

The Overview of Scenario Evaluation Methods describes the steps used to determine the number of facilities the District would need to build and the cost of those facilities. Exhibit 5-8 describes key assumptions used in each step of facility model development for this Scenario and the results of those steps. It moves sequentially through the steps to show the work. That means Step 4 reverses some of the school replacements assumed in Step 2, as the District does not in fact need the capacity.

Under Scenario 3, the District would need to **replace 33 schools and build 4 new schools. The total cost of this model would be $2.4 billion dollars.** There is a small gap between the model cost and forecast bond revenues available for new construction ($2.3 billion), which means the District could likely afford to build this model. This does assume that the District can effectively reduce demand for space among high school students by 5%. If it does not, then it will need to accommodate several hundred additional students. It could do so by increasing school capacity in replacement schools or new option school programs.

Discussion of the Results

There are several benefits associated with this model. The first is that it accommodates some pre-K, which research demonstrates improves education outcome. The second is that it provides students more diverse learning options (e.g., CTE, high-tech). The third is that it replaces more facilities, which improves access to these opportunities.

There are several challenges with this model. The first is that it is barely affordable, given projected bond revenues. The District would need to either make a case to increase the tax rate or be more selective about which schools receive capital funds to support innovation.

Exhibit 5-8. Scenario 3 Facility Model Steps and Results

Key Assumptions for Each Step	Elementary	K-8	Middle	High	Option	Total
Step 1: Evaluate Need						
Evaluate existing school capacity (permanent and portable seats)	19,833	2,630	9,536	12,972	2,497	47,468
Calculate 2065 enrollment under normal growth scenario	23,455	4,814	9,836	13,933	3,607	55,645
Capacity Deficit	(3,622)	(2,184)	(300)	(961)	(1,110)	(8,177)
Step 2: Replace Schools						
Replace ES, MS, and HS at target capacity; replace option schools at necessary capacity						
Replace if built before 1986	21	1	6	3	4	35
Total Replaced Schools	**21**	1	6	3	4	35
Step 3: Shift Students						
Do not allow students to cross Hwys 26 or 217, unless already doing so						
Do not allow students to travel past an at-capacity school to attend one further away						
Step 4: Add/Remove Capacity						
Eliminate school replacement from Step 2, if built before 1966 and 1986, and the District does not need the extra capacity	(1)	0	0	0	0	(1)
Eliminate school if District does not need the capacity in that area	(1)	0	0	0	0	(1)
Add new schools for ES, MS, and HS at target capacity	4	0	1	1	0	4
Total replaced plus new schools	**23**	**1**	**6**	**3**	**4**	**37**
Add 6,000 SF capacity at existing (not-replaced) ES to accommodate additional pre-K space						
Number of schools with added pre-K capacity	11					
Total added SF of pre-K space	**66,000 SF**					
Step 5: Evaluate Costs						
Land acquisition cost for new schools	$36,450,000	$0	$16,875,000	$37,125,000	$0	$36,450,000
Building cost for replacement and new schools	996,590,000	43,330,000	386,640,000	572,466,000	311,865,000	2,310,891,000
Total Cost	**$1,064,124,000**	**$43,330,000**	**$386,640,000**	**$572,466,000**	**$311,865,000**	**$2,378,425,000**

Source: ECONorthwest with data from BSD

A second challenge is that this model does not provide equal access to pre-K. It assumes that pre-K is optional, and only 50% of children in the District attend District pre-K. If the pre-K program is successful, more parents may wish to enroll their children. In that case, the District would need to either turn those parents away, divert capital funds from other projects, or implement management strategies that increase facility efficiency (discussed in Chapter 5 implications).

This model shares two additional challenges with Scenario 2. First, this model assumes the District can make cost-effective additions to elementary schools that it does not replace. That is a blanket assumption that may not be true given a school's site size, existing building configuration, or other amenities.

Second, it increases per-student operating costs. The addition of pre-K slightly decreases the required student-to-teacher ratio for elementary schools. Facility additions to existing elementary schools that require pre-K students to travel between buildings compound the staff impact. The District would almost certainly need to increase its operating levy.

Playground at Rock Creek Elementary.

Scenario 4: Constrained Funding

Although the District has historically been successful in securing funding for school bonds to build facilities, the continuation of that funding is not guaranteed. This scenario explores how the District might operate in a constrained funding environment.

The scenario assumes that the District only receives sufficient funds for deferred maintenance, a reality for some districts in the U.S. It allows education models and facility policies to flex accordingly. The lack of any new money for building new facilities is admittedly an extreme scenario, but it is useful as a bookend for considering what happens if funding gets tight.

Education Model

The District can adopt a combination of the following education models or management practices to reduce the cost of education:

- Intentionally increasing **off-site partnership for dual-enrollment and CTE**
- Renting space for **low-amenity option schools**
- **Renting District facilities** to other partners for complementary activities
- Implementing **high-utilization practices**, such as flexible scheduling and year-round schooling

Facility Model

This Scenario assumes economic conditions in the District change and the District will be unable to pass a capital bond for new facilities. Therefore, the District will be unable to invest in permanent facilities and will only spend on portables, as it tries to accommodate growth in school-aged children. Yes, this is an aggressive and unlikely case, but it reflects a real situation for many districts across the U.S. And it is prudent for the District to explore how such a drastic turn of events could impact its ability to serve students.

Exhibit 5-9 summarizes key characteristics of portable facilities. It shows maximum portable capacity based on a typical school. Many older schools may be on smaller sites, which would reduce their portable capacity. This Study does not do a site-by-site evaluation to address capacity variations.

Exhibit 5-9. Scenario 4 Facility Characteristics

	Elementary Portable Classroom	Middle Portable Classroom	High Portable Classroom
Max Portable Classrooms Per School	6	14	16
Capacity Per Portable Classroom	19	21	23
Capacity Per School, Portables Only	114	294	368
Cost Per Portable Classroom	$125,000	$125,000	$125,000

Source: ECONorthwest with data from BSD

Exhibit 5-10. Scenario 4 Facility Model Steps and Results

Key Assumptions for Each Step	Elementary	K-8	Middle	High	Option	Total
Step 1: Evaluate Need						
Evaluate existing school capacity (permanent and portable seats)	19,833	2,630	9,536	12,972	2,497	47,468
Calculate 2065 enrollment under normal growth scenario	21,437	4,521	9,836	13,933	3,607	53,333
Capacity Deficit	(1,604)	(1,891)	(300)	(961)	(1,110)	(5,865)
Step 2: Replace Schools						
Do not replace schools						
Step 3: Shift Students						
Allow students to travel as far as necessary to reach a school with capacity						
Step 4: Add/Remove Capacity						
Add portables to maximize capacity, as specified in the 2010 BSD Facility Plan	80	14	66	76	11	247
Replace added portables at the 20 year mark	80	14	66	76	11	247
Total new plus replaced portables	**160**	**28**	**132**	**152**	**22**	**494**
Step 5: Evaluate Costs						
Total Cost	**$20,000,000**	**$3,500,000**	**$16,500,000**	**$19,000,000**	**$2,750,000**	**$61,750,000**

Source: ECONorthwest with data from BSD

The Overview of Scenario Evaluation Methods describes the steps used to determine the number of facilities the District would need to build and the cost of those facilities. Exhibit 5-10 describes key assumptions used in each step of facility model development for this Scenario and the results of those steps.

Unlike the other models, this model is for *portables* (as opposed to permanent facilities). The model shows that the District could build up to 247 new portables, which would max out its portable capacity for existing facilities. Since the lifespan of a portable is only 20–25 years, the model shows that the District also needs to replace those portables during the scenario time period.

The total cost of the model is $61.7 million dollars. With no capital bond, the District must fund the purchase of portables with operating revenues. Operating revenues total about $500 million per year, so the portable cost comprises a relatively small portion of operating revenues. What this math does not take into consideration is the added maintenance expenses associated with older facilities. The spike in repair and maintenance would further eat away at the operating budget.

Discussion of the Results

The only benefit of this model is its cost. But that low capital cost comes with some major challenges for the District.

The first challenge is that this model does not accommodate all students. Almost 600 students do not have a seat. The District would need to increase its portable allowance, increase class sizes, shift more students into off-campus learning options, or adopt capacity-reducing management strategies to accommodate all students.

Those who do have seats face additional challenges:

- Students in the western half of the District need to travel east past one or more at-capacity schools to attend a school.
- The District must accommodate almost 1,500 elementary school-aged children (enough to fill two elementary schools) in middle school facilities.
- The District must accommodate almost 400 middle-school children in high-school facilities.
- The District must move almost 900-option school children to other facilities.
- This model also has negative implication on operating costs:
- The presence of thirty-six schools over 100 years old increases maintenance costs.
- The addition of portables increases utility costs and labor costs (students traveling between buildings require more supervision).
- The District must pay more in transportation costs to bus children across the District.

5.4 Summary Comparisons of Opportunities and Challenges

Exhibit 5-11 summarizes some of the results in Exhibits 5-7 to 5-10 to allow a side-by-side comparison of the four scenarios.

Exhibit 5-11. Scenario Summary

Key Assumptions for Each Step	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Capacity Deficit in Terms of Seats				
ES	(1,604)	(6,734)	(3,622)	(1,604)
K-8	(1,891)	(3,478)	(2,184)	(1,891)
MS	(300)	(949)	(300)	(300)
HS	(961)	(2,395)	(961)	(961)
Option	(1,110)	(1,387)	(1,110)	(1,110)
Total Capacity Deficit	**(5,865)**	**(14,943)**	**(8,177)**	**(5,865)**
Capacity Added to Eliminate Deficits				
Replaced Schools Plus New Schools				
ES	17	29	23	0
K-8	1	1	1	0
MS	4	5	6	0
HS	3	3	3	0
Option	3	3	4	0
Total Replaced Plus New Schools	**28**	**41**	**37**	**0**
Added Pre-K Capacity				
Number Of Schools with Added Pre-K Capacity	0	12	11	0
Total Added Square Feet of Pre-K Space	**0**	**72,000**	**66,000**	**0**
New Portables Plus Replacement After 20 Years				
ES	0	0	0	160
K-8	0	0	0	28
MS	0	0	0	132
HS	0	0	0	152
Option	0	0	0	22
Total Replaced Plus New Portables	**0**	**0**	**0**	**494**
Total Cost	**$1,818,875,000**	**$2,567,342,000**	**$2,378,425,000**	**$61,750,000**

Scenario 4 is the outlier: it assumes restricted funding and the inability to develop any new facilities. It is an unlikely scenario. In contrast, Scenarios 1 through 3 are similar, in that they all have revenues for new construction (some more than others), and they all have been designed so that new facility costs are not significantly higher than projected revenues. A comparison of Scenarios 1 through 3 probably yields more relevant insights for near-term planning.

Scenarios 1 through 3 have relatively similar K-8, middle school, high school, and option school needs. They diverge notably in the number of elementary schools required because of (1) increased growth (Scenario 2), and (2) the addition of pre-K (Scenarios 2 and 3). The District could accommodate both changes, but doing so would require some changes to current policies and standards. These issues and their implications are discussed more below, and in Chapter 6.

Some of the opportunities and challenges suggested by the scenarios seem obvious; others were not. This Study convened a Futures Work Group and district staff to help think about the impacts of the scenarios. The results reported here reflect their thinking.

The results of the scenario evaluations show that the District is, all things considered, set up relatively well for the future. **If funding levels stay comparable to those of the last 10–20 years, the District can probably continue to deliver K-12 education services to students in typical suburban facilities, *assuming* it can shift boundaries to maximize the use of existing facilities.**

Westview High School

That last assumption about school boundaries is critical. Chapter 3 illustrates that the majority of the District's growth in school-aged children is at its periphery. Though it only loses population in some areas and only for some time periods, it already has excess facility capacity in some central areas because of changes that have already occurred. If it chooses not to use that capacity because school boundaries would have to change to fill it (and because changing and expanding boundaries for schools in areas with low student density will mean greater travel distances for some students), then

it will have to build more new facilities in other places. Given the amount and location of expected growth for school-aged children, the only way to fully use existing capacity is to change school boundaries.

Those changes are difficult for any school district. Our opinion is that those changes are easier for residents to accept when there is a lot of preparation and a long lead time. That point is true for all public facilities. A typical mistake made by municipalities and service districts is to avoid talking about the hard change because the problem is not bad enough yet, and then to deal with it precipitously when the situation is deemed a crisis. That path gives households no time to adjust and fails to take advantage of the fact that people's situations change and they move. When new people consider moving in, they do so with the knowledge that change is planned, and they can make their decisions accordingly.

The District should start planning now. Most of the projected new students will come in the next 20 years, which means the District would need to start planning attendance boundary changes, land acquisitions, and new school developments in its next facility planning process. **Maintaining a business-as-usual approach to school development would require substantial investments in planning and land acquisition over the short term.**

A continuation of the status quo may not, however, be enough for the District to thrive. A review of education trends (Chapter 4 and Appendix B) suggests that districts across the U.S. are adopting new education models, such as universal pre-K and personalized learning. For BSD to remain competitive, it may need to provide pre-K and specialized programs—both the services and facilities—across the District.[13] Although Scenarios 1 and 2 suggest that the District could almost undertake these initiatives with current resources, that arithmetic does not take into consideration some very real costs:

- **Universal pre-K would require substantial changes to the District's current portfolio of facilities, and soon.** Under a high-growth scenario, it would require making space for 4,600 pre-K students by 2055—the equivalent of six new elementary schools. Building six new schools would be difficult. A more realistic approach to accommodating this growth would be to increase class sizes, partner with other institutions, or phase in pre-K with the construction of new facilities.
- **Specialized programs could take a variety of forms, many of which require more resources.** School within a school, CTE, independent study, and other nontraditional programs require more one-on-one and small-group attention from teachers, more administrative oversight, and more space for students.
- **Making investments in universal pre-K and personalized or other specialized education would require investments above and beyond the projected resources of the District.** If the District thinks it may want to explore these opportunities, it should start having conversations with the teaching and learning staff and the community at large now. Those conversations should discuss questions like: What programs do we want to offer

[13]This report has talked about changes to the educational model in terms of competitiveness. Fundamentally, however, providing better education by improving educational models may *just be the right thing to do.*

our students? What would those programs require in terms of facility and operating expenditures? How much are we willing to pay? What trade-offs might we want to make?

If the District does not get the level of growth projected by the State, County, and other experts, it will need to have a very different conversation with staff and the community. **Lower growth is a real possibility.** For example, national trade barriers or an unfriendly business climate could curb the expansion of Nike, Intel, or other major employers that bring jobs and residents. Worse, those employers could contract or leave, reducing the tax base and, thus, the operating revenues for the District. That effect may, in turn, reduce residents' willingness to pay for new school facilities. Prudent planning includes some consideration of priorities for future services and investments to ease a transition to a more restricted budget, if economic conditions warrant it.

Chapter 6 discusses the implications of these scenarios on District planning activities and policy choices in greater detail.

The Futures Workgroup Weighs In

Members of the Futures Workgroup met to discuss the scenarios and the opportunities and challenges they implied for the District. The opportunities and challenges broadly fell into five themes, which became the structure for Implications.

- Land Use Regulation and Growth
- Education and Technological Innovation
- Funding
- Property and Facilities
- Engagement and Partnerships

6. Implications for District Policy

6.0 Implications for District Policy

This chapter discusses the implications of the scenario evaluation on District actions. It groups those implications into two broad categories: (1) Planning and Policy (with sub categories for Land Use Regulation and Growth, Education Models and Technological Innovation, Funding, Property and Facilities, Engagement and Partnerships) and (2) Facility Management. The first category is more general and sometimes about longer-run and more speculative policy choices. The second category goes deeper into suggestions about facility management that can be implemented now and over the next five years.

In 50 years, the type and location of schools in Beaverton School District will not look just like any single scenario explored in this study. No person or method can predict with confidence that far out. Changes in the local economy, land use regulation, development patterns, technology, State and District policies, and many other factors will change and interact in unpredictable ways.

So why put so much effort into developing detailed pictures of what the District *could* look like? Because the process of thinking about and discussing possible futures leads to better decisions *now*. The District can design and implement resilient policies that will work under a range of potential future conditions and prepare to quickly pivot when something unexpected happens.

In a work session to explore the implications of the scenario work, the consultant team and Futures Workgroup identified over 40 opportunities and challenges facing the District. They categorized these opportunities and challenges under the following themes:

- Land Use Regulation and Growth
- Education Models and Technological Innovation
- Funding
- Property and Facilities
- Engagement and Partnerships

This chapter discusses the *implications of those opportunities and challenges for District actions*. The consulting team found it difficult to talk about policy *implications* without getting into policy *suggestions*. Thus, many of the implications start with the phrase, "The District should…" (rather than the fuzzier, "The District might want to consider…") The District staff and Board should interpret the implications in that context: they are the consultants' ideas about what they see as implications for policy—it is clearly the responsibility of the District staff and Board to decide on which, if any, of the suggestions it may make sense to pursue. In other words, this chapter provides *options* for the District to consider in light of the scenarios, *not recommendations* of a specific package of policies for adoption.

This chapter discusses implications under two main headings. Section 6.1 addresses the high-level planning and policy implications that emerged from the opportunities and challenges in each of the five themes. Section 6.2 dives deeper in the focus of this Study (facilities) to provide suggestions about facility management actions the District could take now and over the next few years.

6.1 Planning and Policy Implications

Land Use Regulation and Growth

The location of students in the future is uncertain, so the District should continue to keep a close eye on growth and development.
The two growth forecasts show different amounts and locations of household growth, which results in different numbers of school-aged children, which means different needs (demand) for facilities. The best ways to deal with that uncertainty about future development are to:

1. Monitor actual and forecasted growth so it does not arrive as a surprise. The District should work with local agencies, such as Metro, the City of Beaverton, and Washington County, to monitor short- and long-term trends that may impact future growth and development. Doing so will enable the District to evaluate the resilience of its facility plans.
2. Try to influence local policies about accommodating growth.

The District should partner with local governments to ensure land use planning and regulation adequately provide for new school facilities.
Projected growth in the District will increase demand for school facilities, and the physical design of those facilities is likely to change. The development of existing Urban Reserves will create new pockets of demand for school facilities. These pockets are in areas not currently serviced fully by infrastructure and public facilities. Serving them will require the development of new school facilities (likely elementary (K-5) or K-8), unless the District opts to redefine "neighborhood schools."

More infill and denser development is likely in the District, which will push the District to continue its transition from a suburban to an urban school district. What does that look like? Broadly, it means multi story schools with less parking and smaller footprints. It may also mean building community partnerships with organizations and businesses that can provide off-site facilities for student activities.

The District and the community at large will best be served if the District and local governments work together now to adequately plan for these changes in development. In its facilities plans, the District can say that local governments *should* set aside land in Urban Reserves for schools or enact laws to allow development fees to support schools.[14] But it cannot enact these changes without local government action.

Therefore, the District should proactively work with local government to align on land set-aside requirements for new developments, identify land acquisition opportunities for the District, and revisit zoning code development standards for public schools (e.g., reduce parking requirements). The Metro Code Urban Growth Management Functional Plan requires that Comprehensive Plan provisions for new urban areas include a "provision for the amount of land and improvements needed, if any, for public school facilities sufficient to serve the area added to the UGB in coordination with affected school districts."[15]

[14]Oregon allows local governments and special districts to charge system development charges (impact fees) for water, wastewater, stormwater, transportation, and recreation facilities, but not for schools, police, or fire facilities. Previous efforts to expand the law to include these other facilities have failed. About 30 states use impact fees; about 10 allow them for school facilities.

[15][1] Section 3.07.1120 Planning for Areas Added to the UGB. (c) 5, page 60

Education Models and Technological Innovation

The District needs more information about short- and mid-term teaching and learning needs and goals before it starts its 2020 Facility Plan update.

Schools function best when designed for specific teaching and learning outcomes. Community goals and needs are changing, and District staff would like to know more about them in advance of the long-range Facility Plan update. The Futures Workgroup recommended that the District reach out to its teaching and learning staff and the community at large to discuss current and future graduate profiles, education models, and other service and facility needs. The conversation should start with goals—who are the students of the future and what will they need to learn to be successful? It can then move on to needs—what does the District need to do to enable student success?

To stay competitive, the District should stay on the cutting edge of education model trends and provide a range of education options for its students and teachers.

The District is currently positioned as a leader in quality education in the State/region. To maintain that commitment to excellence, the District will need to be aware of the expanding universe of education models and stay committed to ongoing research and awareness while providing a variety of choices for families and students that start early and include a combination of, and connection to, community services.

The District should actively manage education model change.

All education model trends point to substantial change in what, how, and where students learn—and these changes will impact what and how District teachers teach. Change can be difficult for every organization and individual. The District will need to actively manage this change *with* staff to build awareness, desire, knowledge, ability, and reinforcement.[16]

Funding

The District has the advantage of a history of local support for capital bond issuances.

The District has historically been successful in securing funding for school bonds to expand, acquire and repurpose, and build new facilities. If economic conditions do not deteriorate, *if* the District can continue to bond at the same capacity, *and* purchase land at a reasonable rate for new schools, *and* education model trends do not increase per capita facility needs, the District can likely continue to build facilities similar to those of today. That is a long list of necessary conditions, and it leaves little room for error. Barring a radical reduction in how the District delivers facilities, the District will need to continue to issue bonds at regular intervals.

To remain competitive, the District should increase its capital and operating funds.

There are several dominant trends in education models that will likely require a higher investment per student: universal pre-K, personalized learning, and more CTE programming. All three trends

[16]The ADKAR Model, https://www.prosci.com/adkar/adkar-model

will likely increase the facility space per student and decrease the student to teacher ratio. The latter two will also require more investments in technology and other specialized equipment. The District could attempt to contain costs by partnering with other organizations to provides facilities and instruction, but the development and maintenance of these relationships would still require a substantial operating investment by the District.

To remain competitive, the District will probably need to increase its capital and operating revenues. In the short- to medium-term, the District could go to voters to seek an increase in the regular capital bond issuance and operating levy beyond current rates. To be successful, the District will need to make a strong case to the community, which points to the need for more community engagement. In the long-term the District could work with state legislatures to develop a more stable funding mechanism for Oregon Schools.

Property and Facilities

Boundary adjustments will be ongoing and inevitable: be clear about that fact and the process the District will use to address it.

Regardless of which education and facility model changes occur in the future, the District will need to adjust school boundaries as the District population grows and changes. Talking with the community about moving children from one school attainment area to another is difficult and could be long, complex, and labor-intensive. The District, its students, and their parents will be better able to address these changes if all parties are clear about their necessity, and about the schedule and process by which that necessity will be addressed. Information in this Study can help the District signal where change is likely to occur many years in advance of the need for such change.

A strategic approach to property acquisition would improve the 10-year facility planning process.

The District will need to build new facilities as more people move into the District, both increasing densities through infill development and expanding service demand through urban reserve development. With the exception of the Urban Reserves, there are few large tracts of vacant land available for development in the District. The District will need to be strategic about how it acquires land for new facilities. Two strategies to consider are: (1) opportunistically acquire land in projected growth areas as parcels become available, and (2) work with local governments to ensure school facilities are part of land-use planning for urban reserve development.

The elimination of portables would require new models or additional investment.

All scenarios allowed the continued use of existing portables at schools that did not get replaced. If the District intends to phase out portables, it will need to adopt education or facility models that reduce per student facility demand or build new capacity.

All education model trends point to the need for facilities with flexible use spaces.

The schools that the District builds today may serve students 100 years from now. This study reinforced the certainty that education models will change substantially in the future—technology will become a bigger part of the learning experience, students will need more group and independent learning spaces, districts may

offer more option schools or specialized facilities, and community partnerships may diversify the types of uses in a school facility. All of these changes imply a need for flexible facilities that can accommodate different education models, and perhaps even different users (e.g., nonprofits, business incubators).

Engagement and Partnerships

The District may explore strategic partnerships to provide both education services and facility space.

Community partnerships can improve the quality of education for all students. Education model research suggests that students, particularly older ones, will continue to seek out diverse learning opportunities outside of the traditional classroom. The District could partner with employers and nonprofits to provide programming and facilities for mentorship, internships, workshops, or other educational experiences to enrich the learning experience.

The District will need to consider both the location and design of partner facilities early in the partnership exploration process. Facilities must be accessible to District students. The design of the facilities must ensure students have access and security. The availability of meeting and individual workspace would also be a plus. These factors have been a challenge for the District in its exploration of partnerships in the past.

Effective staff and community engagement and strategic partnerships are key to success.

The District cannot optimize its facilities without effective engagement and partnership. The District can:

- Engage with local governments to keep on top of growth and development trends and ensure that, when new developments happen, local governments engage the District in the acquisition of appropriate sites.
- Engage in ongoing dialogues with the community, including students, about what students need and want from their education, how facilities can improve the educational experience, and what investments the community will support to improve on education services and facilities.
- Work with teachers and other District staff to create a culture of innovation, which not only tolerates change but *welcomes* it.
- Partner with other organizations to provide educational opportunities outside of the classroom.

There are a lot of opportunities for the District to get engaged both internally (there is always opportunity in any organization for more collaboration across departments) and externally. The most important takeaway is that it start that engagement soon and keep doing it often.

6.2 Property and Facility Capacity Management Implications

Section 6.1 describes possible implications for policy at a high level, organized in broad themes. It covered everything except the details of facility management, and some of what it covered would not be something on which the Facility Department would be lead (e.g., educational models). But the Facility Department is clearly responsible for facility management, which is an area with the most immediate and potentially large effects on the need for future facilities. This section (6.2) dives deeper in the focus of this Study (facilities) to provide suggestions about facility management actions the District could take now and over the next few years.

Section 6.2 starts by providing a list of Potential Strategies (and more-specific actions), organized into four categories:

- Facilities
- Delivery and Programs
- Partnerships
- Enrollment and Demographics

That categorization is suggestive, not rigid. Strategies and actions may fall under more than one category. Some of the strategies overlap with the broader ones described in Section 6.2. Multiple strategies can be implemented in many combinations.

The next subsection, *Application Areas*, attempts to provide some concrete and understandable policy directions despite all the complexity. It does so by grouping facility-management strategies into four levels of application:

- Building-level applications
- Site-level applications
- District-level applications
- Early learning applications

The District may consider some of the strategies described in this section as sub-optimal, or even undesirable. They are not recommendations: they are ideas that can help answer questions as the District later addresses issues related to facility capacity and location. They may not align with the District's educational goals or with current District standards (such as minimum site size requirements and classroom and facility target sizes). They are, however, potential responses to the changes in enrollment, educational models, technology, and facilities that this Study addresses.

This Study evaluated strategies and actions as district-wide approaches. They may not, however, apply to all schools or conditions, and may not address growth in the specific areas of need. Some strategies (e.g., increasing target class sizes or increasing the number of portables) will add capacity throughout the District, including in areas where high growth is not projected. This may result in busing or boundary adjustments to distribute capacity.

Potential Strategies

Facilities

- Replace or add to buildings (to capacity targets)
- Locate multiple facilities on a single site (may require changing site parameters)
- Maximize efficiency of existing sites

- Acquire property for other things (i.e. fields)
- Lease space (commercial type)
- Use of facilities in adjacent districts (if under-enrolled)
- Adjust boundaries (school, District)

Delivery and Programs

- Change grade level on sites to address grade level specific issues (ES to MS)
- Change grade configurations
- Increase target capacity of schools
- Increase class size
- Use of delivery models that also manage enrollment (blended, career/college, dual enrollment, etc.)
- Split shift schedule with or without year-round school model

Partnerships

- Postsecondary high school and middle school (such as career and technical education, advanced placement, other)
- Parks department (fields, other)
- Transportation (high school parking)

Enrollment / Demographics

- Work with jurisdictions to modify zoning (although decreasing residential density does not align with current jurisdictional policies and goals, this strategy may be viable over the long-term span of this study)

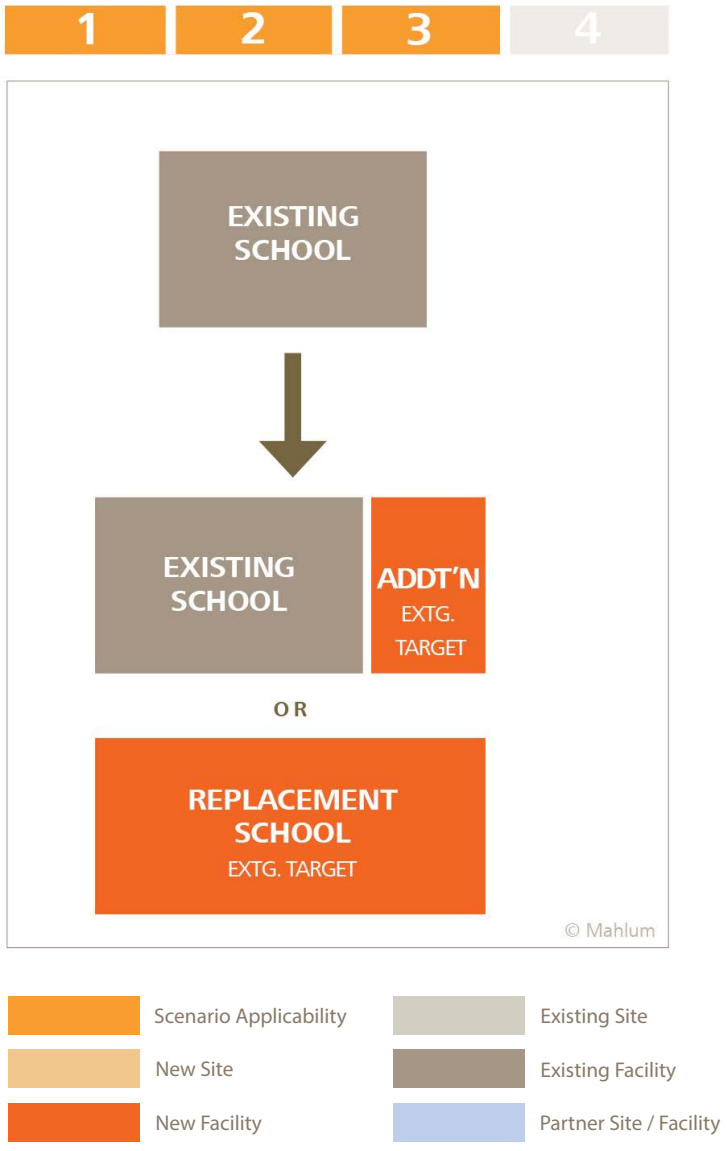
Application Areas

Some of the following strategy applications are already embedded in the definition and evaluation of the four scenarios in Chapter 5. Others are new alternative options aimed at modifying the outcomes of the scenarios.

Key for Diagrams on Following Pages

Please note that these diagrams are *illustrative only* and do not indicate proposed changes.

Building-Level Applications

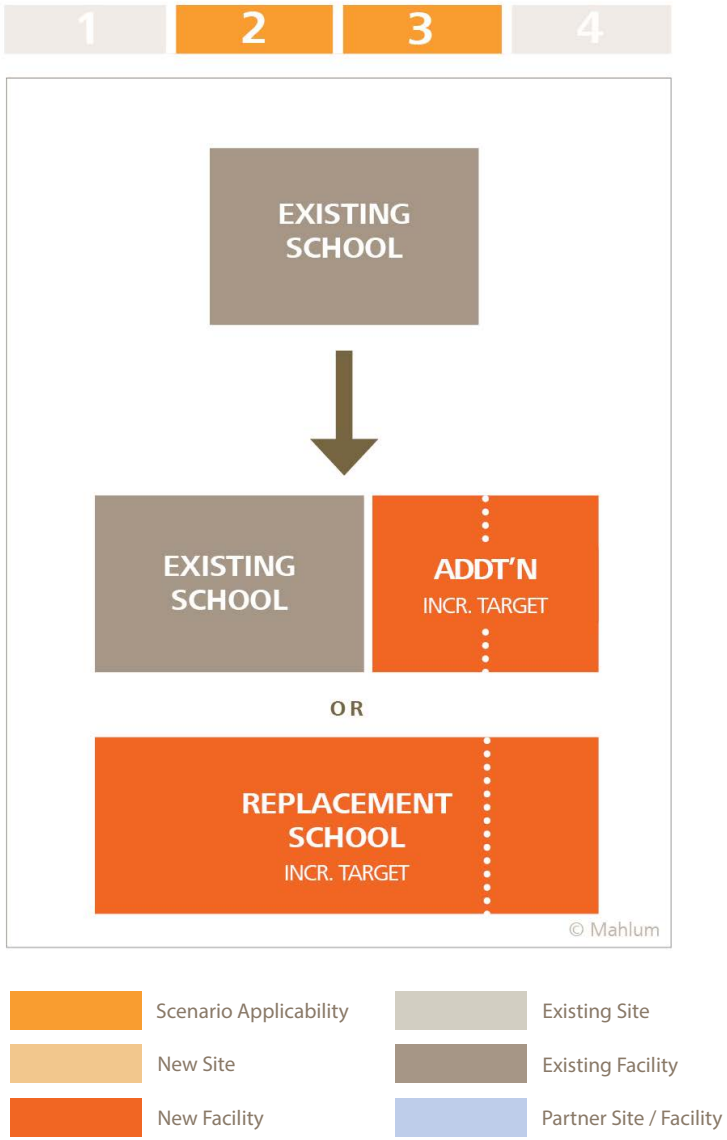


Replace or Add to Existing Schools to Achieve District Target Capacity

The District could add capacity to existing schools that are under target capacity by building either (1) a replacement facility (when warranted due to building age or condition) or (2) a building addition. Current targets are 750 seats at the elementary level, 1,100 seats at the middle school level, and 2,200 seats at the high school level.

Potential Opportunities

Twenty-six of the District's 34 existing elementary schools are under the target capacity of 750, including portable capacity. Increasing (to 750 seats) the capacity of all existing elementary schools that are more than 50 seats below target capacity (17 schools) would increase approximately 3,800 seats districtwide. This would provide a total elementary capacity of approximately 25,300 seats and meet the projected enrollment need in the expected growth forecast (Scenarios 1 and 4). Not all existing schools that are under target capacity may be good candidates for replacement. Some may have been recently constructed and still be in good condition; others are not located in high-growth areas. Twelve elementary schools are both under target capacity and over 50 years old.

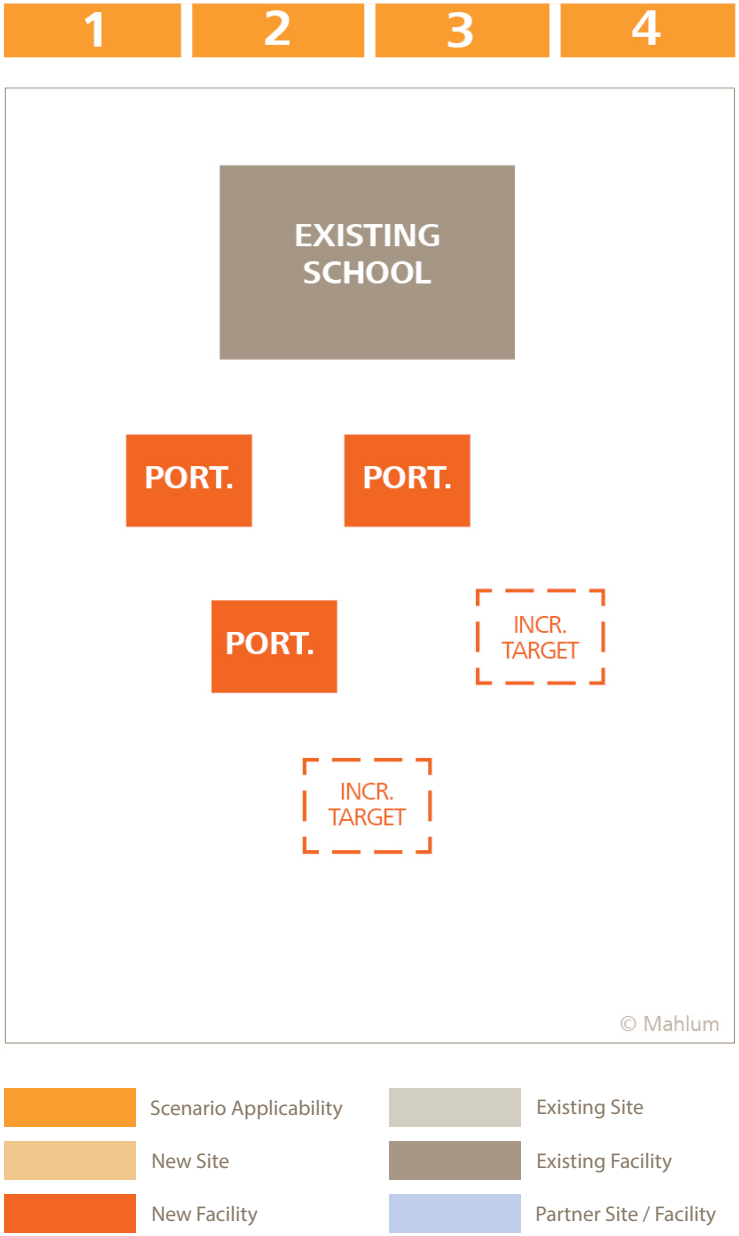


Replace or Add to Existing Schools to Achieve *Increased* Target Capacity

The District could *increase its target capacities* and then add capacity to existing schools that are under target capacity by building either (1) a replacement facility (when warranted due to building age or condition) or (2) a building addition. This will result in larger and more expensive new school facilities (more classrooms = more square footage = higher cost).

Potential Opportunities

Increasing all existing elementary facilities in the District to a facility capacity target of 800 seats would provide approximately 1,700 additional seats districtwide (above and beyond the 3,800 added from increasing facilities to 750). This would provide a total elementary capacity of 27,000 seats, which is very close to the projected enrollment need in Scenario 3. Not all existing schools under target capacity may be good candidates for replacement.



Add Portables to Existing Schools

Add capacity to existing schools that are under target capacity by adding portable (modular) classroom buildings. That could mean adding portable classrooms to reach the existing District maximum per site (six for elementary sites, 14 for middle school sites, and 16 for high school) or changing allowable maximums and adding even more.

Not all school sites have open areas to accommodate portables on site; additions may require using parking or field areas. Existing infrastructure and support facilities (cafeterias, gymnasiums, and restrooms) may not be able to accommodate all of the increased student enrollment from added portables. Adding capacity via portables may locate seats in areas of the District that are not high-growth. This could ultimately require busing to evenly distribute enrollment demand across the entire district. Further analysis on a school-by-school basis would be required.

Portables are typically purchased and installed with operational funds and would not impact the District's capital funding. Thus, the use of modular classrooms may add to any difficulties with operational budgets.

Potential Opportunities

Adding the maximum number of portable classrooms allowed by the District, while maintaining facility capacity targets and including any existing portables, results in an increased capacity of approximately 1,200 seats at the elementary level. A similar strategy at the middle and high school levels results in increased capacities of approximately 600 seats and 400 seats, respectively.

Going to currently allowed limits at all schools (even to those where the addition will cause the school to exceed its target capacity) provides a total of approximately 2,200 seats at the elementary level. A similar strategy at the middle and high school levels results in increased capacities of approximately 1,700 seats at each level. An even greater capacity increase could be realized with the use of portables with adjustments to District standards. This could be achieved by increasing the allowable number of portables per school or the target capacity of portable classrooms.

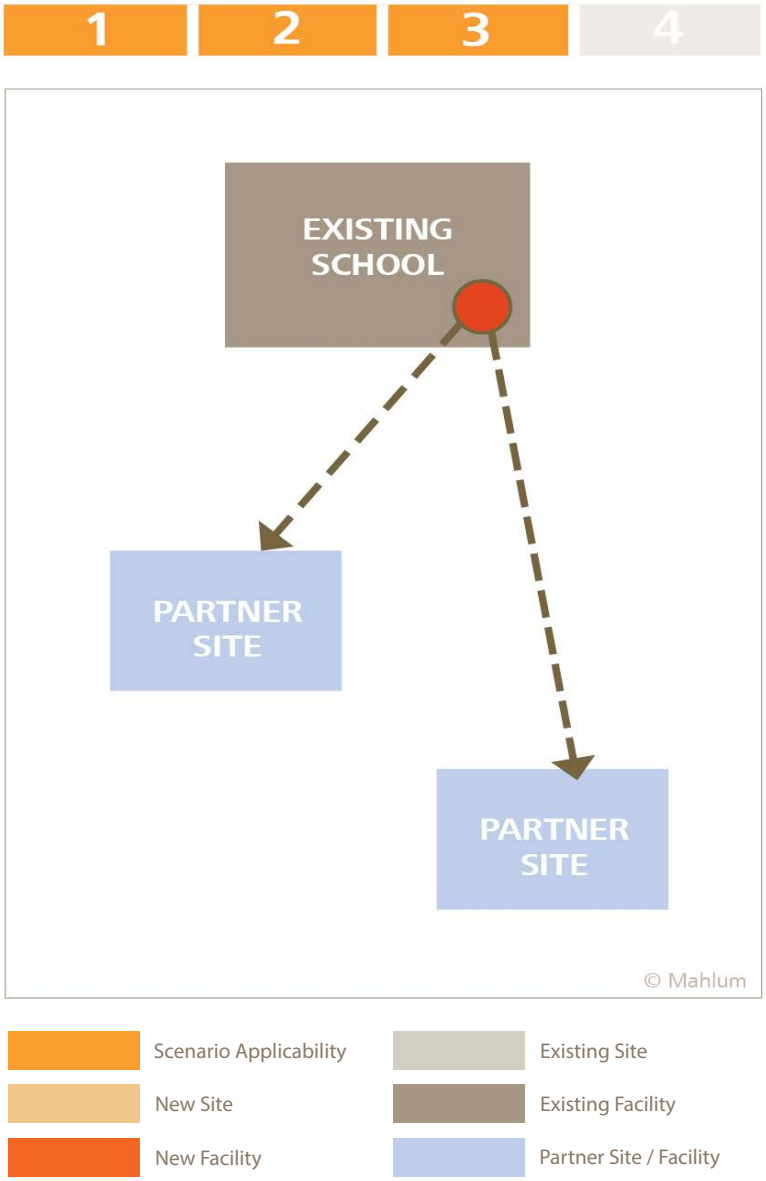
Modular classroom buildings are an affordable and flexible method for increasing the number of seats at a given school site. The use of modular buildings must be balanced, however, with site considerations and issues of educational quality, safety, and equity between schools. There is a growing body of research indicating a positive relationship between the quality of a school facility and student achievement.

Change Building Configuration to Reduce Footprint

Many of the District's older school facilities are one-story buildings, particularly at the elementary level. Changing a facility from one story to two or three stories reduces the size of the building footprint and has the potential to increase site utilization.

Potential Opportunities

Changing from a one-level configuration to a two-level configuration typically provides a 27–32 percent reduction in the building footprint. Changing from a two-level configuration to a three-level configuration provides a smaller footprint reduction. The impact of changing building configuration is dependent on the specific characteristics of each site. Further analysis on a site-by-site basis would be required to determine if this strategy would improve site utilization.

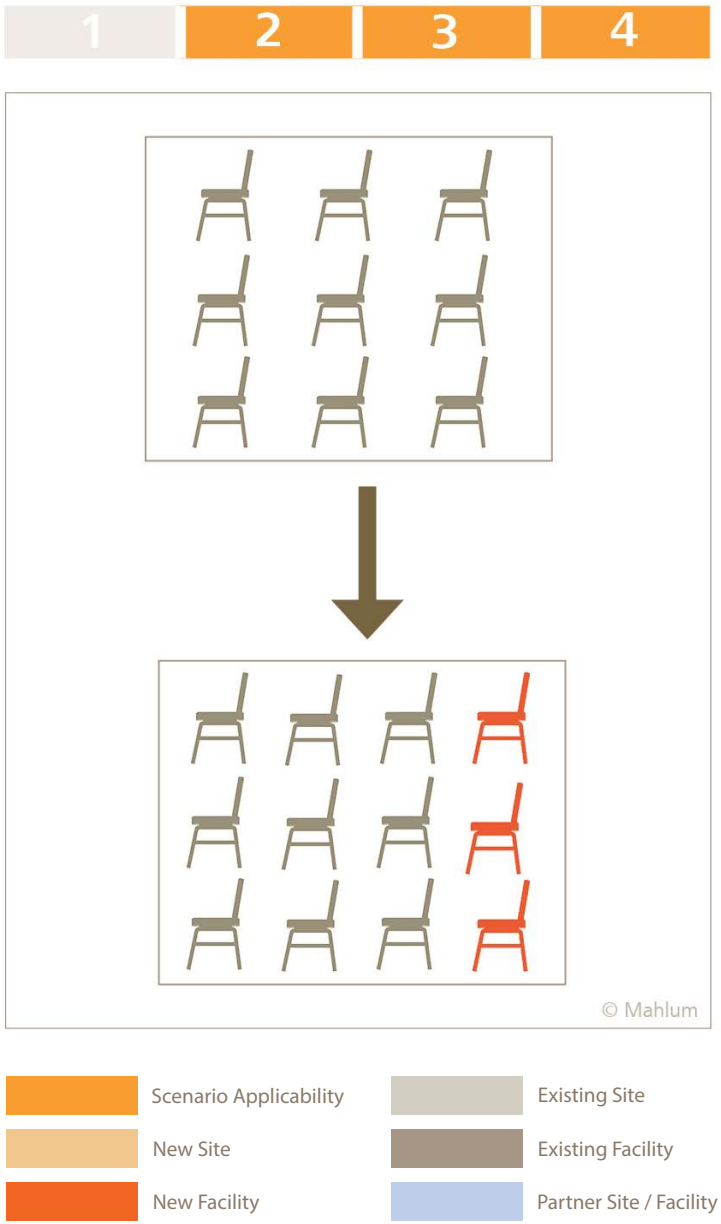


Move Enrollment Off-Site (Partnerships)

The District could look for off-site locations using partnerships. Educational models that aim at enhanced college and career readiness (such as dual enrollment, career and technical education, and internships) are logical candidates for this option. This strategy is most applicable for high school students and potentially a small percentage of middle school students. Partners could include local businesses and postsecondary educational facilities.

Potential Opportunities

Approximately 5% of high school enrollment could be accommodated through off-site partnership programs. This increases the functional capacity of all other facilities and would reduce seat demand in the range of 700 to 770 seats, depending on which enrollment forecast is used. This strategy requires careful scheduling to ensure that 5% of students are off-campus at any given time and has transportation and/or location considerations. Although this strategy may be applicable for some middle school students, it is assumed that the percentage of students would not be large enough to impact capacity at a district-wide level.

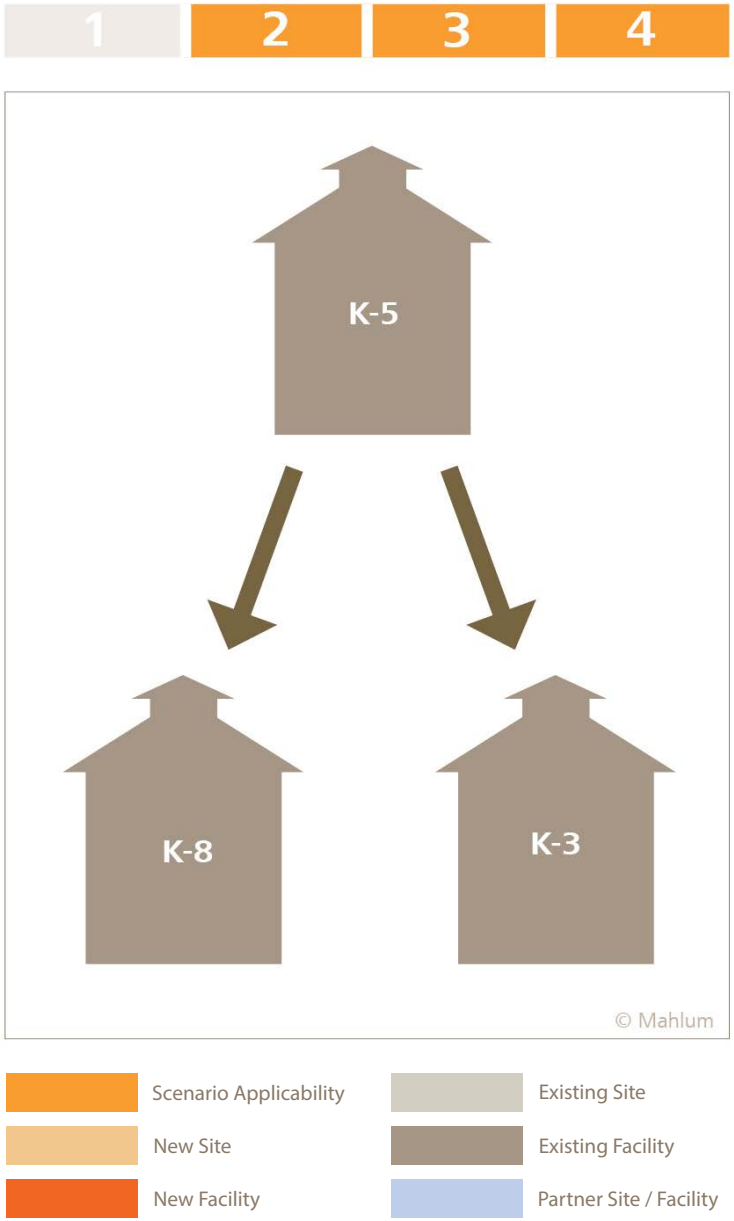


Increase Target Class Size

Existing District targets are 25 students per classroom for elementary and middle school and 30 students per classroom for high school. Increasing those targets increases facility capacity without any physical changes to the building (or any capital expenditure). The strategy may not align with District educational goals, and it may require busing to distribute enrollment demand.

Potential Opportunities

Increasing the elementary school classroom capacity to 29 students per classroom would provide an estimated 3,400 additional seats in existing District facilities. This would accommodate projected elementary growth through 2065, in the expected growth forecast (not including preschool or high growth). Accommodating projected middle and high school growth for the expected growth forecast would require an increase in classroom capacity from 25 to 27 seats at the middle school level (providing an estimated 830 additional seats) and from 30 to 32 seats at the high school level (providing an estimated 1,300 additional seats).



Shift Grade Configurations to Increase Facility Utilization

Shifting grade configurations (e.g., combining elementary and middle schools into K-8) can increase utilization in an underenrolled facility or provide additional capacity in an overenrolled facility.

Potential Opportunities

Utilization increases from this strategy would need to be determined on a school-by-school basis, but some rough estimates are possible.

- A 750-seat elementary school with a projected enrollment of 500 K-5 students could be shifted to accommodate grades K-8 to get enrollment closer to 750, potentially without adjusting school catchment areas (with operating cost implications, because it is less cost effective to provide middle school offerings).
- A 750-seat elementary school with a projected enrollment of 950 K-5 students could be shifted to accommodate grades K-3 or K-4 to reduce enrollment, with fifth grade students moving to the middle school, if space is available (or grade 4-5 students could be housed in a separate "upper elementary" facility).
- Existing schools significantly below capacity targets could have fewer grades, as an alternative to increasing the facility to target size, if projected enrollment warranted this strategy.

Increase Facility Utilization

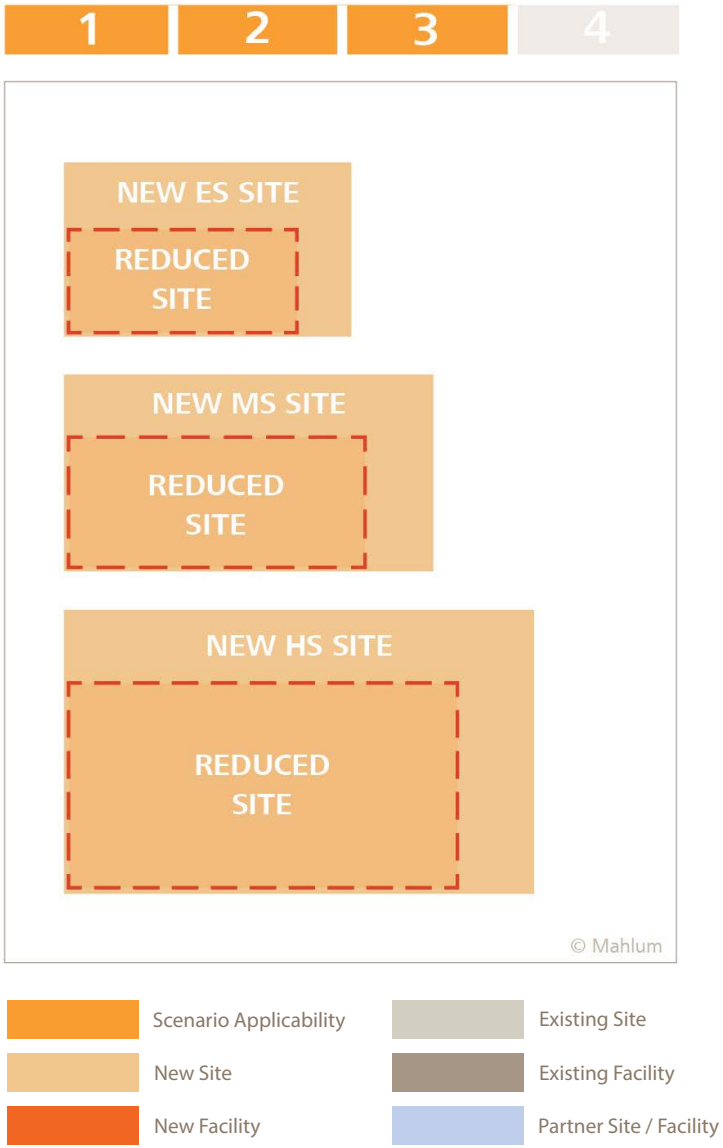
Utilization could be increased by programmatic changes at the District level, such as split-shift scheduling, year-round school, or other efficiency measures. At the high school level, increasing utilization during regular school hours may also be possible by increasing the number of periods that classrooms are used (such as “zero hour” and “seventh hour” periods) and providing locations other than classrooms for teacher planning periods, so that classrooms can be used by other teachers during that time.

Potential Opportunities

Split-shift scheduling has the potential to double the capacity of a school, by increasing school hours to accommodate two separate school schedules per day. This strategy would require significant operational changes and create a variety of issues for students, teachers, and families.

At a smaller scale, at the high school level, the District could add periods at the beginning and end of each day. Utilization increases will vary depending on each school’s schedule, enrollment, and number of classrooms and would need to be determined on a school-by-school basis.

Site-Level Applications

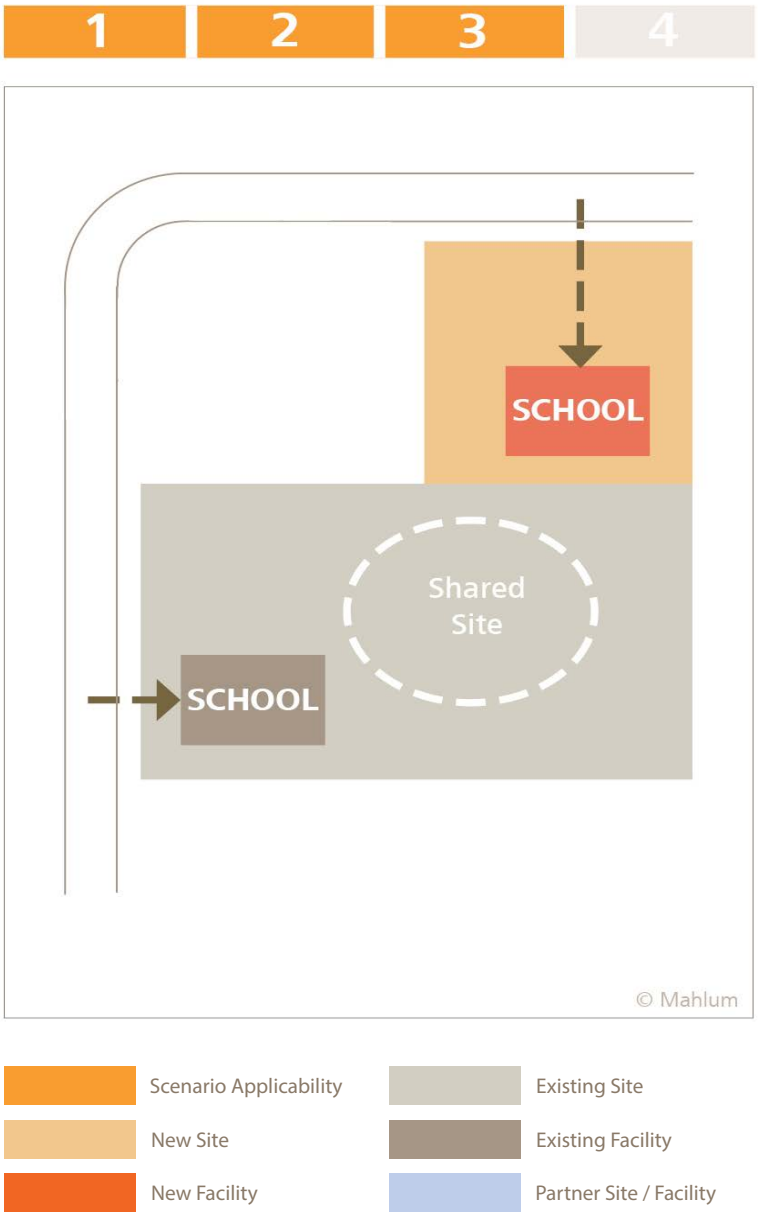


Acquire New School Sites

Purchase property in projected high-growth areas within the District (in the northwest and southwest areas of the District) to build new school facilities. Options include (1) acquiring sites at the District's current target site sizes (7–10 acres for elementary sites, 15–20 acres for middle school sites, and 35–40 acres for high schools) or (2) adjusting District site requirements and acquiring sites at reduced target site sizes.

Potential Opportunities

This strategy relies on the availability of sites in appropriate areas and at the appropriate size and configuration, and it may require adjustment to District standards. Large sites within the District are currently limited and expensive. Sites are expected to become even more difficult to acquire as the population continues to grow over the next 50 years. It is likely that multiple adjacent properties would have to be purchased to create a large enough site, and the use of eminent domain may be required.

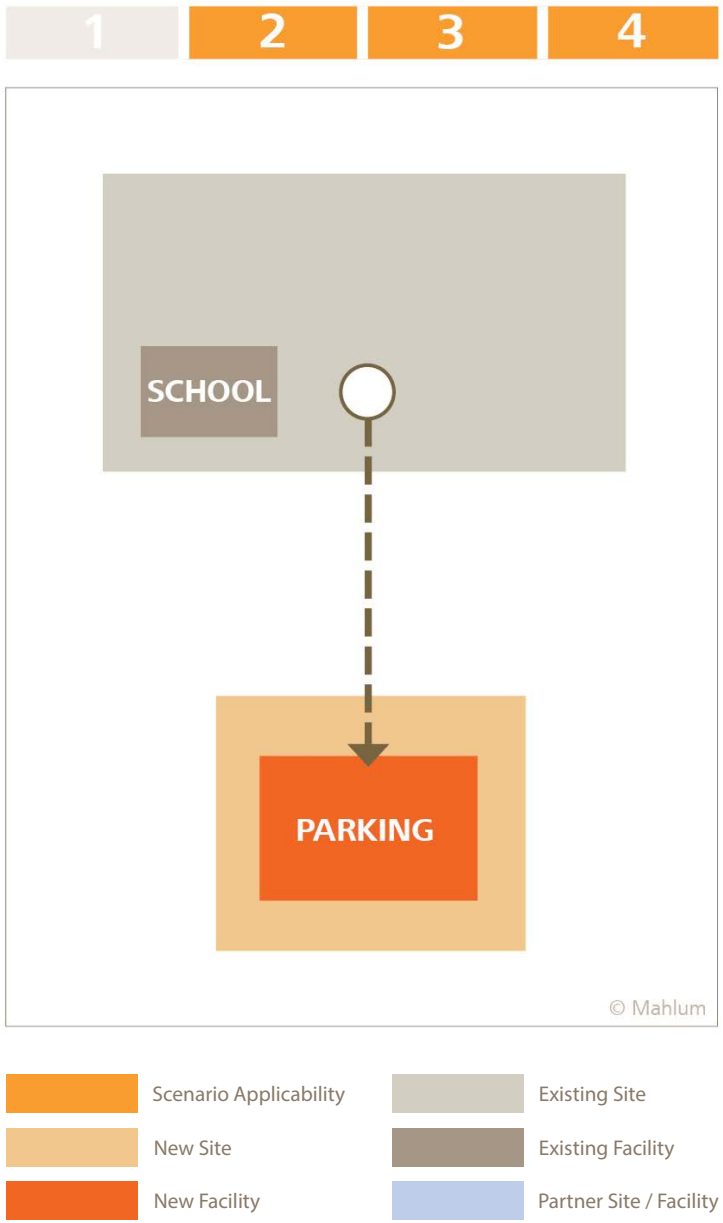


Acquire Adjacent Property to Expand Existing School Sites

The resulting bigger site could allow expansions and new configurations that would not otherwise be possible, and it could be easier and more cost-effective than trying to acquire land for new sites. For example, a strategic property addition to an existing school site could increase the site capacity enough to allow co-location with another facility (shown at left). Another possibility would be to add smaller parcels to an existing school site to allow shifting of site functions and therefore provide room for the existing facility to increase capacity through an addition or replacement.

Potential Opportunities

This strategy relies on the availability of sites in specific locations, but it provides flexibility in terms of site size, potentially increasing usable site inventory.

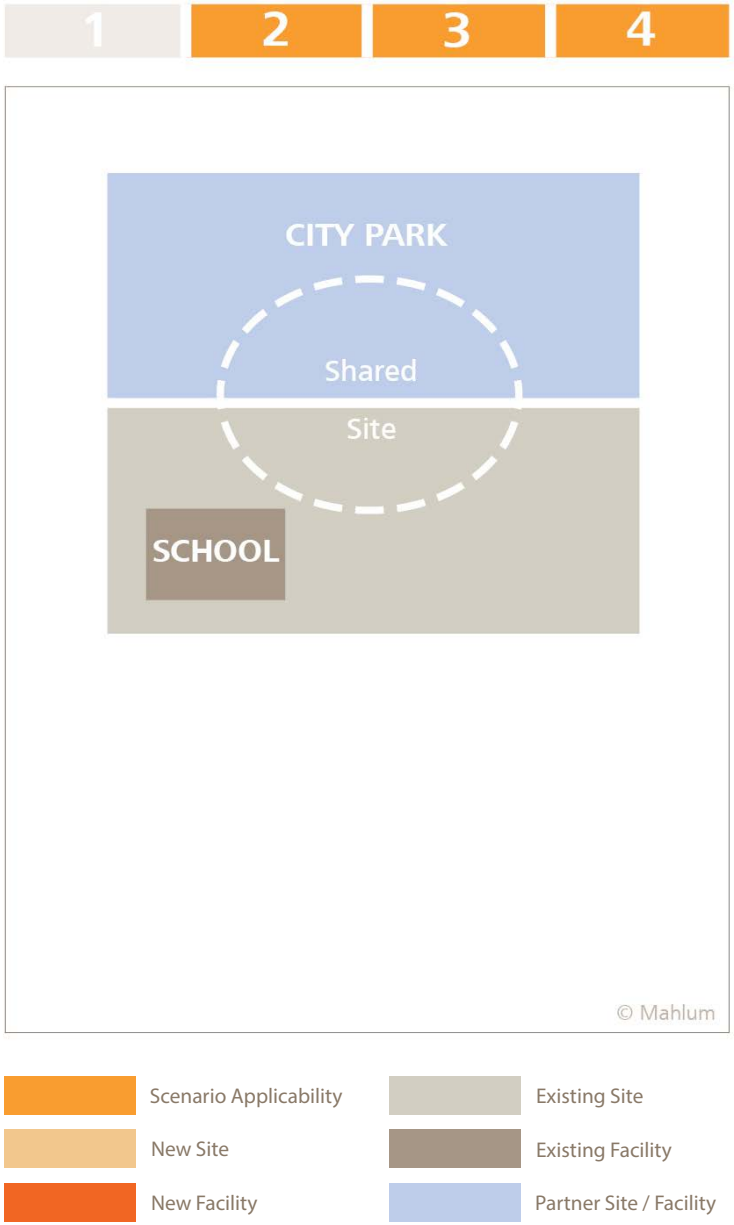


Disperse Site Functions

Use adjacent or proximate sites to provide space to relocate existing site functions, freeing up space on the site for increased facility capacity. Parking is the primary function that could be located on a remote site, with the possibility of athletic fields at the high school level. Options include (1) acquiring smaller properties near existing District sites in order to relocate school functions, and (2) leasing sites near existing District sites in order to relocate school functions.

Potential Opportunities

This strategy requires adjustments to District site standards and can only be utilized where specific site conditions apply, including a site configuration that would allow facility expansion if parking was relocated and an available adjacent or proximate site. (This strategy can only be used in Scenario 4 if leasing property because the scenario assumes there are no capital funds available.)

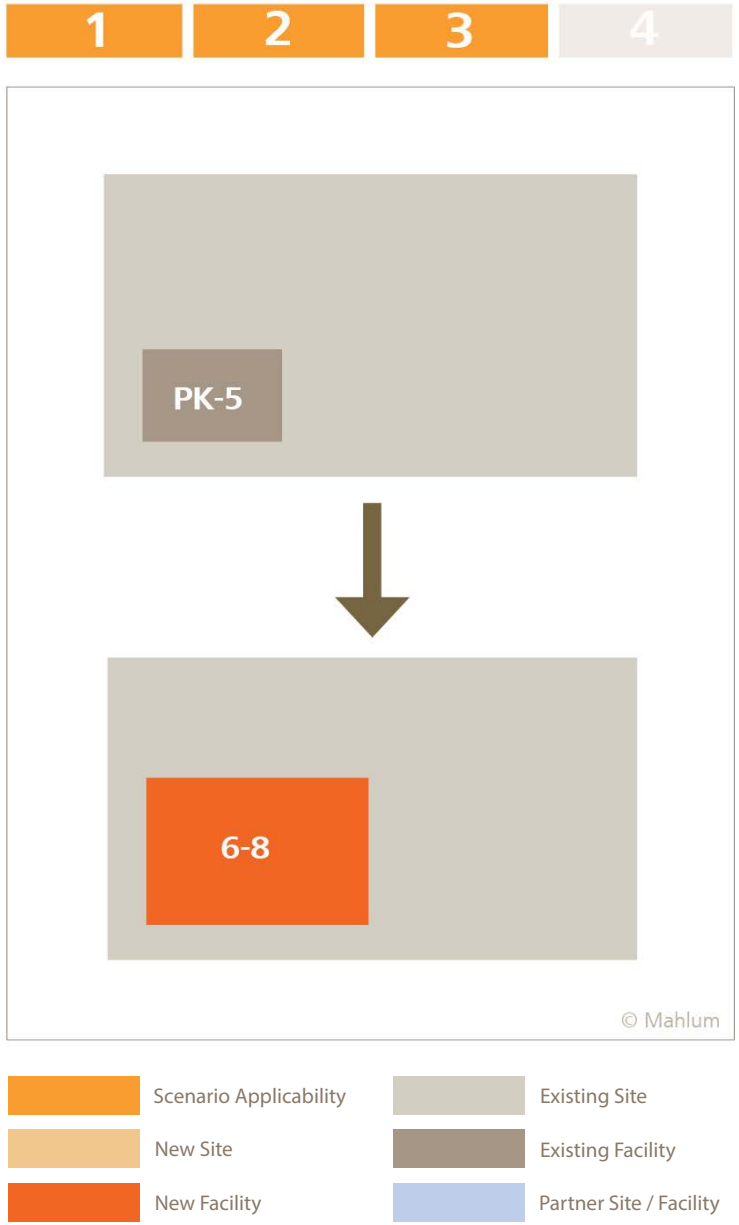


Share Site Functions: Partnership

The District could create partnerships that allow use of adjacent or proximate sites for school functions. For example, locating a school site adjacent to a city park allows a potential partnership for shared use (shown above). Or a school might share the use of nearby parking lots not otherwise used during the school hours (e.g., church parking). The District's long-standing partnership with the Tualatin Hills Parks and Recreation District already implements this strategy at several sites. Expanding this partnership, as well as looking for new partners, can increase opportunities for shared use.

Potential Opportunities

This strategy allows the use of sites smaller than District standards. It may require adjustments to District site standards and can only be utilized where specific site adjacencies exist.

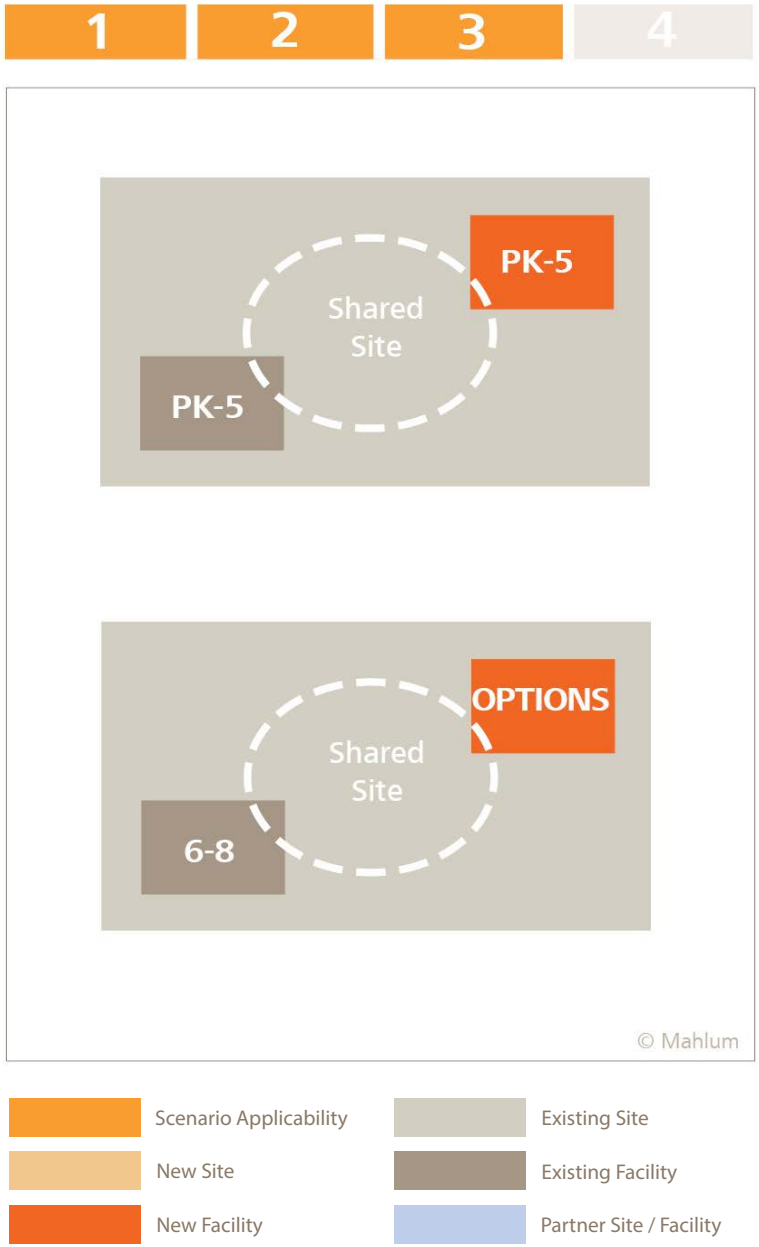


Change Site Function: Grade Level

The District could, on sites that are large enough, replace an existing lower-capacity facility with a higher-capacity facility (e.g., replace an existing elementary school with a middle school, or a middle school with a high school.

Potential Opportunities

The District has two existing elementary school sites (Raleigh Park ES (15.5 acres) and Rock Creek ES (17.4 acres)) large enough to meet site size standards for middle schools (15-20 acres). Shifting would increase the site capacity from 750 seats to 1,100 seats on each site. Three other elementary school sites are 12 or more acres in size and could be used for middle schools with some adjustment to District site requirements. The District has one existing middle school site (Five Oaks, 32.2 acres) close to the 35-acre minimum District standard for a high school site. This site could potentially be used to house a high school, with some adjustment to District requirements.

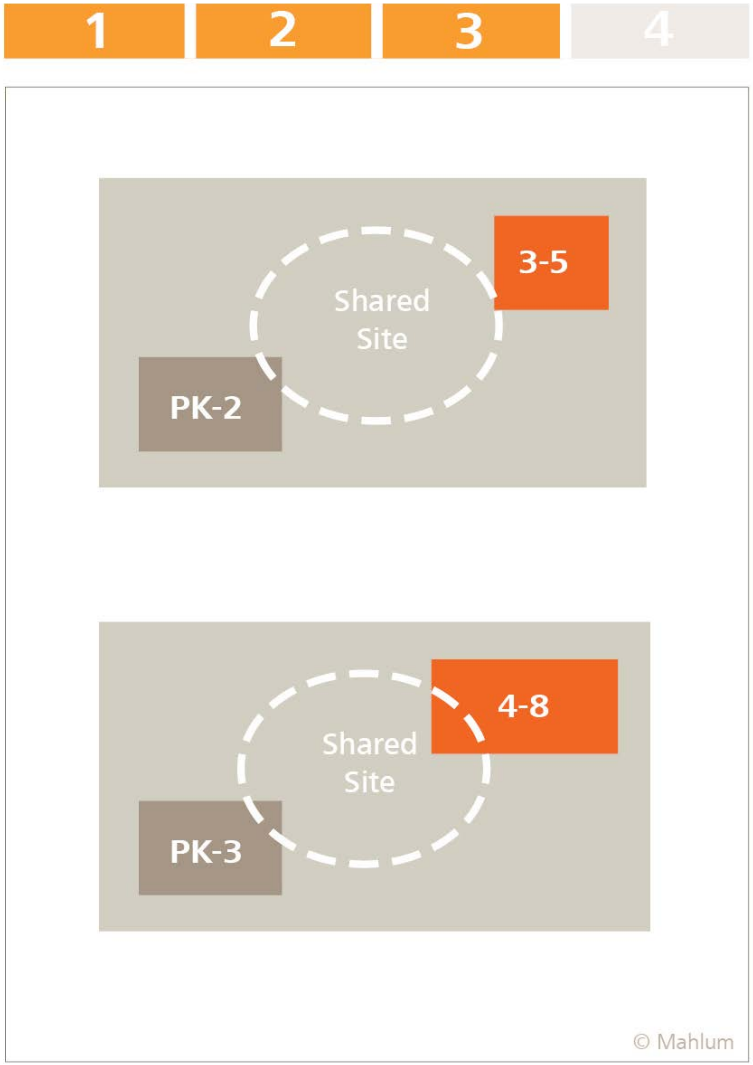


Co-location on Existing Sites: Separate Facilities

The District could locate an additional, separate school facility on sites that currently have one facility, if those sites can accommodate it. Options include (1) locating a second elementary school (K-5 or PK-5) on a site with an existing (or replaced) elementary school, resulting in a 750-seat increase in site capacity; and (2) locating an options school on a site with an existing (or replaced) elementary, middle, or high school (site capacity increase depends on the capacity of the option school, which can vary).

Potential Opportunities

The District has several elementary school sites that appear large enough to allow co-location with another facility, in some cases with replacement of the existing school in a more efficient configuration. These sites (identified in Appendix C on Facilities) range from 8 to 17 acres and are located throughout the District. The ability to accommodate co-location would need to be verified with more detailed analysis on a site-by-site basis. Several existing middle school and high school sites in the District may also accommodate co-location of an additional school facility. This strategy may require modification of the District's site standards, such as parking requirements, number of fields, and sizes of play areas. It is likely to require shared use of site amenities by the co-located schools.



Co-location on Existing Sites: Expanded Facilities

The District could expand an existing school into multiple facilities on sites that currently have one facility, if those sites can accommodate it. Options include (1) locating a second elementary facility on site and splitting grade levels between the existing (or replaced) facility and a new facility, creating a PK-2 facility and a 3-5 facility (increases site capacity to 1,000 or more); and (2) shifting or expanding grade levels or functions on an existing elementary site, such as a PK-3 facility and a 4-8 facility (increase in grade levels and site capacity to 1,400 or more) or an alternative program facility.

Potential Opportunities

This strategy may work with sites that have some extra space, but not enough to accommodate an additional separate school facility. The ability to accommodate co-location will need to be verified with more detailed analysis on a site-by-site basis. This strategy may require modification of the District's site standards, such as parking requirements, number of fields, and sizes of play areas. It is also likely to require shared use of site amenities by the co-located schools.

District-Level Applications

Replace at Target Size and Consolidate Schools

There are several approaches to school replacement in areas of lower enrollment. One strategy (used in Scenarios 1-3) involves replacing some school facilities at the target size of 750, but only the number of facilities required to meet projected enrollment would be replaced, and other schools in lower enrollment areas would be closed. These facilities and sites could be repurposed for other District functions as needed.

Potential Opportunities

Although this strategy makes sense from an operational standpoint, it reduces the number of neighborhood schools and has the potential to increase travel distances for many District students. In addition, school closure is usually not a desirable option for families in the affected area and can lead to a complex and contentious process for changing policy.

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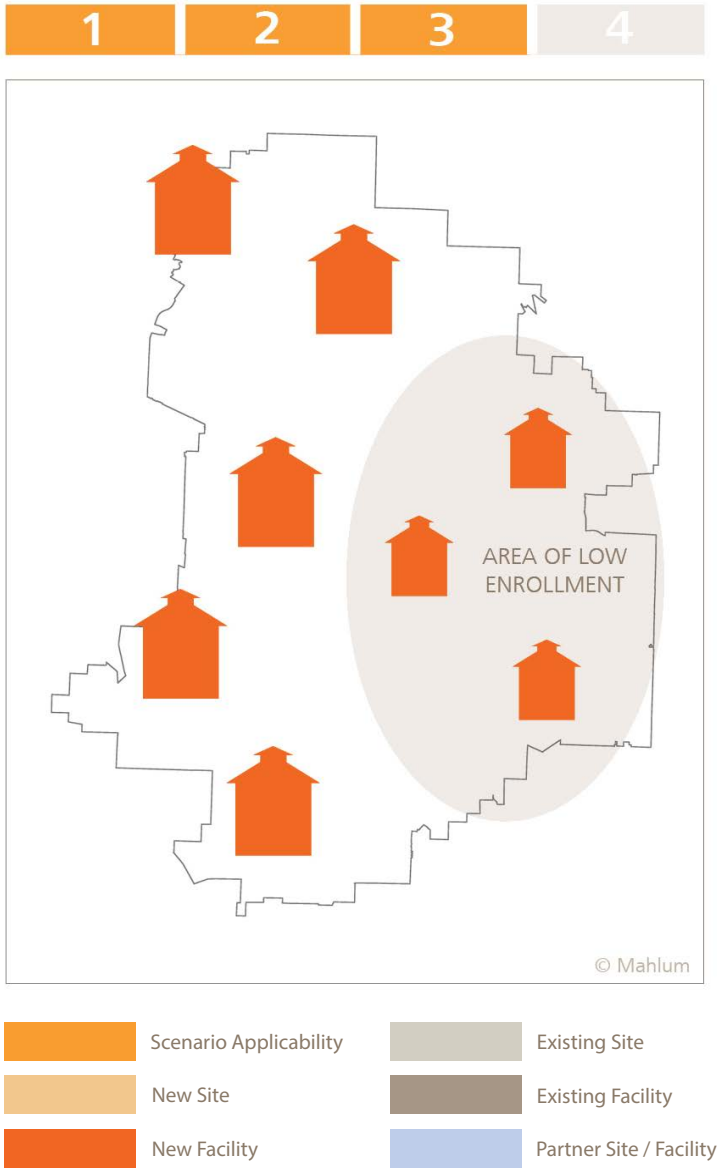


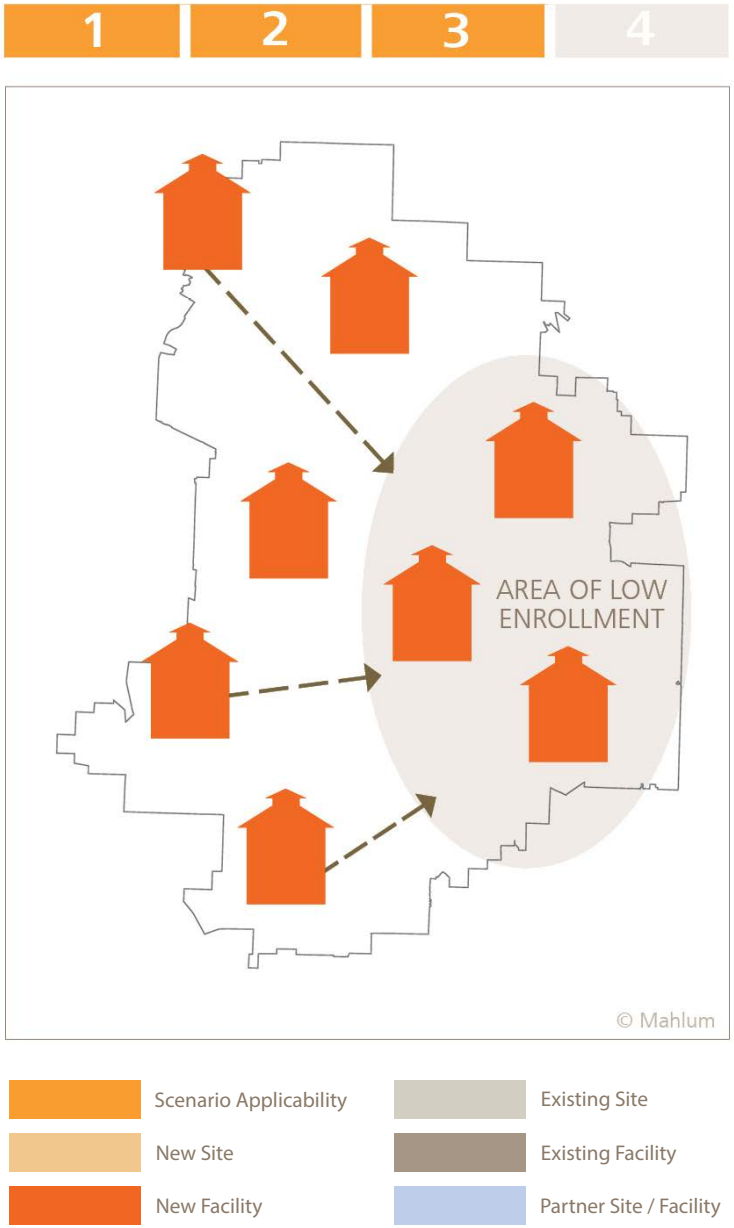
Replace at Appropriate Size to Meet Enrollment Need

A second strategy to address areas of lower enrollment is for the District to replace all or most school facilities in these areas, but at a reduced size and capacity that aligns with projected enrollment. Facilities would be designed to expand to the District target capacity of 750 students in the future, if needed. Site configuration and access would be planned to accommodate a future addition and core instructional and support areas in each facility, such as the gymnasium, cafeteria, library, and administration, which would be sized to accommodate the full target capacity. This strategy allows all of the District's neighborhood schools to be retained, without building unnecessary space.

Potential Opportunities

Replacement schools should be built within a capacity range that is large enough to provide an appropriate learning environment and operational efficiency. Schools below 300 to 350 students are typically considered not able to meet this criterion, but this range should be established by the District.

This diagram is illustrative only and does not indicate a proposed change.



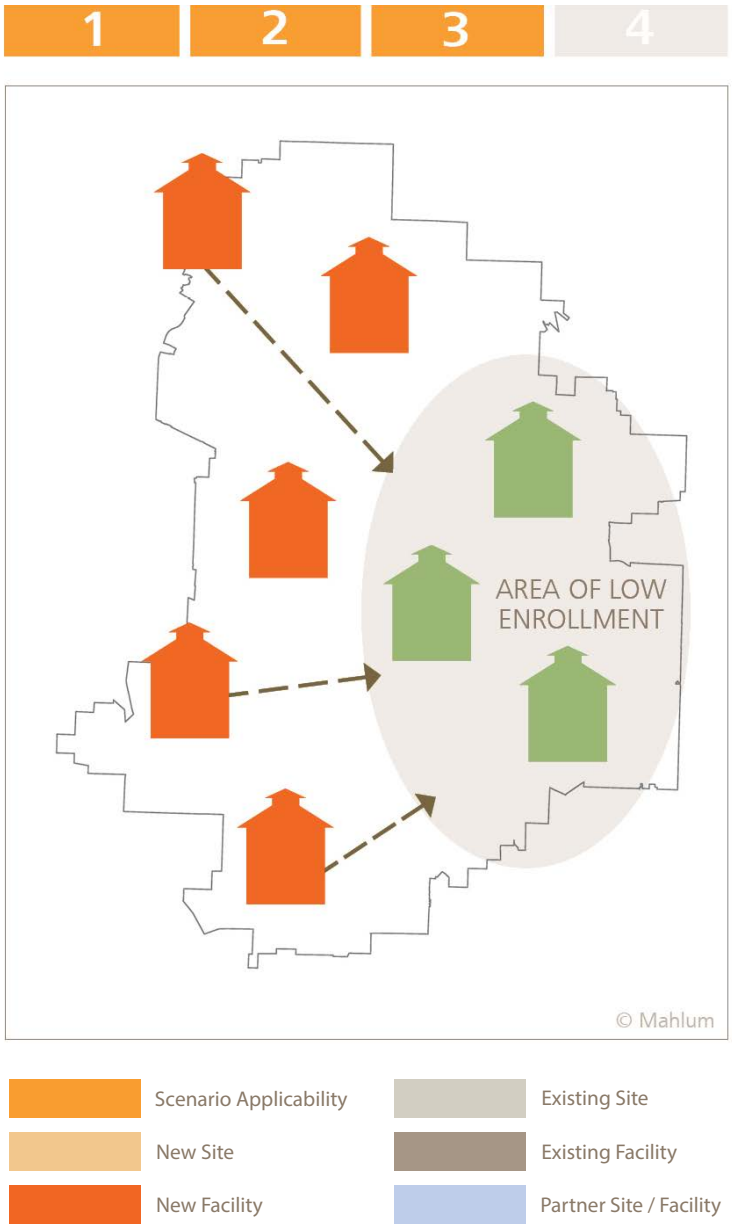
Replace at Target Size and Shift Enrollment (Boundaries/Busing)

A second strategy to address areas of lower enrollment is for the District to replace all school facilities throughout the District at target capacity. The resulting excess facility capacity in areas of lower enrollment could be used to accommodate unhoused students from areas of higher enrollment.

Potential Opportunities

This strategy allows all of the District's neighborhood schools to be retained and all new facilities to meet the District's target capacity. It would, however, probably require significant shifting of school catchment areas and increased busing of students. This could be done, for example, by (1) shifting students incrementally to the next closest school and then shifting displaced students from that school to the next closest school, until capacity is reached throughout the District (reduces travel distances, but affects more students) or (2) shifting students from over-enrolled schools to under-enrolled schools. The latter affects a smaller number of students, but would require longer travel distances, including the potential for some students to be passing one school on the way to their assigned school. Both approaches would probably involve some students crossing major arterials, such as Highway 26 and 217.

This diagram is illustrative only and does not indicate a proposed change.



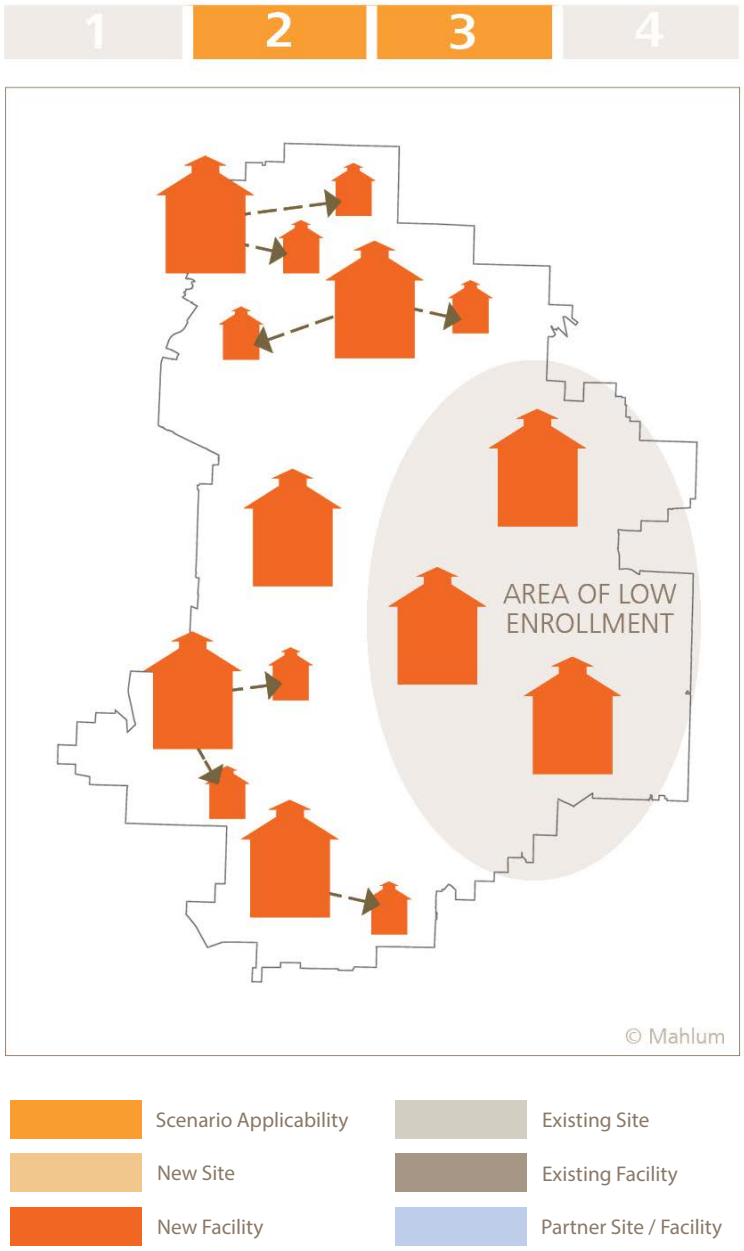
Replace at Target Size and Create Magnet Programs

The District could replace all school facilities throughout the District at target capacity, but create magnet programs at facilities in areas of lower enrollment, particularly at the elementary level. The District already has several successful magnet programs at the middle and high school levels, such as the Arts and Communication Magnet Academy and the School of Science and Technology. These programs attract students from all over the District and can reduce capacity need in higher enrollment areas, potentially without requiring busing

Potential Opportunities

This strategy would require some boundary adjustments. Providing facilities with both magnet programs and neighborhood programs would reduce busing requirements by accommodating students living in lower enrollment areas while also providing some capacity relief in higher enrollment areas.

This diagram is illustrative only and does not indicate a proposed change.



Create Additional Small Schools

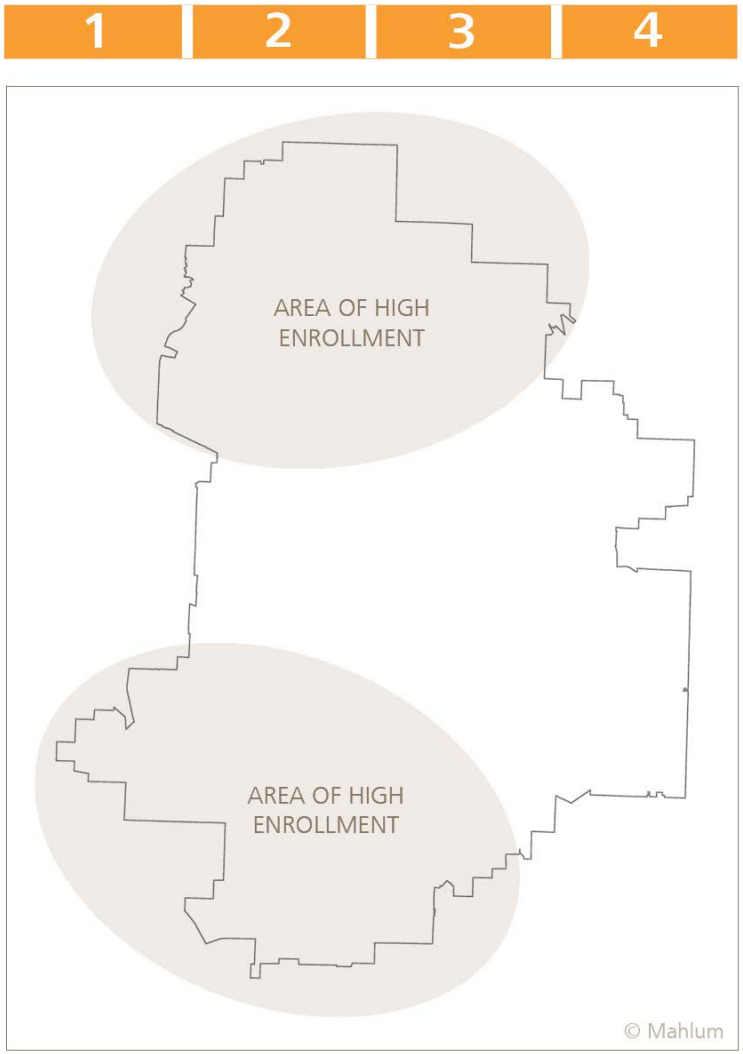
The District could create smaller schools throughout the District, particularly in areas with high levels of projected enrollment and limited site acquisition options, in conjunction with other strategies to provide additional capacity in high-need areas. This strategy would be particularly useful in areas with limited existing facilities and site acquisition options.

Potential Opportunities

These small schools could vary in size, depending on capacity need, program goals, and available sites and facilities. They could be independent programs, connected to nearby neighborhood school programs, or connected to each other. Some examples:

- Distributed microschools with capacities of 25 to 100 students per school and a centralized program run by the District; located on new residential-sized sites that could be easier for the District to acquire
- Additional options programs, including elementary-level options programs, with capacities of 100 to 300 students per school; co-located facilities on existing school sites with available space.

This diagram is illustrative only and does not indicate a proposed change.



Modify Zoning to Reduce Enrollment and Parking Requirements

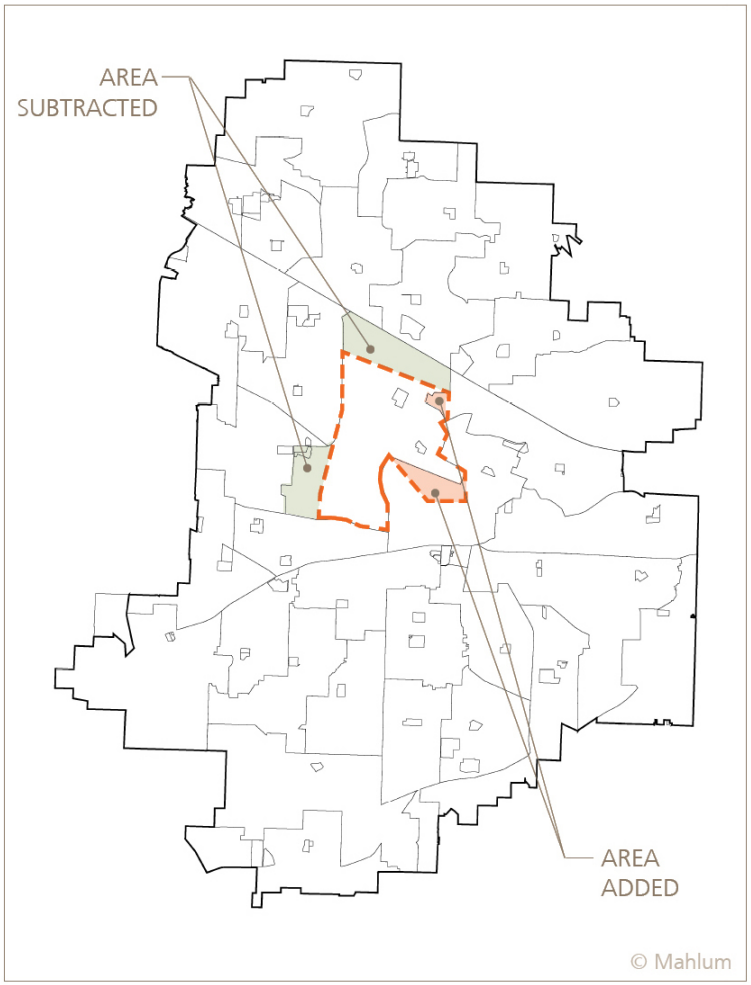
This strategy involves working with local jurisdictions to adjust zoning requirements in areas of projected high enrollment to reduce population increases and therefore potential enrollment growth. This strategy could be considered if the District does not have other alternatives to accommodate growth within the District. Although decreasing residential density does not align with current jurisdictional policies and goals, this strategy may become more viable over the long-term span of this study.

Potential Opportunities

Various zoning and policy adjustments can be made to help reduce enrollment growth, including: (1) changing allowable densities of multifamily areas, and (2) limiting or eliminating incentives for developers to develop new housing in high-growth areas. Working with jurisdictions to reduce parking requirements for schools can help reduce school site sizes, allowing the purchase of smaller sites for new facilities and potentially increasing the capacity for building additions at some existing sites.

This diagram is illustrative only and does not indicate a proposed change.

1 2 3 4



Scenario Applicability
New Site
New Facility
Existing Site
Existing Facility
Partner Site / Facility

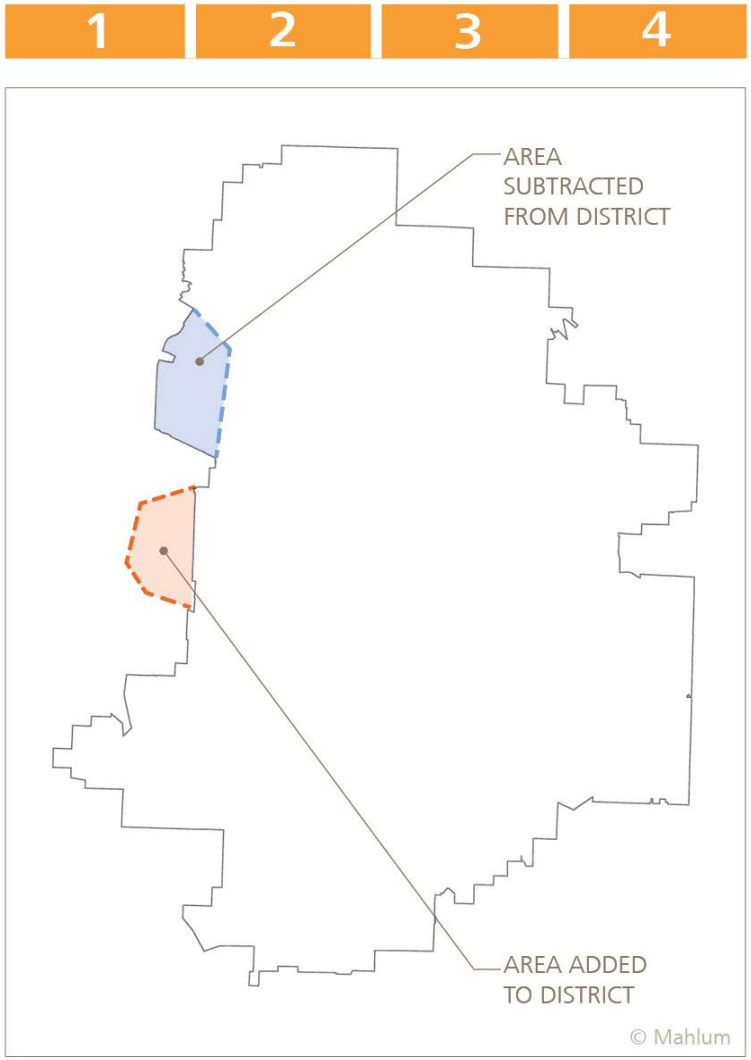
Adjust School Attendance Boundaries Areas

Adjustments to school attendance boundaries are a recurring necessity for growing school districts. Although it can be a complex and politically charged process, it is an inevitable part of managing enrollment and facilities in a fiscally responsible way.

Potential Opportunities

All four planning scenarios assume boundary adjustments will be implemented as necessary to improve enrollment balance and use existing facilities as efficiently as possible. However, expanding boundary adjustment parameters, such as acceptable travel distances, can increase efficient utilization of existing facilities beyond what would be possible using current standards. This will likely be required if the District does not have adequate funding to build new facilities (Scenario 4), but can also be used in other scenarios as well.

This diagram is illustrative only and does not indicate a proposed boundary change.



Adjust District Boundaries

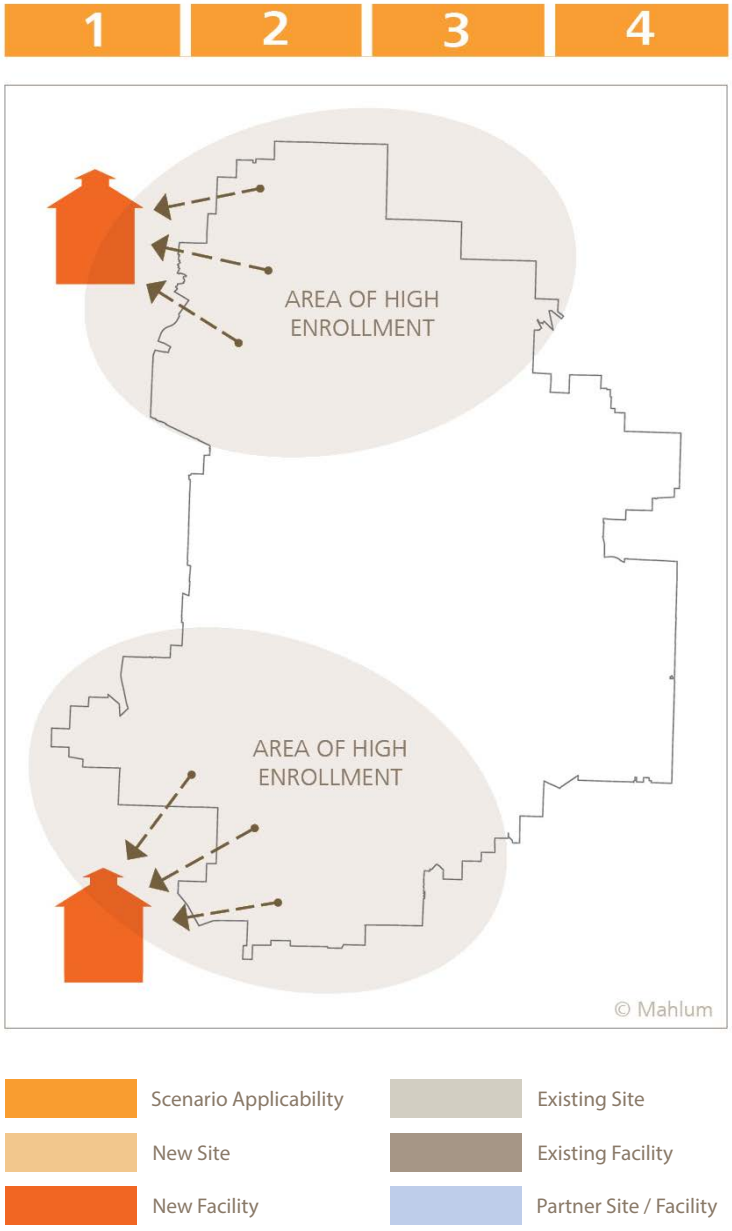
Adjusting the District's boundaries requires working with adjacent school districts to shift enrollment between districts in a way that benefits both entities. It is a complex process. A variety of impacts must be evaluated, including impacts to current and future students, property owners, and alignment with both Districts' strategic and long-range plans.

The Beaverton School District is bounded by Portland Public Schools to the north and east, Hillsboro School District to the west, and the Tigard-Tualatin School District to the south. A recent land exchange with the Hillsboro School District (2015-16) resulted in boundary shifts in the southwest corner of the District, so that planned communities in South Hillsboro and South Cooper Mountain could each be served by one school district.

Potential Opportunities

Future land exchanges may be considered by the District as a method to reduce enrollment pressures in high growth areas when other alternatives to accommodate growth are not available.

This diagram is illustrative only and does not indicate a proposed boundary change.



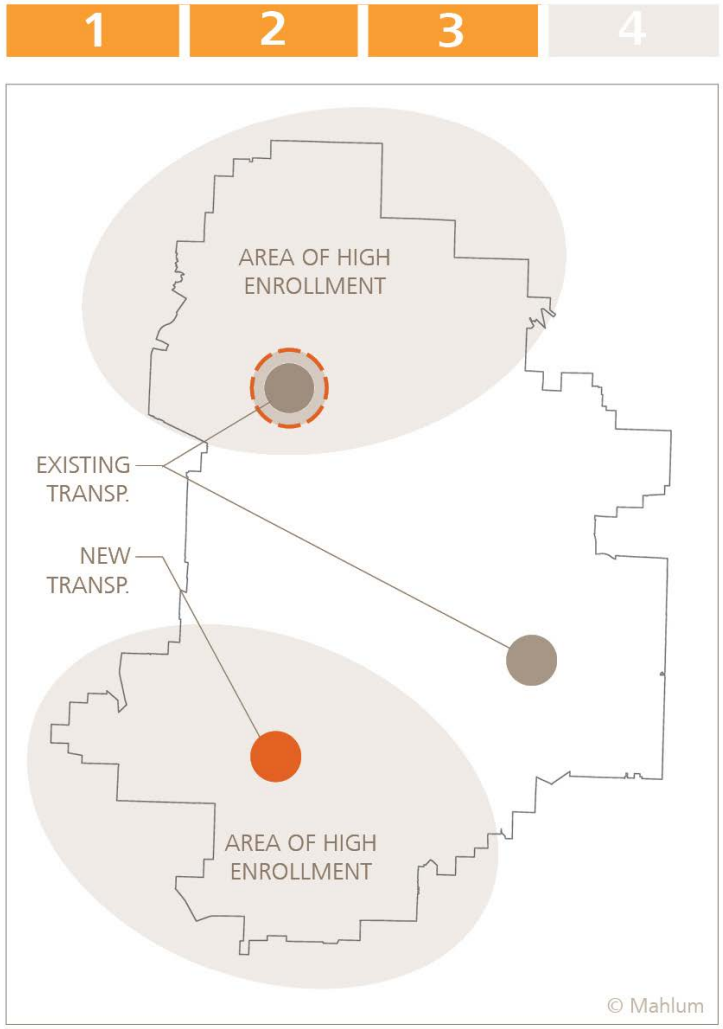
Locate Schools Outside District Boundary

Another strategy that involves working with neighboring school districts to accommodate enrollment growth is to site District school facilities outside of the District boundary, but within the urban growth boundary (UGB). This strategy would primarily be applicable at the elementary school level and would increase the available area for potential site acquisition in the places where it is needed most.

Potential Opportunities

The ability to locate school adjacent to high growth areas could provide a significant capacity increase in these areas with minimal impact in terms of boundary adjustments and busing requirements. There are a number of ways a school facility could be implemented, which would need to be developed in conjunction with the neighboring school district. There are also opportunities for sharing support facilities.

This diagram is illustrative only and does not indicate a proposed change.



Expand Support Facilities

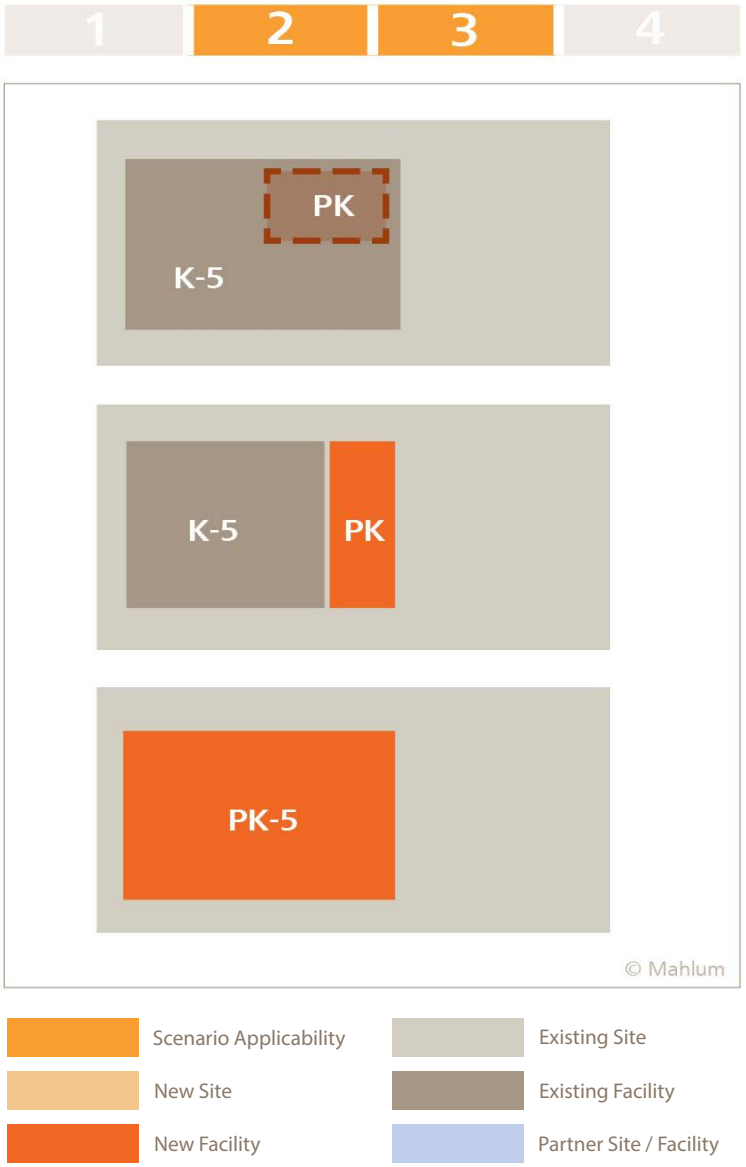
Projected growth in the District over the next 50 years will impact District support functions, such as administration and transportation. Administrative needs may be able to be accommodated in existing facilities, but needs must be considered as the District grows. Transportation will be directly impacted by enrollment growth, as well as the potential for significant increases in the percentage of student bus riders with some facility management strategies.

Potential Opportunities

As most growth is projected on the west side of the District, expanding transportation facilities in this area should be considered. Possibilities include expansion of the existing Transportation and Support Center in the north, and/or a new facility in the southern part of the District.

This diagram is illustrative only and does not indicate a proposed change.

Early Learning Applications

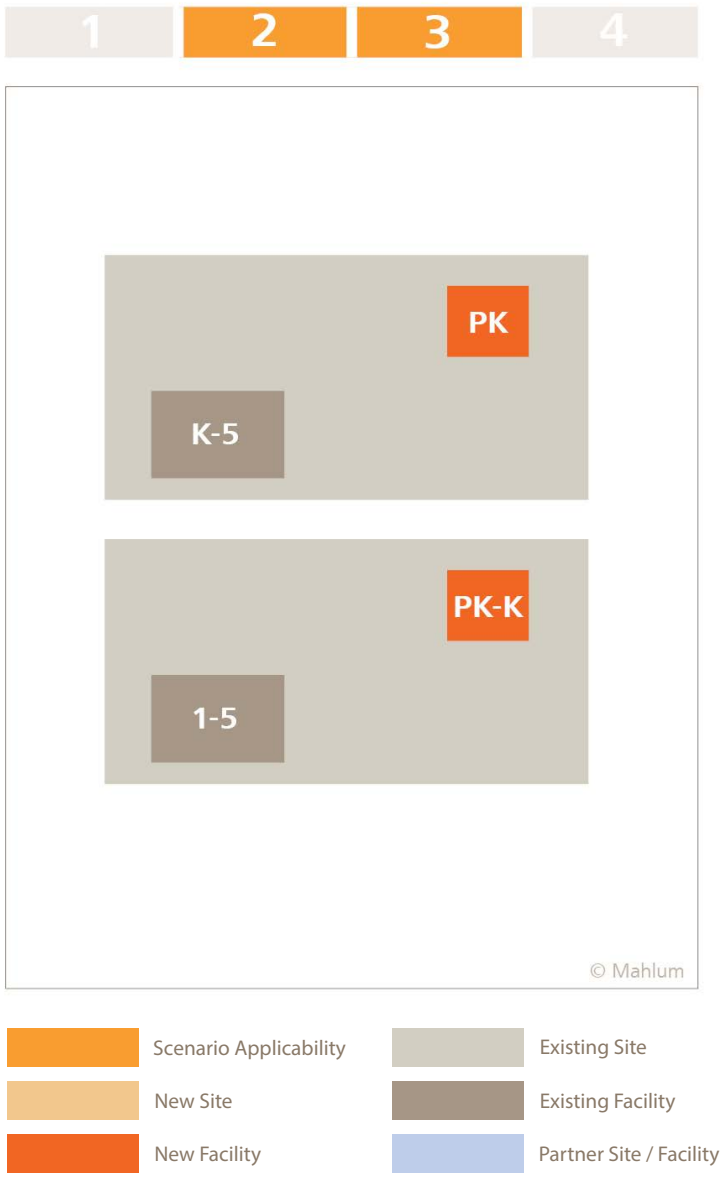


Locate Preschool Classrooms within Each Elementary School

This strategy provides the strongest connection between preschool and elementary grades and is included in Scenarios 2 and 3. It assumes the District's 750-seat target facility capacity is maintained as a maximum.

Potential Opportunities

For existing elementary schools that are at or close to target capacity, existing classrooms can be modified to accommodate preschool. This will result in some capacity reduction because preschool classrooms have a maximum capacity of 17–20 seats, rather than the 25-seat elementary target. For existing elementary schools that are below target capacity, preschool classrooms can be added with a building addition, as site and building configuration allows. This will result in a capacity increase in the facility. For new or replacement facilities, schools will be designed with both preschool and elementary classrooms. In order to reach the target capacity of 750 students, these facilities will have an estimated four more classrooms than a typical K-5 school, due to the lower capacity in preschool classrooms.

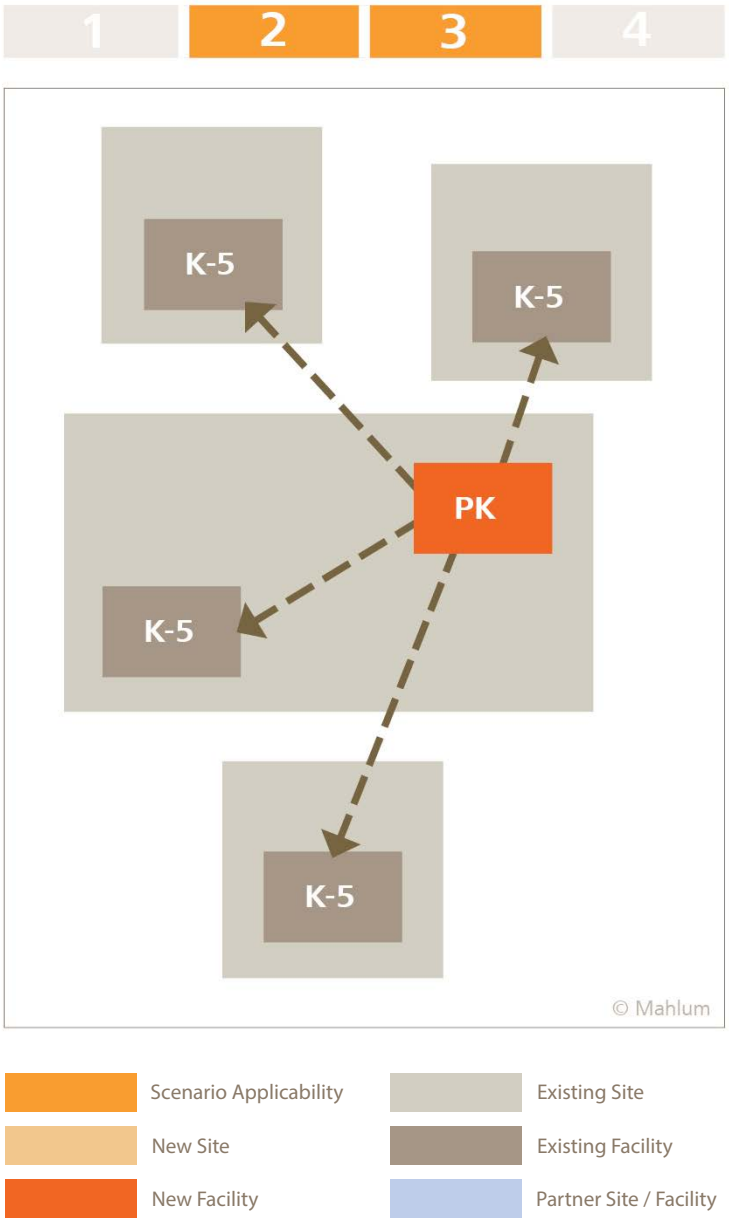


Create Separate Preschool Facilities on Each Elementary School Site

Another strategy for implementing early learning includes locating separate preschool (or preschool and kindergarten) facilities on elementary school sites that can accommodate it (co-location). This allows a close connection between preschool and elementary grades, without impacting the capacity of the elementary facility.

Potential Opportunities

This strategy allows District elementary schools to maintain a 750-seat target capacity for housing K-5 students, rather than displacing elementary classrooms to accommodate preschool. Preschool classrooms would have remote access to large specialized instruction spaces located in the elementary school, such as the gymnasium. Preschool facilities would be built on-site at an appropriate capacity to align with elementary grade level sizes. Preschool capacity for a 750-student elementary school is estimated at approximately 250 students. This would increase the total site capacity to as much as 1,000 seats. This strategy cannot be accommodated at every elementary school because of site constraints, but could be used to increase site capacity at some school sites.



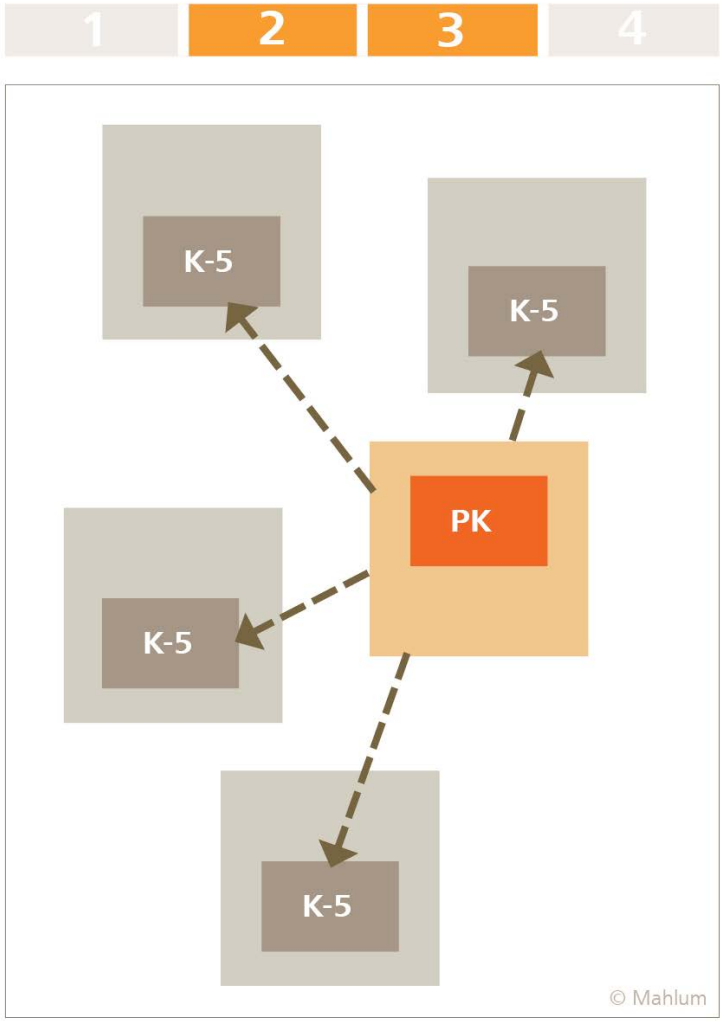
Co-locate Satellite Preschool Facility on an Existing Site

For existing elementary sites that have space, preschoolers would feed into kindergarten at the on-site elementary, as well as other nearby elementary schools.

Potential Opportunities

This strategy eliminates the capacity impact of preschoolers on District elementary schools, while still providing this important program. This strategy would be ideal for sites that can accommodate a separate on-site preschool facility, but still want to maintain a 750-seat elementary capacity in their existing facility. It is also potentially applicable districtwide, as it doesn't rely on having preschool space at every elementary site, which is not available.

Co-location on existing sites, where available, does not require the District to acquire new sites to accommodate preschool. Co-location provides higher utilization of available large elementary sites and larger, centralized preschool facilities can provide operational efficiencies and a more diverse and robust program. However, it is important to note that there are academic trade-offs. It can be more difficult to align preschool and early elementary programs if preschool classrooms are not located on the same site.



Build Satellite Preschool Facility on a New Site

The District could build larger, centralized preschool facilities on separate, dedicated sites throughout the District. Preschoolers would feed into kindergartens in nearby elementary schools.

Potential Opportunities

This strategy eliminates the capacity impact of preschoolers on District elementary schools, while still providing this important program. This strategy would be ideal for sites that can't accommodate a separate on-site preschool facility, but still want to maintain a 750-seat elementary capacity in their existing facility. This strategy has academic trade-offs, similar to the previous strategy. Options include:

- Build new preschool facilities on new sites acquired by the District (sites to be acquired would have reduced site size requirements).
- Repurpose existing District facilities that are significantly underutilized or have been closed due to shifting enrollment patterns.
- Lease space in non-District facilities to house District preschool programs.

7. Supporting Information

7.0 Supporting Information

This Study occurred in phases over a one-year period. For the purposes of communication with District staff and the advisory Futures Work Group, the consultant team created many memoranda and presentations explaining parts of the data and analysis. The consultant team consolidated the most important parts of these memoranda and presentations in appendices to this report. This section simply lists their titles and contents. Anyone interested in more detail about the data, methods, and findings of this Study should contact staff in the District's Facilities Department.

- Appendix A, Demographics and Development (written by ECONorthwest)
- Appendix B, Education Models (written by Getting Smart)
- Appendix C, Facility Evaluation (written by Mahlum Architects)

Appendix A. Demographics and Development

In 2017, the Beaverton School District completed its *Futures Study*: an exploration of how District facilities and services might evolve over the next 20–50 years. That document is available from the District.

This document is an appendix to the *Futures Study*. It provides more detail about the research related to demographic growth and development in the District's boundaries, which is addressed in Chapter 3 of the *Futures Study*. ECONorthwest is the primary author of this appendix.

Appendix A: Demographics and Development

1 Introduction

In 2014 the Beaverton School District passed the largest capital bond program for school construction in the history of Oregon. That program will fund facility needs for the next 8-to-10 years.[1]

The District is now evaluating its needs beyond that period. It is conducting an evaluation unlike any it has done previously. Its *Futures Study* looks at how District facilities and services might evolve over the next 20 - 50 years.

The District assumes that Washington County will continue to growth: there will be more economic activity, development, housing, people, and students. But how many students, and where? And with what programs, technology, and facilities will education be delivered? The Futures Study explores these questions by focusing on three categories of driving forces:

- **Growth of Enrolled Students.** The demand and need for facilities derives directly from the number of students the District must serve, and their characteristics. How many students, with what characteristics, are likely to live where within the District in the future? Students are part of households, and households need housing: thus, factors that influence the supply and price of housing will also affect student numbers and characteristics.
- **Education Model.** How will educational services be delivered? Technology, classroom techniques, and staff and facility management techniques are changing rapidly and likely to change even faster in the future. A longer-run view will consider how these factors might change and, in doing so, change the needs for the amount, type, and location of facility space, and the way the space is operated.
- **Facility Needs.** The ultimate output of this project is a thoughtful description of new facilities that might be needed: what types, where, and when? How might those needs change given different assumptions about development and operations (e.g., new methods for delivering educational services, repurposing or redevelopment of existing school sites, or new forms of school facilities)?

[1] https://www.beaverton.k12.or.us/depts/facilities/2014%20Bond%20Program/School%20Bond%20Measure%20Flyers/2014%20Bond%20FAQs.pdf

This appendix describes the technical work done to forecast the number of students enrolled in District schools for the next 50 years by school level (elementary school, middle school, and high school) and geographic area. These forecasts, when combined with assumptions about educational models (and the technologies, facilities, and staffing such models will require), are the primary inputs to the creation and evaluation of future *scenarios* for educational delivery and facilities, which is the core work of this study.

This appendix provides technical documentation of the approach and methods used to create the forecasts of District students. Efforts were made to write it clearly, but it is not light reading. It is written mainly for the District's technical staff and this study's technical advisory group (the Futures Work Group). For the Board, other stakeholders, and a broader public audience, the material in this appendix is summarized in the main report of the Futures Study.

This rest of this appendix consists of two sections:

- **Section 2: Forecast Methods**. This section explains methods for forecasting enrollment. It lists the steps that ECONorthwest (ECO)[2] undertook to estimate future enrollment.
- **Section 3: Results**. This section presents the results of the study's enrollment forecast then discusses their context among other forecast and the expected pattern of growth over time.

2 Forecast Methods

This section describes the methods used to produce the Study's enrollment forecast. It describes:

- The use of MetroScope to estimate future school-aged children within the district
- Methods to convert estimate of school-aged children into estimates of students
- How district-wide totals look at the subarea level.

2.1 Estimation of Future School-Aged Children

To estimate population growth within the Beaverton School District, this Study takes advantage of prior forecasts for Washington County. The recent *Washington County Transportation Futures Study* (WCTFS) forecasted future population and

[2] ECONorthwest is the prime consultant for this project, the author of this appendix, and reasonable for all the technical work it describes. It conducted the research reported in the appendix in 2016 (June – September).

development growth in the region. The forecasting assumptions used in that County study to create its "most likely" scenario[3] are the basis for the "baseline" scenario in this District *Futures Study.*

To produce the forecast of growth within Metro's "most likely" scenario, the WCTFS relied on MetroScope, a forecasting model maintained by Metro, the regional planning agency for the greater Portland metropolitan region. MetroScope brings together separate forecasts of population, transportation accessibility, development policy, and land supply to forecast regional growth.[4]

To specify MetroScope's assumptions about the composition of regional growth, Scenario 1 of the WCTFS used two sets of modeling assumptions (1) Metro's Baseline scenario, and (2) several other modified assumptions that the study's authors believed to reflect probable future development patterns. Such modifications included:[5]

- Buildable land equals that of the most recent regional analysis by Metro, with adjustments to reflect updates from local governments in Washington County.
- The Urban Reserves become available for development during the study period. The Metro Baseline prepared allocations to 2040, when only a small amount of the reserves were expected to be available.
- Supply for multi-family and mixed-use developments in Washington County's centers was increased from the Metro Baseline, which the project team believes more accurately reflects planned.
- The model's factor for relative attractiveness of areas was increased in some zones to reflect the characteristics of newly planned urban neighborhoods and areas anticipated to undergo redevelopment. These areas were not included in Metro's calculation of attractiveness, which only considered base-year conditions.

Given the forecasts of demographic and development growth from the WCTFS Scenario 1 and from Metro, ECO estimated the population within the Beaverton School District geography, and derived from it a forecast of growth in the number of children by age group. To do so, ECO used Python scripts to conduct the following steps:

- **Step 1**: Given the forecasted number of households in 2055 by Transportation Analysis Zone (TAZ) from the WCTFS Scenario 1, and the

[3] Scenario One in the WCTFS.

[4] The consultant team provided staff of the Beaverton School District with a supplement to this appendix that describes in more detail both the structure of MetroScope and its application in the WCTFS. That supplement is available from the District.

[5] Metro *Urban Growth Report*, 2014. Appendices 1a and 1b.

estimated population for each five-year interval between 2015 and 2055 in the Metro Baseline, ECO estimated the number of households and the share that have children for *each five-year interval* between 2015 and 2055 for the WCTFS Scenario 1.

- **Step 2**: Given the forecast of households and their characteristics for five-year intervals from Step 1, ECO estimated the number of children per household based on estimates of household size and the presence of children. It yielded an estimate of the number of children in the District in each Census block in each five-year interval. Data from WCTFS Scenario 1 and MetroScope reveals (a) whether households have any children, and (b) the household size (but *not* the number of children). To estimate the number of children in each house, ECO used the data to calculate a statistical average number of children per household for different households sizes: 1.167, 1.871, or 3.063 for households with a size of three, four, or five-or-more persons per household, respectively.
- **Step 3**: Given an estimate of the number of children for five-year intervals through the forecast period, ECO estimated the number of children within each age group throughout the District by cross-referencing 2010 Census block data on the number of children by age group.
- **Step 4**: To forecast through 2065 (because the MetroScope results extend only to 2055), ECO assumed that the estimated growth rate from 2045 through 2055 continues through 2065.

2.1.1 School-aged Children Forecast Results

The steps described above yielded an estimate of 43,402 school-aged children living within Beaverton School District's boundary in 2015, and a projection that between 2015 and 2065 that population would grow by 37% to 59,545 school-aged children (an average annual growth rate of 0.63%). Exhibit 1 presents these forecast results, disaggregated by school level.

Exhibit 1. Child Population, Forecast Growth, 2015 - 2065

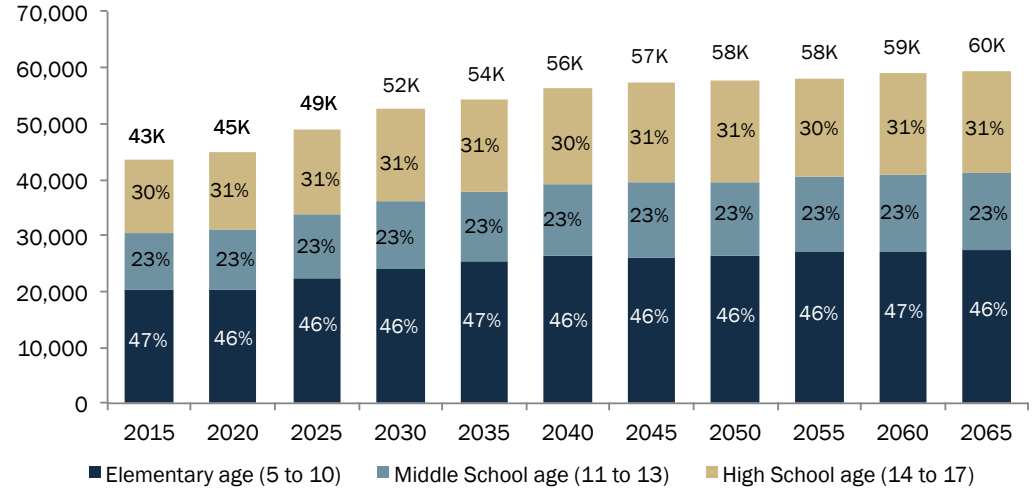
	2015	2065	Change, 2015 - 2065		
			#	%	AAGR
School-aged Children	43,402	59,545	16,142	37%	0.63%
Elementary age (5 to 10)	20,296	27,449	7,153	35%	0.61%
Middle School age (11 to 13)	10,093	13,752	3,659	36%	0.62%
High School age (14 to 17)	13,014	18,344	5,330	41%	0.69%

Source: ECONorthwest analysis of Metro forecast, BSD 2015 student count from data provided by BSD

Exhibit 2 shows the school-aged population at five-year increments from 2015 through 2065. This population will grow the fastest in the five-year period from 2020 to 2025, when it increases by 9.4% or 4,043 children. From 2060 to 2065, the forecast is for the District to have a net increase of fewer than 1,000 school-aged children (or less than 1% growth over the five-year period). The percentage in the bars show that though growth in children slows down over time, the percentage

in the three school-age categories is essentially unchanged: about 47% elementary, 23% middle school, and 30% high school.

Exhibit 2. 5-17-year-olds in Beaverton School District boundaries, 2015 - 2055



Note: Percentages (%) in the bars are percent of total children, by school type, for that period.
Source: ECONorthwest analysis of Metro forecast, BSD 2015 student count from BSD

2.2 Growth and Development Over Time

The forecasts show that the Beaverton School District's population will continue to grow, but at a declining rate. Two expectations contribute to the declining growth rate: (1) a decline in the supply of developable land, and (2) a change in the composition of households.

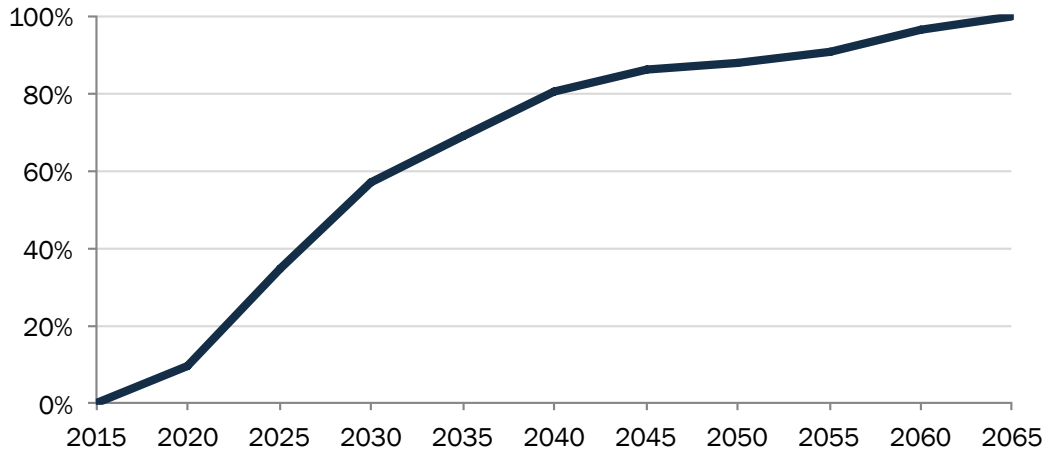
Regarding land supply, a regional urban growth boundary restricts Washington County's development. There are areas of open space within the District. Demand for new housing and commercial buildings will cause many of the parcels in these areas to develop. Once developed, there will be fewer opportunities for new single-family developments that tend to attract new families with children to the region. Moreover, that restricted supply will cause land price, and therefore housing price, to increase. The growth rate of school-aged children will decrease (other things being equal).

Regarding the projected change in household composition, forecasts suggest that families will continue to have fewer children, causing households to get smaller. Fewer children per household means lower growth for the District's school-aged population.

One implication of a decline in the growth rate is that most of the growth in the number of children will occur in the first half of the forecast period. Of the 16,142 new school-aged children forecasted for District over the next 50 years, more than half (9,144 people) arrive within 15 years (by 2030).

Exhibit 3 illustrates that point. It shows the share of the total forecast growth realized by each five-year interval. In the first five years, the District will realize 9.4% of the total growth that will occur by 2065. In other words, in the first five years, the population of school-age children will have grown by 1,513 children, which is 9.4% of the total growth forecasted to occur by 2065. Then, by 2030, with 9,144 more children, the District will have realized 57% of the total forecast growth, etc. In broad strokes, 1/3 of the growth occurs in the 10 years from 2015 to 2025, 1/3 in the 10 years from 2025 to 2035, and 1/3 in the 30 years from 2035 to 2065.

Exhibit 3. Percent of Total Forecast Growth in School-Aged Population Realized by Year, 2015-2065, Beaverton School District



Source: ECONorthwest

2.3 Capture Rate: Estimation of BSD Students from School-aged Children

Not every child living in the District boundaries is a student enrolled in a District school, and some students enrolled in District schools live outside its boundaries. To estimate enrollment ECO analyzed the "capture rates" for Beaverton School District schools. The capture rate is equal to the number of students enrolled in a given school or District divided by the total number of school-aged children in the school or District's attendance area.

To calculate the baseline capture rate for the forecast, ECO cross-referenced enrollment data provided by the District with its estimates of school-aged children. Given those two sets of data, ECO divided the number of students at each school (for each school type),[6] by the estimated population of school-age students in each school's attendance area to estimate each school's capture rate.

[6] The Beaverton School District has four school types. Three are common—Elementary School, Middle School, and High School. The fourth type is Option Schools. Students in grades 6-12 have

Exhibit 4 shows capture rates by grade level for the District. Based on the District's enrollment records for the 2015-16 school year, and the population estimate for 2015, ECO estimated that 90% of the school-age population in the District enrolled in the District's schools.

Exhibit 4. Capture Rate by Grade Level, 2015-16 School Year

	Population	Enrollment	Capture Rate
District	43,396	38,889	89.6%
Elementary	20,291	18,345	90.4%
Middle	10,092	9,200	91.2%
High	13,014	11,344	87.2%

Source: ECONorthwest estimated the population; Beaverton School District provided its enrollment count by grade level.
Note: Options schools enroll 3,663 students of which 60%, or 2,026, enroll in middle-school-level grades and 1,457, or 40%, enroll in high-school-level grades. Option School enrollment is included in the Middle School and High School enrolment number in this exhibit.

To estimate future capture rates, ECO assumed that each incremental increase in an attendance area's population would converge upon the District-wide average capture rate. For example, if one attendance area enrolled 50% of its school-aged children in 2015 and would grow by 100 students in the next five years, ECO assumed that 89 of the new students would enroll in the school, rather than 50. Said another way, ECO assumed that attendance areas that are currently "under-enrolling" will add students at a faster rate relative to the growth in their population, and vice versa.

The ratio of enrolled students to estimates of school-aged children (i.e., the capture rate) varies across attendance areas. For Jacob Wismer Elementary, for example, the number of enrolled students was more than one-third larger than the estimated number of elementary-aged children in that area. In West Tualatin View Elementary, the number of enrolled students was approximately half of the estimated number of elementary-aged children in that area. Variation in attendance areas is not unexpected and may result from any of the following possibilities: students enrolled in home school, students allowed to attend schools in a different capture area than the one in which they live, students enrolled in private school, or students not enrolled in school.

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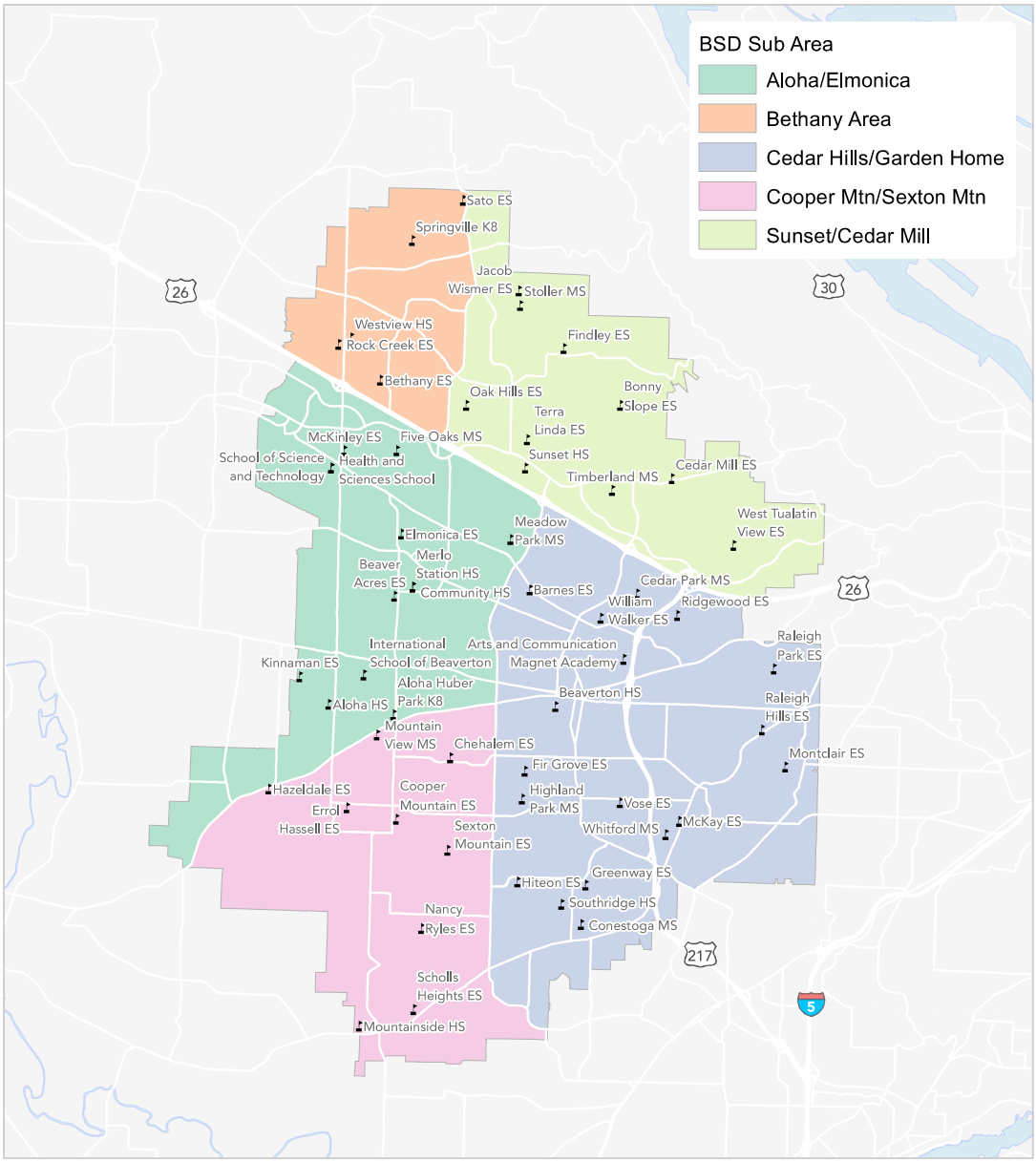
the opportunity to investigate learning options that best fit their academic needs at Option Schools. In the 2015-16 school year, there were 3,663 students enrolled in such schools. These schools do not have conventional attendance areas; students at a given option school may come from outside of that school's capture area. For the calculation of capture rates, this means that we treat their capture area as the entire district. Furthermore, because option school enrollment may not be limited to children within their attendance area, some exhibits in this report separate options school enrollment from that of regular schools.

2.4 Subareas

Section 3, below, presents enrollment growth within the District by *subareas*, which were delineated specifically for this Study to analyze and present student growth. Exhibit 5 shows the boundaries of the analysis subareas and the schools included within them. These subareas are <u>not</u> official District designations: they are used just in this Study as a way of simplifying the presentation of a lot of information.

Exhibit 5. Boundaries of Analysis Subareas



3 Enrollment Forecasts

This section presents the enrollment forecast. The first subsection presents the estimated enrollment by subarea and grade level for each five-year interval between 2015 and 2065. The following subsection discusses how these estimates compare to prior enrollment forecasts.

3.1 Summary

Exhibit 6 shows enrollment for 2015 through 2035, and 2065. It groups results by subarea, and shows the overall results for elementary, middle, and high schools, where applicable. It shows the average annual growth rate (AAGR) for 2015 through 2065 (with one exception) and is shaded in reference to the total subarea growth rate. For example, ECO forecasts Aloha/Elmonica to grow at 0.3% per year, which is slower than the district-wide growth rate of 0.6% per year, and the cell for this row is shaded red to indicate slower growth.

Exhibit 6. Beaverton School District Enrollment by Subarea, 2015 – 2035 and 2065

	Enrollment						Enrollment Change 2015 - 2065		
	2015	2020	2025	2030	2035	2065	#	%	AAGR
Aloha/Elmonica	7,129	6,710	6,692	7,059	7,566	8,329	1,200	17%	0.3%
Elementary	3,534	2,976	3,021	3,380	3,604	4,138	604	17%	0.3%
Middle	1,658	1,875	1,587	1,602	1,807	1,922	264	16%	0.3%
High	1,937	1,859	2,084	2,077	2,155	2,269	332	17%	0.3%
Bethany Area	4,674	4,153	4,873	5,560	6,118	7,047	2,373	51%	0.8%
Elementary	1,968	2,021	2,316	2,706	3,189	3,286	1,318	67%	1.0%
Middle	153	174	308	404	500	693	540	353%	3.1%
High	2,553	1,958	2,249	2,450	2,430	3,068	515	20%	0.4%
Cedar Hills/Garden Home	11,924	11,733	12,740	13,158	13,205	14,239	2,315	19%	0.4%
Elementary	5,318	4,997	5,121	5,463	5,501	5,761	443	8%	0.2%
Middle	3,333	3,398	4,076	4,252	4,212	4,739	1,406	42%	0.7%
High	3,273	3,337	3,544	3,443	3,492	3,739	466	14%	0.3%
Cooper Mtn/Sexton Mtn	4,464	7,222	8,096	8,988	9,568	9,978	5,514	124%	1.6%
Elementary	3,622	4,495	5,123	5,240	5,860	6,048	2,426	67%	1.0%
Middle	842	917	961	1,036	1,084	1,109	267	32%	0.6%
High*	0	1,809	2,012	2,712	2,624	2,821	2,821	156%	0.9%
Sunset/Cedar Mill	7,035	6,567	7,299	7,858	7,777	8,714	1,679	24%	0.4%
Elementary	3,903	4,031	4,748	5,076	4,791	5,606	1,703	44%	0.7%
Middle	1,008	888	932	1,037	1,049	1,072	64	6%	0.1%
High	2,124	1,649	1,620	1,745	1,937	2,036	-88	-4%	-0.1%
Options Schools	3,663	3,791	4,132	4,435	4,598	5,025	1,362	37%	0.6%
Total Subarea	38,889	40,175	43,833	47,057	48,833	53,333	14,444	37%	0.6%
Elementary	18,345	18,520	20,329	21,864	22,945	24,840	6,495	35%	0.6%
Middle	6,994	7,253	7,864	8,331	8,652	9,535	2,541	36%	0.6%
High	9,887	10,612	11,509	12,427	12,637	13,933	4,046	41%	0.7%
Options	3,663	3,791	4,132	4,435	4,598	5,025	1,362	37%	0.6%

Source: ECONorthwest
*High School growth rates for Cooper Mtn/Sexton Mtn are for 2020-2065, because 2015 has zero students.
Note: Green shading indicates growth rates that surpass the District average. Red shading indicates that they grow slower.

ECO forecasts that the Beaverton School District's enrollment will grow by 14,444 students (an increase of 37%) from 2015 through 2065 (an average annual growth rate of about 0.6%). Most of the growth (68%) will happen by 2035, by which point the District will already have gained 9,944 students.

Growth will happen fastest in the Bethany and Cooper Mtn/Sexton Mtn areas, where enrollment will grow at 0.8% and 1.6% per year respectively. Each of the

three other subareas will grow slower than the District as a whole. The number of high school students will grow faster than the District as a whole, at 0.7%.

Exhibit 7 shows the share of total District enrollment for each subarea and grade level. The shading indicates which areas will increase their share of the District's students. Areas with green highlighting will see their share increase, while areas with red shading will see a decrease in their share.

Exhibit 7. Share of Total Enrollment by Subarea and Grade Level, 2015-2035 and 2065

	Enrollment						Enrollment Change 2015 - 2065	
	2015	2020	2025	2030	2035	2065	Change in Share of District	AAGR
Aloha/Elmonica	18%	17%	15%	15%	15%	16%	-3%	0.3%
Elementary	19%	16%	15%	15%	16%	17%	-3%	0.3%
Middle	24%	26%	20%	19%	21%	20%	-4%	0.3%
High	20%	18%	18%	17%	17%	16%	-3%	0.3%
Bethany Area	12%	10%	11%	12%	13%	13%	1%	0.8%
Elementary	11%	11%	11%	12%	14%	13%	3%	1.0%
Middle	2%	2%	4%	5%	6%	7%	5%	3.1%
High	26%	18%	20%	20%	19%	22%	-4%	0.4%
Cedar Hills/Garden Home	31%	29%	29%	28%	27%	27%	-4%	0.4%
Elementary	29%	27%	25%	25%	24%	23%	-6%	0.2%
Middle	48%	47%	52%	51%	49%	50%	2%	0.7%
High	33%	31%	31%	28%	28%	27%	-6%	0.3%
Cooper Mtn/Sexton Mtn	11%	18%	18%	19%	20%	19%	7%	1.6%
Elementary	20%	24%	25%	24%	26%	24%	5%	1.0%
Middle	12%	13%	12%	12%	13%	12%	0%	0.6%
High*	0%	17%	17%	22%	21%	20%	20%	0.9%
Sunset/Cedar Mill	18%	16%	17%	17%	16%	16%	-2%	0.4%
Elementary	21%	22%	23%	23%	21%	23%	1%	0.7%
Middle	14%	12%	12%	12%	12%	11%	-3%	0.1%
High	21%	16%	14%	14%	15%	15%	-7%	-0.1%
Options Schools	9%	9%	9%	9%	9%	9%	0%	0.6%
Total Subarea	38,889	40,175	43,833	47,057	48,833	53,333	NA	0.6%
Elementary	47%	46%	46%	46%	47%	47%	-1%	0.6%
Middle	18%	18%	18%	18%	18%	18%	0%	0.6%
High	25%	26%	26%	26%	26%	26%	1%	0.7%
Options	9%	9%	9%	9%	9%	9%	0.0%	0.6%

Source: ECONorthwest
*High School growth rates for Cooper Mtn/Sexton Mtn are for 2020-2065, because 2015 has zero students.
Note: Green shading in the "Change in Share of District" column indicates that the share of the district overall increases, while red shading indicates a decline. In the "AAGR" column, green shading indicates an above-average growth rate, while red shading indicates below average.

Cedar Hills/Garden Home had the largest share of students in 2015, with 11,924 of the District's 38,889 students (31%). By 2065, it will have 2,315 more students, but it's share of the district's population will fall from 31% to 27%.

Alternatively, Cooper Mtn/Sexton Mtn will grow much faster than the District overall, due largely to the soon-to-be-opened South Cooper Mountain High School. In 2015 this area had 4,464 students. By 2065, ECO forecasted that number to grow to 9,979, more than doubling the area's enrolment and bringing its share of the District's enrollment from 11% to 19%.

3.2 Comparison to Other Forecasts

A common method for assessing a forecast is to compare it to prior forecasts of the same variable for the same area or, more generally, to related and accepted

regional forecasts of economic (employment) and demographic (population and household) growth. ECO considered three forecasts that are relevant.

Directly relevant is the forecast of the Washington County Transportation Futures Study (WCTFS). That is the most recent and detailed forecast of employment, population, and development in Washington County, and the only one that goes out 50 years. Because this *Futures Study* for the Beaverton School District relies on data and models from the WCTFS for its forecast, its forecasts are entirely consistent the ones in the WCTFS.

Another typical comparison would be to regional forecasts of growth done by Metro. But here, too, the comparison is already built into the forecasts done for this *Futures Study.* The WCTFS built off and improved the most recent regional forecast (in Metro's 2014 *Urban Growth Report*), and this *Futures Study* is using, with small modifications, the data and models of the WCTFS forecasts.

ECO's forecast estimates that between 2020 and 2030 the population of school-aged children within the District will grow by 1.15% per year, and for the entire 50-year period will average 0.68% per year. In comparison, Metro forecasts that the region overall will grow at 0.96% per year in the first twenty years (slightly slower than ECO's forecast), and at 0.85% per year over the full 40-year period (slightly faster than ECO's forecast). Differences between these two forecasts are expected given that they measure (a) different populations, and (b) different geographies.

The third comparison is to an enrollment forecast for the district done by Portland State University (PSU) in 2012 for the Beaverton School District. ECO compared its forecast to that of PSU (Exhibit 8). Because the two studies do not estimate the same years, ECO cannot compare every year. Therefore, ECO compared its forecasts in the overlapping years, 2015, 2020, and 2025.

Exhibit 8. Forecast Comparison, District Students, ECO and PSU, 2010 - 2030

	2015	2020	2025	Change (2015-2025) #	%	AAGR
PSU (2012)	39,548	41,337	43,361	3,813	9%	0.9%
ECO (2016)	38,889	40,175	43,833	4,944	11%	1.2%
Difference	659	1,162	472	1,131	2%	0.3%

Source: ECONW; Portland State University, *Beaverton School District Population and Enrollment Forecasts 2012-13 to 2025-26*, April 2012

Exhibit 8 shows that PSU's 2012 forecast estimated that there would be 659 more students in the fall of 2015 than actual attendance (according to the District's records). For 2025, the estimates of PSU and ECO differ by 472 students, about 1% of total estimated enrollment in that year. Over the period of overlap for the two forecasts, PSU estimated an average annual growth rate of 0.9%, compared to ECO's estimate of 1.2% per year.

3.3 Forecasts by Attendance Area

Section 3.1 provided a roll-up of the forecasts to subarea and school type. Exhibits 10 – 13 provide more detail, showing the student forecasts by attendance area for all schools in the District.

Exhibit 9 shows enrollment by elementary school attendance area (as defined in 2015) from 2015 through 2065.

Exhibit 9. Enrollment Forecast by Elementary Attendance Area, 2015-2065

	Enrollment						
	2015	2020	2025	2030	2035	2040	2045
Aloha Huber K-8 Elementary	833	800	834	876	877	855	886
Barnes Elementary	677	331	314	402	449	360	375
Beaver Acres Elementary	771	641	672	805	815	721	777
Bethany Elementary	552	575	590	603	583	577	592
Bonny Slope Elementary	643	665	810	881	846	886	948
Cedar Mill Elementary	386	364	449	535	507	479	530
Chehalem Elementary	513	475	474	525	532	497	514
Cooper Mountain Elementary	487	681	725	677	703	852	811
Elmonica Elementary	610	475	465	504	537	488	487
Errol Hassell Elementary	488	537	571	586	607	636	630
Findley Elementary	826	786	966	1,046	948	956	1,077
Fir Grove Elementary	501	503	489	509	517	502	492
Greenway Elementary	362	380	373	367	376	379	371
Hazeldale Elementary	505	534	632	766	837	836	830
Hiteon Elementary	679	838	836	777	770	857	828
Jacob Wismer Elementary	739	786	867	859	801	854	897
Kinnaman Elementary	670	676	715	756	779	772	785
McKay Elementary	348	334	349	381	369	357	378
McKinley Elementary	650	384	335	439	595	530	414
Montclair Elementary	387	402	383	431	464	424	422
Nancy Ryles Elementary	570	874	1,105	1,125	1,493	1,863	1,597
Oak Hills Elementary	552	581	617	652	629	617	645
Raleigh Hills K-8 Elementary	363	346	393	434	410	385	426
Raleigh Park Elementary	395	426	489	506	473	493	517
Ridgewood Elementary	446	489	529	522	531	564	571
Rock Creek Elementary	582	596	607	618	621	621	628
Scholls Heights Elementary	546	739	940	957	1,108	1,355	1,268
Sexton Mountain Elementary	513	655	674	604	580	667	648
Springville K-8 Elementary	834	849	1,119	1,485	1,985	2,253	2,028
Terra Linda Elementary	407	495	583	584	548	612	658
Vose Elementary	685	571	577	658	663	584	613
West Tualatin View Elementary	350	354	456	518	510	498	542
William Walker Elementary	475	377	389	476	479	408	450
New Schools							
Sato Elementary							
Fishback Perrin Elementary							
South Cooper Mountain Elementary							
Total	18,345	18,520	20,329	21,864	22,945	23,736	23,635

Note: 1) K-8 enrollment and capacity counts only grades K-5.

Exhibit 10 shows enrollment by middle school attendance area (as defined in 2015) from 2015 through 2065.

Exhibit 10. Enrollment Forecast by Middle School Attendance Area, 2015-2065

	Enrollment											Enrollment Change 2015 - 2065		
	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	#	%	AAGR
Cedar Park Middle	893	917	1,030	1,171	1,209	1,152	1,206	1,302	1,309	1,283	1,343	450	50%	0.8%
Conestoga Middle	853	836	1,065	1,076	1,031	1,106	1,233	1,144	1,094	1,168	1,203	350	41%	0.7%
Five Oaks Middle	799	993	812	787	905	986	888	870	1,026	1,039	1,041	242	30%	0.5%
Highland Park Middle	814	784	1,170	1,174	1,077	1,249	1,451	1,235	1,151	1,294	1,310	496	61%	1.0%
Meadow Park Middle	681	686	595	620	696	684	620	673	719	684	667	-14	-2%	0.0%
Mountain View Middle	842	917	961	1,036	1,084	1,104	1,098	1,098	1,112	1,114	1,109	267	32%	0.6%
Stoller Middle	1,008	888	932	1,037	1,049	970	1,020	1,085	1,046	1,014	1,072	64	6%	0.1%
Whitford Middle	586	660	616	624	676	682	635	671	710	686	673	87	15%	0.3%
Aloha Huber K-8 Middle	178	197	179	195	207	208	199	213	221	216	215	37	21%	0.4%
Raleigh Hills K-8 Middle	187	202	194	207	218	212	200	220	224	214	210	23	12%	0.2%
Springville K-8	153	174	308	404	500	697	749	593	645	750	693	540	353%	3.1%
New School Timberland Middle														
Total	6,994	7,253	7,864	8,331	8,652	9,049	9,299	9,106	9,258	9,461	9,535	2,541	36%	0.6%

Note: 1) K-8 enrollmen counts only grades 6-8.

Exhibit 11 shows enrollment by high school attendance area (as defined in 2015) from 2015 through 2065.

Exhibit 11. Enrollment Forecast by High School Attendance Area, 2015-2065

	Enrollment											Enrollment Change 2015 - 2065		
	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	#	%	AAGR
Aloha High	1,937	1,859	2,084	2,077	2,155	2,258	2,258	2,199	2,250	2,300	2,269	332	17%	0.3%
Beaverton High	1,692	1,707	1,822	1,726	1,819	1,934	1,895	1,848	1,982	2,044	1,969	277	16%	0.3%
Southridge High	1,581	1,631	1,721	1,717	1,673	1,729	1,750	1,737	1,737	1,770	1,770	189	12%	0.2%
Sunset High	2,124	1,649	1,620	1,745	1,937	1,927	1,848	1,983	2,088	2,046	2,036	-88	-4%	-0.1%
Westview High	2,553	1,958	2,249	2,450	2,430	2,666	2,943	2,868	2,680	2,992	3,068	515	20%	0.4%
New School South Cooper Mountain High		1,810	2,013	2,713	2,625	2,490	2,822	3,002	2,649	2,614	2,822	2,822		
Total	9,887	10,613	11,509	12,428	12,638	13,004	13,514	13,637	13,385	13,766	13,934	4,047	41%	0.7%

Exhibit 12 shows enrollment by option school attendance area from 2015 through 2065.

Exhibit 12. Enrollment Forecast by Option School, 2015-2065

	Enrollment											Enrollment Change 2015 - 2065		
	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	#	%	AAGR
ACMA	718	743	810	869	901	933	948	953	960	975	985	267	37%	0.6%
Health & Science School	863	893	973	1,045	1,083	1,121	1,140	1,146	1,153	1,172	1,184	321	37%	0.6%
ISB	884	915	997	1,070	1,110	1,149	1,167	1,173	1,181	1,200	1,213	329	37%	0.6%
Merlo Station Community High School	164	170	185	199	206	213	217	218	219	223	225	61	37%	0.6%
Terra Nova High School	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bridges Academy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summa Programs	853	883	962	1,033	1,071	1,108	1,127	1,132	1,140	1,158	1,170	317	37%	0.6%
Rachel Carson School	181	187	204	219	227	235	239	240	242	246	248	67	37%	0.6%
Early College School*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	3,663	3,791	4,132	4,435	4,598	4,760	4,838	4,863	4,895	4,974	5,025	1,362	37%	0.6%

Notes:
Summa Programs and Rachel Carson School are housed within middle schools whose capacity is counted in tables above.
* Early College School students attend PCC. Not counted in forecast based on conversation with ECONW and Robert McCracken on 9/21/16.

Supplement to Appendix A: MetroScope and the WCTFS as a Basis for Forecasting Students

Appendix A (Forecast of Student) of the *Futures Study* of the Beaverton School District provides a summary explanation of how MetroScope was used as a basis for forecasting students. This document is a supplement to Appendix A. It provides more technical information about what MetroScope is, how it operates, and how it was used in the *Washington County Transportation Futures Study* (WCTFS, 2015-17) to forecast development and population growth by subareas of the County. Those forecasts, and the assumptions and model parameters that led to them, were a starting for the student forecasts of the District's *Future Study.*

1 Overview of MetroScope

MetroScope is an integrated set of land use and transportation models, developed by Metro and used for allocating growth forecasts and evaluating a wide range of policy scenarios.

For each forecast year, regional control totals for households by category and employment by sector are provided from an econometric model. The land use model takes these forecasts and distributes them spatially over the buildable land in the region. A transport module is integrated with the land use model, so that the household and employment distributions can respond to changes in accessibility.

For both the residential and non-residential modules, real estate market forces determine the supply of and demand for built space. If the quantity supplied is less than the quantity demanded, then prices rise, which makes it more profitable to build and less affordable to buy. Similarly, if the quantity supplied is greater than the quantity demanded, then prices fall, which makes space less profitable to build and more affordable to buy. The modules are iterated until supply matches demand.

2 Inputs and Parameters

Overview of types of inputs used by :

- **Network**: The transportation network is represented as files containing zone-to-zone travel times for every zone pair.
- **Land Supply**: Buildable land is represented as acres by zone by zoning class, along with assumptions about the density at which land in each zoning class will be developed. The supply of redevelopable land is represented as the number of equivalent acres of vacant land.
- **Development Costs**, Subsidies, and SDCs: Assumed development costs vary by zoning type, whether it is on vacant land or redevelopment, the cost of system development charges, and the value of subsidies to developers, if any. SDCs and subsidies are specified for each zone.
- **Development Rate**: When land is made available for development, not all of it gets developed immediately. Input parameters specify the maximum proportion of newly available land can be developed in any five-year period.
- **Neighborhood Scores**: Each residential zone is assigned a "neighborhood score" encapsulating the effects of all neighborhood attributes (as of the base year) not otherwise modeled explicitly.
- **Control Totals**: MetroScope requires, for each five-year increment, the total number of households, the proportion of households in each of 400 categories (defined by household size, presence of children, household income, and age of the household head), and employment by sector (14 sectors).
- TAZ allocation: Metro has employment zone-to-TAZ and residential zone-to-TAZ crosswalks to distribute household and employment totals transportation analysis zones.

3 Scenario 1 of the WCTFS

3.1 Network

New travel-time skims for years through 2040 that are consistent with the Climate Smart network were provided by Metro and used in all WCTFS modeling. ECONorthwest also extended the travel-time skims out to 2060. For each zone pair, the highest growth rate in travel time for any 5-year period from 2015 to 2040 was applied to periods after 2040. This means that there is a gradual increase in travel time between zone pairs for the years 2040-2060. While the

model was not very sensitive to this change, the technical team felt that it was a realistic assumption.

3.2 Land Supply

The following changes were made to the land supply:

- Year 1 change to add supply for Cornelius (some of the land brought into the UGB under HB 4078 was mistakenly not included in Metro's Buildable Land Inventory data)
- Capacity in cities outside the Metro UGB was intended to represent a 20-year supply. Metro used the growth rate seen for the cities for the last 10 years (2000 to 2010) and doubled it to represent additional demand in the 20-year horizon. Since this study is intended for a fifty-year horizon, the additional supply was simply doubled again and the new supply was added in the year 2035.
- Urban reserves were brought online from 2030 through 2050
- The strike price used to generate the amount of redevelopment supply in multi-family and mixed-use zones was adjusted to $35/$40 respectively. Metro's model run used $10/$12 for all of Washington County, which was not generating as much supply as the project team felt should be available. The updated values are half of the amount used for close-in Portland (downtown Portland uses $130 for both categories) and were determined to be closer to reality for the prices seen in recent developments. This created an additional 16,995 units over the supply used by Metro for the Urban Growth Report. Creating the additional supply does not mean it will be consumed by the model.

No new land supply was introduced after 2045. The models continued to consume land made available in earlier periods.

3.3 Subsidies and SDCs

Metro's base model run assumed significant subsidies to residential development in certain areas, particularly in central Portland but also is in a couple of places in Washington County. There is no future funding for such subsidies and their inclusion in the metro base run was considered controversial. S1 inputs assumed no subsidies in the region.

The metro base run also had different levels of system development charges (SDCs) levied on development to reflect the cost of providing new infrastructure. SDCs don't need funding them and cities have more leeway in defining them than they typically do with subsidies, which often require funding. S1 assumed no changes to the SDCs used in the base run.

3.4 Neighborhood Scores

The neighborhood scores used in the Metro Baseline specification were produced from econometric modeling of base-year conditions such as sales price. The value is used by the model to determine the relative attractiveness of particular neighborhoods. For neighborhoods that have not yet been developed or are in the process of redevelopment, those scores will misrepresent the attractiveness of the neighborhoods after development. Washington County staff altered the neighborhood scores (Exhibit 1) in those areas to a higher score, based on an area with similar attributes and sales prices anticipated for the new and redevelopment areas. .

Exhibit 1: Neighborhood Scores in Scenario 1

Description	Rzone	Old Score	New Score
South Hillsboro	326	0.3979	0.706784
Cooper Mtn	300	0.454915	0.706784
Cooper Mtn	305	0.619031	0.706784
River Terrace	310	0.531005	0.706784
North Bethany	281	0.634489	0.706784
Orenco	339	0.697017	0.706784
Amberglen	287	0.377265	0.706784
Tanasbourne	295	0.377265	0.706784
Tigard Triangle	261	0.470068	0.706784
Tualatin/Wilsonville Residential Reserves	322	0.483345	0.706784
Tualatin/Wilsonville Residential Reserves	324	0.649927	0.706784
Sherwood West Reserve	325	0.618659	0.706784
King City Reserve	309	0.537079	0.706784

Source: Washington County

3.5 Control Totals

Population, households, personal income, and CPI are as reported for the "base" in Appendix 1a to the 2014 Urban Growth Report (Exhibit 2).

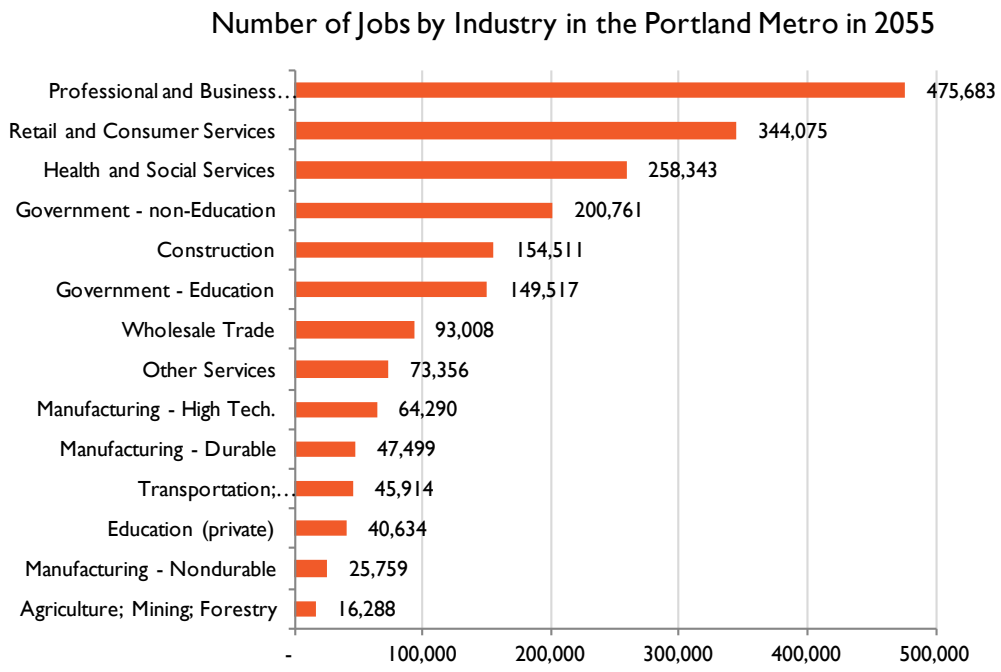
Exhibit 2: Households, Population, CPI, and Personal Income in Scenario 1

Year	Households	Population	US CPI	Personal Income (Nominal $000)
1990	593,092	1,523,741	130.7	$ 30,720,000
2000	746,625	1,927,881	172.2	$ 63,463,000
2005	901,794	2,067,325	195.3	$ 74,750,000
2010	867,794	2,226,009	218.1	$ 87,940,000
2015	898,746	2,342,501	240.3	$ 113,240,000
2020	977,439	2,519,163	264.8	$ 152,425,000
2025	1,048,227	2,671,777	291.5	$ 192,794,000
2030	1,119,466	2,814,058	321.7	$ 241,065,000
2035	1,185,775	2,937,885	356.9	$ 299,650,000
2040	1,244,782	3,052,078	397.3	$ 372,295,000
2045	1,306,725	3,170,710	442.3	$ 462,551,534
2050	1,340,587	3,284,438	492.3	$ 574,689,215
2055	1,375,326	3,402,246	548.1	$ 714,012,752
2060	1,406,000	3,534,390	610.1	$ 887,112,890

Source: ECONorthwest and Metro, 2014 Urban Growth Report, Appendix A, 2014 Draft

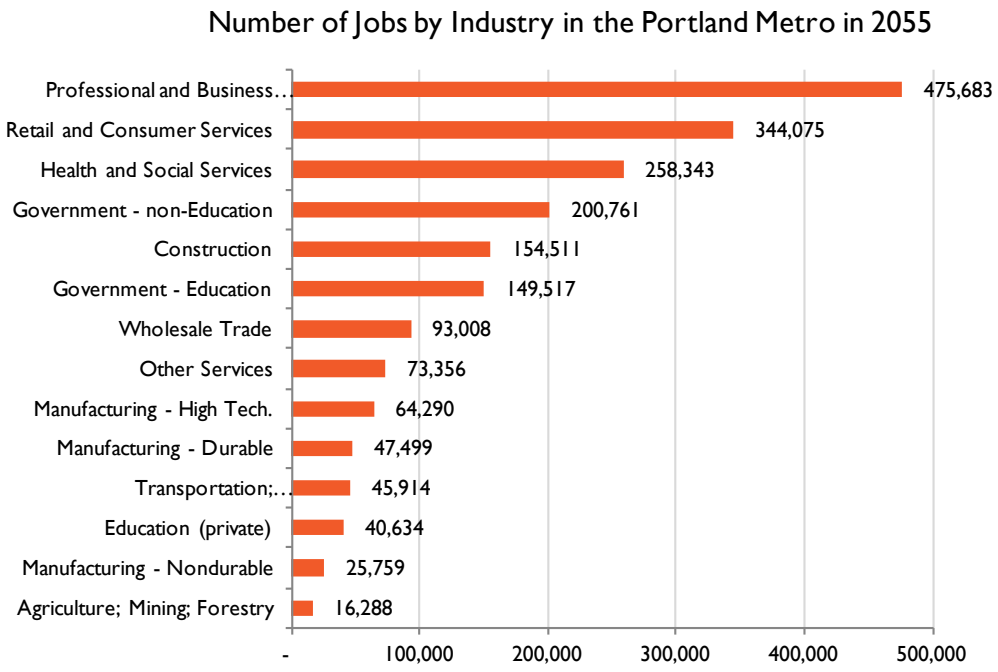
Employment was the same as in the Metro Baseline mode specification through 2045 (Exhibit 3 and 4) The model input values were a little higher than Appendix 1a. The growth rates from 2040 to 2045 were applied to forecast subsequent years to 2060.

Exhibit 3: Employment in Scenario 1



Source: ECONorthwest and Metro, *2014 Urban Growth Report, Appendix A*, 2014 Draft

Exhibit 4: Employment by Industry in Scenario 1 for Portland Metro Region



Source: ECONorthwest and Metro, *2014 Urban Growth Report, Appendix A*, 2014 Draft

3.6 TAZ Allocations

Employment zone-to-TAZ and residential zone-to-TAZ crosswalks for 2050, 2055, and 2060 were copied from 2045. That means that the same shares of households and employment are allocated to the TAZs from the larger geographies for those years as in 2045. The study team reviewed and adjusted TAZ allocations for 2055 as needed to match zoning and development patterns before using them in the travel demand model. This is the same process Metro uses for regional modeling work.

Appendix B. Education Models

In 2017, the Beaverton School District completed its *Futures Study*: an exploration of how District facilities and services might evolve over the next 20–50 years. That document is available from the District.

This document is an appendix to the *Futures Study*. It provides more detail about the research related to educational models, which is addressed in Chapter 4 of the *Futures Study*. Getting Smart is the primary author of this appendix.

Beaverton Futures Study Appendix B: The Future of Learning

Table of Contents

Introduction

For the last 50 years, school districts have acted as a central pillar for American communities. They not only provide education for our students, but they provide a sense of culture and community in neighborhoods that is difficult for anything else to match. As we look ahead to the next 50 years, school districts will take this responsibility to new heights by extending the options, opportunities and services they provide.

Although it is difficult to say with complete certainty what learning will look like 50 years from now, the combination of new technologies with a deeper understanding of how the brain learns will yield a highly personalized experience for learners where students will progress by mastery of content rather than solely by age cohorts. Soon data will be tailored to specific customer situations. A simple example: Sponsored content in your Google search results thanks to Google Adwords. Much like mobile push-learning[1], content delivery will be informed by learning data.

This will involve deep integration between platforms with less UX (user experience) differentiation, however as technology advances, so will the need and ability for quality experiential learning. Districts of the future will make the adjustments needed to prepare students for an unfamiliar future. There will be a greater emphasis on early education and the effects it has on equity and preparation. Students will be given more opportunity to engage in experiences and meaningful projects that prepare for an increasingly project-based world. Students will prepare for jobs that may not exist now and will be prepared to create their own paths toward college and career, often starting before high school graduation.

Through this study, we worked to match education models to each scenario, painting possible futures for how educational services might be delivered. As outlined in the report, we recommend the teaching and learning teams continue their work in ongoing study of education trends and best practices to ensure practices are put into place that are best suited for the unique needs of the Beaverton School District community. As technology advances quickly, the opportunities for (and the implications on) teaching and learning will evolve. The education information outlined in this report is not designed to be extensive, but rather to provide a set of resources to support a vision into the future.

Through this education models appendix, we will highlight how the district can take a comprehensive and proactive approach to district growth while maintaining a high level of quality education for Beaverton students. This appendix research will present an overview of key trends in education today, important factors that will impact trends of the future and the opportunities and implications they present.

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[1] http://www.gettingsmart.com/2015/05/push-learning-how-smart-notifications-will-change-education/

Education Trends

Access to information has dramatically shifted the way in which individuals learn. Learning science has provided insight into how the brain processes information. Current trends in education have been shaped by new technologies and a better understanding of how individuals learn. Current pockets of innovation, across the country and the globe, offer a study into different models and practices that are shifting the traditional mold of education.

The last two decades of standards-based reform were a series of improvement efforts[2] with a focus on good teaching in every classroom. It included higher expectations, with aligned curriculum, assessments and professional development. It left intact basic structures of age cohorts, the agrarian calendar and time-based courses and credits. While well executed, this agenda led to incremental improvements and narrowed gaps. Innovations including personalized[3] and competency-based learning[4] means doing things differently hoping for step function improvement in traditional as well as broader aims[5]. But it's hard, often risky work that may require investment in capacity and tools.

As the world around us continues to change, it will be important that we apply the lessons of the past to the trends of the future in order to ensure that we are creating powerful learning experiences for all. We can think of these lessons in terms of arcs that have spanned the history of education and learning.

In recent history, we have seen a variety of trends, all designed to push learning forward in effective and efficient ways; some have come and gone as "just another educational fad," while others have stood the test of time. Among the most significant national trends that will act as overarching themes into the future of learning are:

- Blended and online learning;
- Competency based (or mastery based) education;
- Personalized learning;
- Project-based and Place-based; and
- Social emotional learning.

These models are all driven by the desire to provide deeper learning experiences[6], "the delivery of rich core content to students in innovative ways that allow them to learn and then apply what they have learned."

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[2] http://www.gettingsmart.com/2016/10/on-balancing-improvement-innovation/

[3] http://www.gettingsmart.com/2016/05/personalized-project-based-learning/

[4] http://www.gettingsmart.com/2016/09/shifting-to-competency-based-education-a-tale-of-three-states/

[5] http://www.gettingsmart.com/2016/06/superintendents-aim-to-redefine-readiness/

[6] http://deeperlearning4all.org/about-deeper-learning/

Summary of Educational Models Included in Scenario Development

The information below recaps the education models referenced throughout scenario development. For each education model, you will find definitions, examples and implications.

Competency-based Education

There continues to be increased interest in competency-based education as districts realize greater personalization will be key to better prepare students for college and career. At the state level[7], policies are being developed and adjusted to allow for competency education innovations.

The term competency-based education, as defined by CompetencyWorks[8], refers to a systems model in which (1) teaching and learning are designed to ensure students are becoming proficient by advancing on demonstrated mastery and (2) schools are organized to provide timely and differentiated support to ensure equity. A competency-based structure enables personalized learning to provide flexibility and supports to ensure mastery of the highest standards possible. With clear and calibrated understanding of proficiency, learning can be tailored to each student's strengths, needs, and interests and enable student voice and choice in what, how, when, and where they learn.

Examples & Resources	General implications on space
Great Schools Partnership[9] Competency Works[10] The Shift From Cohorts to Competency[11]	Traditional age based cohorts are redefined. More kids will move more quickly through the system and will enter work based and dual enrollment sooner (Seniors on/off campus). School spaces especially in elementary and middle will be less reliant on cohort based classrooms and will be flexible space that allow teachers to meet with students in small groups.

Blended and Online Learning

New technology has created the ability for any student on the planet to learn any subject at anytime. While it may feel far fetched there are examples both nationally and internationally of this radical shift in learning. In traditional school environments blended and online learning has allowed districts, schools and teachers to expand options, choice and customize learning for all students.

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[7] http://www.gettingsmart.com/2016/02/3-smart-state-approaches-to-competency-based-education/
[8] http://www.competencyworks.org/
[9] http://www.greatschoolspartnership.org/
[10] https://www.competencyworks.org/
[11] http://www.gettingsmart.com/publication/shift-cohorts-competency/

Blended Learning: As defined by The Christensen Institute for Disruptive Innovation[12], blended learning is when the best of face-to-face and online learning are combined in a blended environment. A formal education program in which a student learns: at least in part through online learning, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home; and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience. *Note: When referenced in the frame of 50 years ahead, we see this as a dynamic definition in which the available technology will shift, but the model will remain the combination of the best of available technology with the best of in person interaction (between learners and teachers/school staff).*

Online Learning: Keeping Pace[13] defines online learning as teacher-led education that takes place over the internet, with the teacher and student separated geographically, using a web-based educational delivery system that includes software to provide a structured learning environment. It may be synchronous (communication in which participants interact in real time, such as online video) or asynchronous (communication separated by time, such as email or online discussion forums). It may be accessed from multiple settings (in school and/or out of school buildings)

Examples & Resources	General implications on space
Grant Beacon Middle School[14] Blended Learning Universe[15] Blended Learning Implementation Guide[16]	Fully online opportunities pave an opportunity for students to move from the traditional school campuses, however blended classrooms and schools may fall on a continuum from a decreased need for space per student to an increase (an example of blended learning yielding a higher footprint is Huntly[17]). To provide high quality blended and online environments students will need access to buildings with strong broadband and flexible learning spaces.

Personalized and Experiential Learning

One outcome of an increased access to technology is the ability to create a deeply personalized experience for students. This includes not just the development of content knowledge, but also the experiences that support a deeper understand of content and how it relates to the world and the personal interests and passions of students. Mobile technology powers anywhere anytime

[12] https://www.christenseninstitute.org/blended-learning-definitions-and-models/

[13] http://www.kpk12.com/reports/

[14] http://www.gettingsmart.com/2015/10/grant-beacon-middle-school-builds-character-extends-and-blends-learning/

[15] https://www.blendedlearning.org/

[16] http://www.gettingsmart.com/publication/blended-learning-implementation-guide-2-0/

[17] http://gettingsmart.com/2016/08/huntley-blend-provides-support-flexibility/

learning and augmented reality (e.g., Pokemon Go) and virtual reality are becoming more available and extending the power of immersive learning and trend that will only advance in the next 50 years.

Personalized Learning: According to the National Education Technology Plan, "personalized learning" is paced to student needs, tailored to learning preferences and customized to the specific interest of different learners. We believe personalized learning also includes daily engagement with powerful learning experiences, flexibility in path and pace and the application of data to inform the individual learning trajectory of each student.

Project-based Learning: One way to ensure all students achieve deeper learning outcomes is to ensure they have access to high-quality project-based learning[18] (PBL). As defined by Buck Institute for Education, PBL "is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge."

Place-based Education: Place-based education[19] (PBE) is an approach to learning that takes advantage of geography to create authentic, meaningful and engaging personalized learning for students and is more broadly is defined[20] as an immersive learning experience that "places students in local heritage, cultures, landscapes, opportunities and experiences, and uses these as a foundation for the study of language arts, mathematics, social studies, science and other subjects across the curriculum." With a focus on broader aims and #RedefiningReady[21], PBE connects kids to their community and builds relationship skills.

Internships: Every student should graduate from high school having experienced success in several work settings (one of 10 vital experiences[22]). There's no better way to earn job skills than on the job. Work-based learning experiences are a great way to narrow interests and focus future learning. As we noted in a paper on college and career guidance[23], most high school students would benefit from more Internships and job shadows.

Examples & Resources	General implications on space
Place-Based Education and Why it Matters[24]	Project-based learning and experiential opportunities like makerspaces require specialized space unless partnerships are formed and students participate in off campus activities.

[18] http://www.gettingsmart.com/publication/preparing-students-project-based-world/
[19] http://gettingsmart.com/2016/07/genius-loci-place-based-education-why-it-matters/
[20] promiseofplace.org/what_is_pbe
[21] http://www.gettingsmart.com/2016/06/superintendents-aim-to-redefine-readiness/
[22] http://www.gettingsmart.com/2014/09/better-prep-experiencing-success-whats-next/
[23] http://digitallearningnow.com/site/uploads/2014/05/FINAL-Smart-Series-Core-and-More-Guidance.pdf
[24] http://www.gettingsmart.com/2016/07/genius-loci-place-based-education-why-it-matters/

Katherine Smith Elementary[25] Preparing Students for a Project-Based World[26] Lighting the Path to Personalized Learning[27]	Schools with high numbers of students participating in internships can either have a smaller footprint or higher student capacity.

College and Career Readiness

College and career readiness refers to the content knowledge, skills, and habits that students must possess to be successful in postsecondary education or training that leads to a sustaining career. A student who is ready for college and career can qualify for and succeed in entry-level, credit-bearing college courses without the need for remedial or developmental coursework. (David Conley). Schools and district leaders will continue to look to "redefine ready[28]," in an effort to better prepare students for the world beyond K - 12. This includes:

Early College: Early college high schools, for example, use a blended approach and have produced incredible results. Early college students receive support to complete up to two years of college credit and earn an associate's degree as part of the high school curriculum. There are over 280 such schools[29] around the country serving largely low-income and first generation college students, and many of the schools are located on college campuses. Rigorous research[30] shows that early college schools ensure that more students finish high school and start and complete college credentials, including the roughly 30 percent[31] who finish an associate's degree along with their high school diploma.

Dual Credit: Dual credit is a program that allows high school students to enroll in college courses for credit prior to high school graduation. College credits earned through dual credit can be applied toward high school and college graduation and can be transferred to other colleges or universities.

Career & Technical Education: More specialized space in their own schools or more community partnerships. This also includes internships (as described above).

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[25] http://www.gettingsmart.com/2015/12/quality-work-project-based-learning-at-katherine-smith-elementary/

[26] http://gettingsmart.com/publication/preparing-students-project-based-world/

[27] http://www.gettingsmart.com/publication/lighting-path-personalized-learning/

[28] http://www.gettingsmart.com/2016/06/superintendents-aim-to-redefine-readiness/

[29] http://www.jff.org/initiatives/early-college-designs/schools

[30] http://www.air.org/sites/default/files/AIR_ECHSI_Impact_Study_Report-_NSC_Update_01-14-14.pdf

[31] http://www.jff.org/publications/early-college-expansion-propelling-students-postsecondary-success-school-near-you

Examples & Resources	General implications on space
School networks like Cristo Rey[32] use an advisory period to prepare students for work-study or to coordinate work-based learning experiences and internships. Simon's Rock Early College[33] Beaverton school district[34] - currently works in partnership with PSU for dual credit as well as student awareness of resources Personalizing and Guiding College and Career Readiness[35]	Can dramatically impact the time that students are required to be on campus. Especially for Junior and Seniors who may be spending time at flex centers or on college campuses.

Early Learning

Early learning refers to the formal and informal experiences, activities and supports for children from birth through age 8 that are designed to improve their health, social-emotional, and cognitive outcomes to provide a strong foundation for their future success. While preschool, PreK and child care programs are the most common and visible early learning programs, increasingly educators are addressing two other key areas: infant and toddler development (through programs that typically address parent-child interactions and infant-toddler health) and PreK-3rd education, which creates stronger alignment between early learning programs and the primary grades.

Traditionally preschool and preK required families to pay tuition, although Oregon and other states have expanded public preK programs. Increasing research around the importance of early education (and the gap that is already set in place by K for those students without access to strong early learning opportunities — either at home or at pre-school) point to the need for publicly funded options for families. The Oregon Legislature enacted the Preschool Promise

[32] http://www.cristoreynetwork.org/
[33] http://gettingsmart.com/2015/06/simons-rock-early-college-three-gendiy-women-paving-their-own-path/
[34] https://www.beaverton.k12.or.us/PS/Pages/College--Career-Information.aspx
[35] http://www.gettingsmart.com/publication/personalizing-and-guiding-college-career-readiness-2/

program in 2015, which is providing funding to school districts, private providers, and community-based programs to expand the number of preschool slots around the state.

Examples & Resources	General implications on space
David Douglas and Pendleton[36] Washington DC[37] and AppleTree Institute	Could require significant increase in space, however there are big opportunities for community partnerships and creative approach to co-location.

New School Models

An important K-12 innovation[38] of the last twenty years has been new school development. This takes many different forms, but will be important for districts to be aware of and participate in.

Charter Schools: Charter schools are public schools of choice, meaning that families choose them for their children. They operate with freedom from some of the regulations that are imposed upon district schools. Charter schools are accountable for academic results and for upholding the promises made in their charters. Beaverton school district currently operates 2 charter schools, but could think of expanding choice for district families through charter schools, which often require less space than traditional campuses and can utilize nontraditional buildings.

Microschools: Thanks to new learning tools and strategies, the opportunity to open "microschools"[39] as a school-within-a-school or as low-cost private school is getting a lot easier. Models can be as simple as a principal supporting teacher-leaders in trying a new blended, interdisciplinary, and project-based approach. They can be platform-based, produced by an online learning provider that can be adopted by teachers. Even larger districts could use a microschool strategy as part of a collaborative and distributed innovation[40] strategy. Regardless of the size or approach, microschools are fostering cultures of experimentation[41].

Community Schools: Community schools are designed to respond to students' complex health and basic needs that present barriers to learning (demographic and economic trends

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36 http://www.childinst.org/images/Building-Blocks-Fall2014.pdf

37 http://www.gettingsmart.com/2016/04/dc-extends-performance-contracting-k-12-pre-k-residential-adult-ed/

38 http://www.gettingsmart.com/2015/07/how-to-innovate-combine-new-tools-new-schools/

39 http://gettingsmart.com/2015/05/the-micro-school-opportunity

40 http://gettingsmart.com/2012/07/blended-case-study-leadership-public-schools/

41 http://www.gettingsmart.com/2015/09/in-education-how-do-we-create-a-culture-of-experimentation/

suggest these will become increasingly significant). This includes, but is not limited to housing, behavioral health, physical health, transportation.

Examples & Resources	General implications on space
Summit Public Schools[42] AltSchools[43] 100 Tips & Insights to Opening Great Schools[44] The Micro-School Opportunity[45]	There is a tradition of charters operating in smaller/cheaper rented space. The district could use a couple dependent charters to push enrollment into alternative spaces (not district supported) A scenario that addresses high facilities use vs low facilities use could highlight an aggressive push to a portfolio approach that opens and authorizes innovative schools (charters and microschools. Community schools have a high impact on space required due to additional services space (clinics, community liason offices, etc), but there is also an opportunity to connect to and partner with community organizations.

Emerging Factors

Combining current trends with significant emerging factors allow us to better understand what education might look like 50 years from today. Areas of focus and trends to pay attention to include: community connections, enrollment and competition, increased access to networks and technological advancements.

Community Connections

For decades, public school districts have been a central component to the communities in which they are located. It is highly likely that this deep connection to the community will continue to evolve over time to fully leverage community assets, such as health and human services. Schools are quickly becoming more than solely an academic institution, and in addition to partnering to provide a more comprehensive set of services, the community will also be more conscious to their ability to provide learning experiences. The library, symphony, the zoo, and the hospital will all have learning resources (or even onsite micro schools).

Imagine. Imagine if community partnerships included augmented and virtual realities.

[42] http://www.summitps.org/schools/washington
[43] https://www.altschool.com/
[44] http://www.gettingsmart.com/publication/100-tips-insights-opening-great-new-schools/
[45] http://gettingsmart.com/2015/05/the-micro-school-opportunity/

Audio tour applications are already available in destinations across the world. They combine walking tours with voice overs about a place — based on your geographic location, a "story" is triggered and individual interests inform the experience. Imagine if you were able to click a button in your learner profile to automatically link to a sensor and unlock a set of learning resources at a variety of community organizations across the city. In addition, an application would notify you with options to learn more (in a variety of modalities). Imagine if every community asset had available experiences. If you decide to engage in challenges or assessments, then you can progress into "production" to earn a microcredential[46]. What does that mean for schools? Opportunity to extend the classroom, potentially less needed space, but significantly more time and energy required for strategic scheduling that allows for it.

Enrollment and Competition

In the next 50 years, most urban districts will have to respond to external competition in more significant ways than has currently been the case. Education will become an increasingly more competitive market through both existing and new sources, potentially resulting in lower enrollment. It is estimated, that under the best of circumstances this competition will capture 5 - 10% of students, but could also capture up to 30% of Beaverton enrollment. The District should understand the market variables and be able to respond to them, this includes: microschools, independent charters, innovative programs at neighboring districts, home-school and private schools.

The infrastructure for this competitive environment will vary dramatically state by state. It may not happen as quickly in Oregon, compared to Arizona or Utah, but looking 50 years ahead, the concept of multi-location, multi-provider, anytime, anywhere learning is invertible. As indicated in scenario development, in order to continue to meet the ever-changing needs of the Beaverton students, the districts will need to respond to competition intentionally by providing a variety of learning environments and experiences.

Imagine. Imagine if every student within the district had access to a knowledgeable and passionate advisor that could help navigate information powered by big data sets that would help students and families choose from a variety of learning environments that would help to engage and prepare students for the future. In some cases this might even include a sequence of learning experiences from a variety of "learning providers."

Increased Access to Networks

School networks are one of the most important innovations in the modern era of U.S. K-12 education. They have boosted achievement and graduation rates and expanded quality options in communities that most need them. Educators are working hard to personalize learning and

[46] http://www.gettingsmart.com/2016/08/rethinking-high-school-graduation-requirements-project-microcredentials/

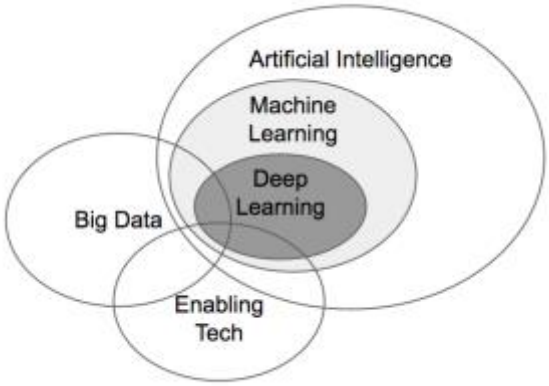
new tools can help, but long-standing success can be supported from a fully aligned system and supports. Personalized learning models are challenging to build. Competency-based progressions add complexity and require a high degree of team coordination and new forms of student, teacher and school support. Developing or adapting platform tools to a learning model is a big technical challenge. Add talent development demands and you have a difficult and daunting challenge, for even the most experienced teams. By providing design principles, curriculum materials, technology tools and professional learning opportunities, networks make it easier to create a good new school or transform an existing school. As a result, school networks[47] will play an increasingly important role in bringing quality to scale.

Imagine. The benefits of networks today are focused on a coherent school model, but imagine the power of networks to support a series of coherent individual experiences that support highly personalized pathways for learners. Pathways may be organized around passions, job clusters, or community assets. For example if you are in an arts and artistic expression cluster, networks can provide the resources and support needed to build learning trajectories that link academics to work experiences to job opportunities, all tailored to a particular community. Networks will become the combination of learning pathways and the resources needed to support them. Schools will extend beyond the classroom in more targeted ways to ensure meaningful experiences for all.

Networks can support a spectrum of hyper-local to hyper-global learning experiences that assumes elementary student learning will look more traditional (local), whereas by high schools students will have more experience outside the traditional walls of school (global) that prepare them for their unique path forward.

Technology

As access to technology increases and as the amount of information that technology can take in and process becomes more sophisticated, the amount of data that environments such as school communities can gather will have a direct impact on learning. Students (and teachers) will know more about what is happening in their brains (including, but not limited to mental and physical health). Sensors in buildings will allow us to consistently monitor and automatically adjust water and air quality 24/7. Students monitoring for health and safety combined with a super sophisticated privacy authorization, will present indicator by indicator information sharing. Getting that nested permission right and the reliability high enough to count on will be a challenge, but learning environments in the future will take the



[47] http://www.gettingsmart.com/2017/02/how-school-networks-work-and-why-thats-important/

idea of a “smart facility” to a whole new level.

Artificial Intelligence (AI) will have more influence on the lives and livelihoods of young people over the next few decades than any other factor. While AI will help address our most pressing problems, it has the potential to exacerbate gaps in society and pose existential threats. We are at a pivotal moment in time to disseminate the wide swept advanced technologies that are occurring in the technology sector and create the impactful connection to education and how we can transform the classroom. Our world is going to look and operate drastically different over the next two decades. Powered by exponential technology, the cost of storage and computing are near zero making it possible to crunch gigantic data sets and enabling a new generation of AI. Application development tools and enabling technologies (i.e., sensors, cameras, robots) have improved dramatically. The combination makes it possible to automate even super complex tasks. This will have a direct connection to teaching and learning, transportation and student health and wellness.

Imagine. Imagine if every student had an intelligent digital assistance. The digital assistant will be able to monitor health and wellness, transportation's, ongoing learning opportunities, and complex schedules. In the next 5 years, student profiles are anticipated to more substantial than they have ever been, but they will continue to get exponentially better and more comprehensive in the next decade. What does this mean for schools and districts? This will have implications for school staffing models. It has the potential to reduce staffing loads, and will change the way that districts staff with more focus on social emotional components and less on content sharing (which will be available from a variety of learning sources).

Imagine. In less than 10 years, it is extremely possible that we will be looking at a completely different transportation system for districts that allow more flexibility, increased efficiency and lower costs. The opportunity for anytime anywhere learning is getting closer to a reality for many students, but the logistical challenge of transporting students is huge factor. Driverless cars, electric cars and complex platforms connected to big data sets will help redefine what we mean by anytime, anywhere learning. Driverless student transportation vehicles will vary in size and be connected to a complex platform that is able to communicate directly with students to build schedules that are ever changing based on need. Cars could be district owned or community shared with the ability to optimize through multipurpose use, such as adult commutes, senior commutes, etc. AI will support in optimizing around start times, schedules, enrollment and community partnerships. Optimization could reduce the cost per student mile by at least 40% and dramatically reduce the amount of vehicles that are district owned. Think of the flexibility Uber has afforded adults in the way they get from point A to B and apply it to students and schools. A smart platform, that dynamic, automatic and secure, would allow students to make adjustments to pick up schedules and increase their capability to learn in a variety of environments.

Concerns that will need to be addressed through policy and safety regulations: Young children will need to have access to an adult “safety guard” on all rides, this individual is someone with

a background check that has been certified to ride. Education is as much a jobs program as much as it is an intellectual endeavor, careful attention to job security and shifts in roles will be important to communicate. Schools that are in crisis will come to take advantage of this first, it will start around the edges, with the students that currently "cost the most" to transport to school and then the opportunity will expand.

The use of AI is on the rise, and interviews with leaders[48] in several different fields about AI point to the same thing: an increasing importance in self-directed learning--lifelong, often project-based and (when possible) with a diverse team.

Implications on Space

When we think about education models and the implications that they have on space, three main categories/types of implications arise:

- Size/scale
- Sitting/location
- Characteristics/design

Possibly the biggest impact decision for space (as it relates to all three categories) is a commitment to early education. This could include regular connection with 0 - 3 parents as well as pre-k (and full day K). Early education could add 10% to space requirement (this is assuming 2 grades (preK 3 and preK 4) of full day). On average, a grade is about 7.3% of full enrollment, however an important factor that we will address is the actual space that the younger students require.

Transitioning to full service/community schools in which the quality and range of services provided to students and their families are extended will also have an impact on space needed. These community schools could easily add 5 - 10% by adding office for community liaison, clinics, and potentially increased community space (community meetings, etc). This range shifts dramatically based on district priority. Those incremental additions could be offset with library districts and communities park and partnership opportunities. Project-based learning and experiential opportunities like makerspaces require specialized space unless partnerships are formed and students participate in off campus activities.

With strategic planning, online and blended models create an opportunity to decrease the per student footprint, but this is not because of the technology alone, but rather the opportunities it creates in terms of scheduling and learning environments. In the situation where devices are introduced into traditional classrooms and students are rotated through stations of learning, there will be little change to the special requirements. Creative scheduling and school design will open the door to greater impact. Scenario planning will outline what this looks like as a spectrum from little impact to high impact on space.

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[48] http://www.gettingsmart.com/2017/03/rise-of-ai-demands-project-based-learning/

The most dramatic shifts to decreasing space will come in the older grades as students have more opportunity for real world experiences off site. Although in district career and technical education requires specialized space, this can be offset by community partnerships and off campus experiences in both college and career. Competency-based learning (plus encouragement for early exit) could reduce senior classes by 30%. This means more students graduating early, taking online courses of interest, and aggressive dual enrollment and early college opportunities.

An emphasis on work-based priority could reduce junior and senior time on campus by 10% (goal should be to shoot for a day week which would be 20% for seniors — Jr/Sr = 14%x.1% = 1.4% reduction in total sf req). Similarly, dual enrollment and online learning could each reduce total square feet by 1.4%. The district could add a graduation requirement for online courses (assume that they take) — half in common space on campus (out of traditional space, some happen in building common space — no new space) or a larger opportunity is full time k - 12 online enrollment (might check in), but are not attending a traditional school but are attending a district online school.

Conclusion

As Beaverton School District looks at the next 50 years, it will be important to understand how these education models fit together to provide students with a comprehensive set of options for students. Increased choice will fuel increased engagement and student success, and will allow the district to respond to student need and outside competition with intention. It is difficult to know the exact models that will increase in popularity over the next 50 years, but as we learn more about how the brain works and how information is attained and retained, the education community will continue to develop and expand on ideas, trends and best practices. Beaverton is currently positioned as a leader in quality education in the state/region. In order to maintain that commitment to excellence, Beaverton will need to be aware of education models and stay committed to ongoing research and awareness while providing a variety of choices for families and students that start early and include a combination of, and connection to, community services.

We believe that it will be vital for the District to continue community conversations[49] to shape what students should know and be able to do and to continuously redefine graduate profiles that are innovative and relevant. As Beaverton looks ahead towards population growth, the district should prioritize:

- Maintaining a strong connection to the community with connected community services that support students physical and mental health;
- Responding to competition with intention by providing a variety of choice options for students that fuel increased engagement and student success; enable high quality options for a variety of learners (including early learners);
- Extending the classroom beyond school walls (especially for middle and high school students); and

[49] http://www.gettingsmart.com/2015/12/building-habits-of-success-and-measuring-what-matters/

- Taking the steps to transition into a competency or mastery based system in which students progress based on mastery and have the option to combine a variety of learning experiences.

AI, big data and continued technological advancements will exponentially impact the way that both teachers and students learn. As we prepare for a hyper personalized and automated future, the involvement and engagement of high quality and passionate teachers will be more important than ever as they act as the central bridge between the opportunity that technology holds and the relational advisory that students need.

Appendix C. Facilities

In 2017, the Beaverton School District completed its *Futures Study*: an exploration of how District facilities and services might evolve over the next 20–50 years. That document is available from the District.

This document is an appendix to the *Futures Study*. It provides more detail about the research related to historical and existing conditions of facilities in the District, which is addressed in Chapters 5 and 6 of the *Futures Study*. Mahlum Architects is the primary author of this appendix.

APPENDIX C: FACILITIES

EXISTING CONDITIONS

DISTRICT FACILITIES

The Beaverton School District (BSD) is the third largest school district in Oregon, educating over 40,000 students each year. The District is located to the west of Portland and encompasses an area of approximately 57 square miles in Washington County.

BSD owns and operates over five million square feet of facility space on over 800 acres of land throughout the District. This includes 33 elementary schools, eight middle schools, five high schools and six option schools, as well as administrative and support facilities. The two charter schools in the area are not owned or operated by the District and are not included as part of this study.

Additional new and replacement facilities funded in the 2014 bond are currently being planned or constructed, and are also included in this study. New projects include one elementary school (for a total of 34 in the District), one middle school (for a total of nine in the District), and one high school (for a total of six in the District).

Replacement schools include Hazeldale, Vose and William Walker elementaries. The new and replacement schools are in various stages of planning or construction, with the last facility to be completed in 2019. Due to the long-range planning horizon, they are assumed to be complete for the purposes of this study.

Many District schools have one or more modular classrooms, or "portables," on site, to provide additional student capacity. The square footage of these portables in not included in this study, however the student capacity provided by portables is accounted for, as described in the Facility Capacity section of this Appendix.

ELEMENTARY SCHOOLS

The majority of BSD's elementary schools house students in kindergarten through fifth grade, with the exception of three K-8 schools: Aloha-Huber Park, Raleigh Hills and Springville. The 31 K-5 elementary schools range in size from approximately 41,000 square feet to as much as 87,200 square feet at Sato, the newest elementary in the District.

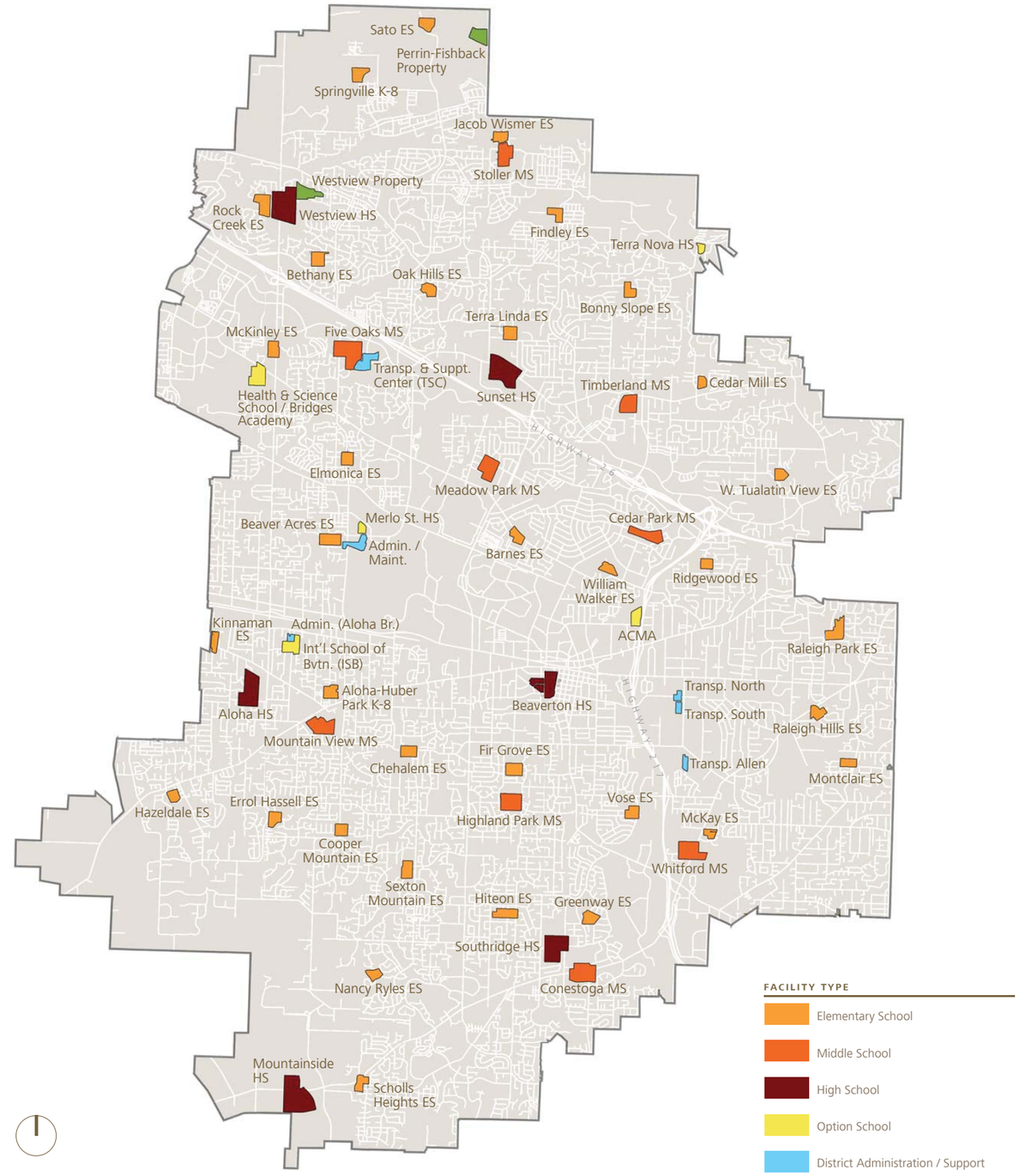
The K-8 facilities are larger, ranging from approximately 56,000 square feet to 106,000 square feet. 21 elementary schools have modular classrooms on site.

MIDDLE SCHOOLS

The District's nine middle schools house students in sixth through eighth grades. They range in size from approximately 116,000 square feet to 166,000 square feet at Timberland, the District's newest middle school. Seven middle schools have modular classrooms on site.

HIGH SCHOOLS

The six high schools in the District range in size from approximately 253,000 square feet to 330,000 square feet at Mountainside, the District's newest high school, scheduled for completion in 2017. Two existing high schools have modular classrooms on site.



Beaverton School District: Existing Facilities and Sites

BELOW:
Some of BSD's Existing Facilities

Beaverton High School


Bonny Slope Elementary School

McKinley Elementary School

Springville K-8 School


ACMA


Conestoga Middle School

Cedar Park Middle School


Sunset High School

OPTION SCHOOLS

The District's six option school facilities vary in program, grade levels and size. All option schools accommodate high school students, with several schools accommodating middle school students as well.

The District has a total of approximately 310,000 square feet of facility space used for option schools. Facility sizes range from 10,800 square feet (Bridges Academy) to over 105,000 square feet at the Health & Science School. Two options schools have modular classrooms on site.

Most option school facilities are housed on their own sites. Exceptions include the International School of Beaverton, which is co-located with the District's branch administrative facility, and Bridges Academy, which is co-located with the Health & Science School at the Capital Center.

SUPPORT FACILITIES

The majority of the District's support facilities are housed on one main campus, which has an administration building, several portables and five maintenance buildings. There is also a small administrative branch facility, as well as four transportation and support facilities located throughout the District. There are approximately 170,000 square feet of support facilities in the District.

UNDEVELOPED PROPERTY

BSD currently owns two parcels of undeveloped property in the District. Both properties are located in the northern part of the District. One property is located directly east of Westview High School and includes four tax lots. It is 14.8 acres in size, with about 11.6 acres of developable land, due to the presence of wetlands in the northern portion of the site.

The second property, identified as the "Perrin-Fishback" property, is located at the northern edge of the District, near the new Sato Elementary School. This property is approximately 10.0 acres in size.

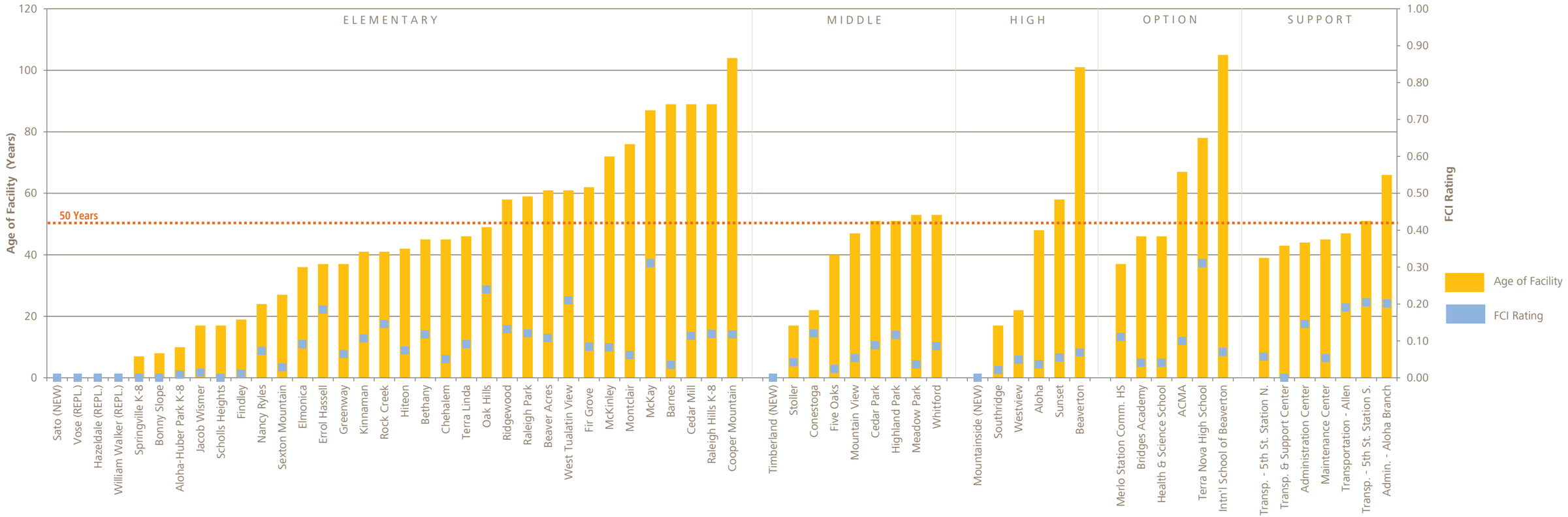
EXISTING CONDITIONS SUMMARY & EVALUATION

The following pages include a summary of the assessment of existing conditions in the District and identify areas that may provide opportunities to increase capacity, based on these factors. Evaluations were conducted at a high-level and are for planning purposes only. Confirming viability for actual projects will require more detailed study on a site-by-site basis.

The majority of this appendix reflects the opportunities based only on existing conditions and does not take into account the ramifications of projected enrollments. However, the Existing Capacity and Projected Enrollment section, beginning on page 18, analyzes the impact of enrollment projections with current conditions in the District.

A complete listing of District facilities, with detailed existing conditions data, is located at the end of this appendix.

BELOW:
Chart A-1: Age of Facility & FCI Rating



FACILITY CONDITION

BSD facilities vary greatly in age and condition. Two metrics that can be used to evaluate building condition are facility assessment scoring facility age.

FACILITY ASSESSMENT

Detailed facility assessments were not completed as part of this study, however District staff completed an in-house facility condition assessment in 2009. The results from this assessment were reviewed as part of this study. Detailed information regarding the assessment process and findings can be found in the BSD 2010 Facilities Plan Update.

The District's facility condition assessment included evaluation of the building exterior, interior, systems and grounds for all District facilities. Each building component was rated using a scoring system reflecting the significance of deficiencies that were found to exist.

Estimated costs were then developed to correct each deficiency, and calculated as a percentage of the building replacement cost. This number provides a Facility Condition Index (FCI) score for each building. The lower the FCI score, the lower the need for funding relative to the facility's value. As shown in the chart above, FCI scores (shown in blue) for the majority of District facilities are under 0.20, reflecting less than 20% of the building cost to address deficiencies.

Because FCI scores are similar for most buildings, it is difficult to use them as a metric for assessing condition in the long-term. Although FCI scores can be very helpful in determining need in the shorter term, such as a 10-year facility plan, it is a less useful metric for the 50-year time-frame of the Futures Study. Buildings that are 50 years old today will be 100 years old in 2065, and will likely need replacement or modernization on a scale beyond what is identified with an FCI score.

In addition, FCI scores only address the physical condition of a facility and may not fully represent changes that may be required to meet District needs. Elements that were not considered in the District's 2009 assessment include:

:: Functional program adequacy

:: Needs related to enrollment growth

:: Facility alterations or expansions needed to support changes in educational programs or teaching approaches

As shown in the chart above, the District's FCI scores do not correlate with facility age. Many older facilities have lower (better) FCI scores than the newer buildings, which may not fully reflect of the needs of the building.

FACILITY AGE

It was determined that facility age was the most appropriate metric for assessing and prioritizing building condition in the Futures Study, due to the long time-frame.

Original construction dates were used for all buildings, although many District facilities have received modernizations and additions since their initial construction. This is because major building systems and components, such as foundations, structure and exterior materials, continue to degrade over time and eventually require replacement, regardless of subsequent work that has been done in the building.

Facilities built 50 or more years ago (before 1966) are identified as candidates for potential replacement, due to both physical condition and program accommodation issues.

Physical Condition

Within the 50-year time frame of the Futures Study, these buildings will be more than 100 years old and likely beyond their useful life in terms of physical condition. Major systems may be failing or cost prohibitive to replace.

Program Accommodation

Older school facilities were generally not designed to accommodate current models of teaching and learning. Building configurations were typically designed to support one teacher with a group of 30 students, providing limited flexibility for team-teaching or convening a variety of student group sizes. Often there is no space outside the classroom for private conversations to facilitate more interpersonal instruction or tutoring and shared facilities, such as cafeterias, gymnasiums, restrooms and administration areas are undersized for current functions and needs.

EXISTING CONDITIONS

Elementary Schools

The majority of the District's elementary schools (22 schools) are less than 50 years old, with 10 of these being less than 20 years old. This includes the replacement facilities that are planned for Hazeldale, Vose and William Walker, as well as the new Sato Elementary, all scheduled for completion between 2017 and 2019.

12 elementary school facilities are over 50 years old, and may be considered as candidates for replacement in the future, depending on other factors. Five of these facilities were built before 1936 and are currently over 80 years old, including Barnes, Cedar Mill, Cooper Mountain, McKay and Raleigh Hills.

Middle Schools

Five of the District's middle schools were built in the 1960's, with the two oldest, Meadow Park and Whitford, being constructed in 1963. These facilities may be considered as candidates for replacement in the future. Other existing facilities are more recent, including three middle schools built between 1976 and 1994. The newest middle school, Timberland, was completed in 2016 (although it is being used as an elementary school until 2019).

High Schools

The oldest comprehensive high school in the District is Beaverton High School, originally built in 1915. Sunset and Aloha were built in the 1950's and 60's. These three facilities may be considered as candidates for replacement, depending on other factors. Southridge and Westview high schools were built in the 1990's and Mountainside High School is scheduled for completion in 2017.

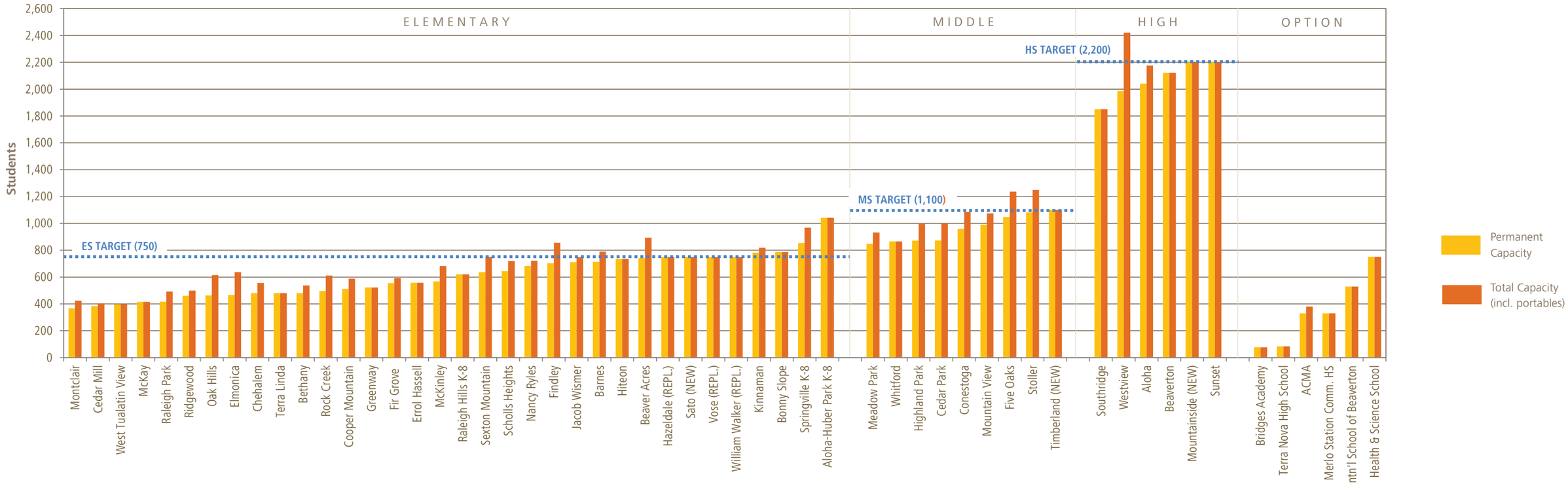
Options Schools

The facilities that house the District's option schools are all over 35 years old. The International School of Beaverton, constructed in 1911, is the oldest facility in the District.

Support Facilities

The District's support facilities range in age from 39-65 years old, although most facilities were built in the 1960s and 1970s.

BELOW:
Chart A-2: Existing Facility Capacity



FACILITY CAPACITY

Facility capacity is a planning metric that reflects the number of students that can be accommodated in a school building, based on parameters such as number of students per classroom or square footage per student. Understanding the existing school capacity in the District is important, in order to estimate future capacity needs based on enrollment forecasts.

EXISTING CAPACITY

Facility capacity can be determined in a variety of ways. The Beaverton School District evaluated a number of methods as part of the 2010 Long-Range Facility Plan, and determines permanent and portable capacity in different ways.

Permanent school capacity is calculated using the total building square footage, subtracting space used for specialized programs and dividing by a square footage (SF) per student factor. Factors vary by grade level grouping and are as follows:

:: 104 square feet per student for elementary

:: 128 square feet per student for middle school

:: 141 square feet per student for high school

Portable (modular classroom) capacity is determined by multiplying the number of portable classrooms times the staffing ratio at that level minus a 20% core facility factor. Adjusted portable capacities are as follows:

:: 19 students per classroom for elementary

:: 21 students per classroom for middle school

:: 23 students per classroom for high school

Portable capacity is added to the permanent capacity to determine the total available capacity of a facility. More information about the District's school capacity formula can be found in the BSD 2010 Facilities Plan Update.

The chart above illustrates both the permanent and total capacities for all school facilities in the District. For the purposes of this study, total capacity (including portables) is used, unless otherwise noted.

TARGET CAPACITY

While school building size is a reflection of the educational models in place at the time a school was constructed, school size targets are based on current thinking regarding the number of students needed to meet the District's program goals and provide an optimal learning environment. Targets are based on existing resources and staffing ratios and provide a range for planning purposes. School size targets may vary through the years, as educational program models and funding levels change.

BSD's target capacities, as described in the BSD Education Specifications: Volume 1, May 2014, are as follows:

:: 750 students for elementary school

:: 1,100 students for middle school

:: 2,200 students for high school

Schools that are significantly over or under target capacity may not be able to provide an optimal learning environment or allow for efficient operations.

As illustrated in the comparative chart above, more than half of BSD schools have facility capacities that are below the District's established target capacities. This indicates a potential opportunity to increase capacity in the District in the future on sites currently owned by the District.

EXISTING CONDITIONS

Elementary Schools

At the elementary level, there are 25 schools (73%) that are below the District's target capacity of 750, when looking at permanent capacity only. There are 21 schools (61%) below target capacity when looking at total capacity (including portables). Many of these elementary schools are older facilities, built at a time when school size was typically smaller.

There are also four elementary schools whose permanent capacity is over the District target. However, the two schools that are more than 50 students above the target are both K-8 schools. Although specific targets have not been defined by the District for elementary schools with K-8 programs, it is expected that these facilities will be larger than traditional K-5 elementary schools, due to the additional grade levels that must be accommodated.

Middle Schools

All of the District's middle schools, with the exception of the new Timberland Middle School, have permanent facility capacities that are below the target capacity of 1,100 students. Four of these facilities are more than 200 students shy of the target. All but two middle schools have total facility capacities that are below target capacity, indicating an opportunity to add capacity in the future.

High Schools

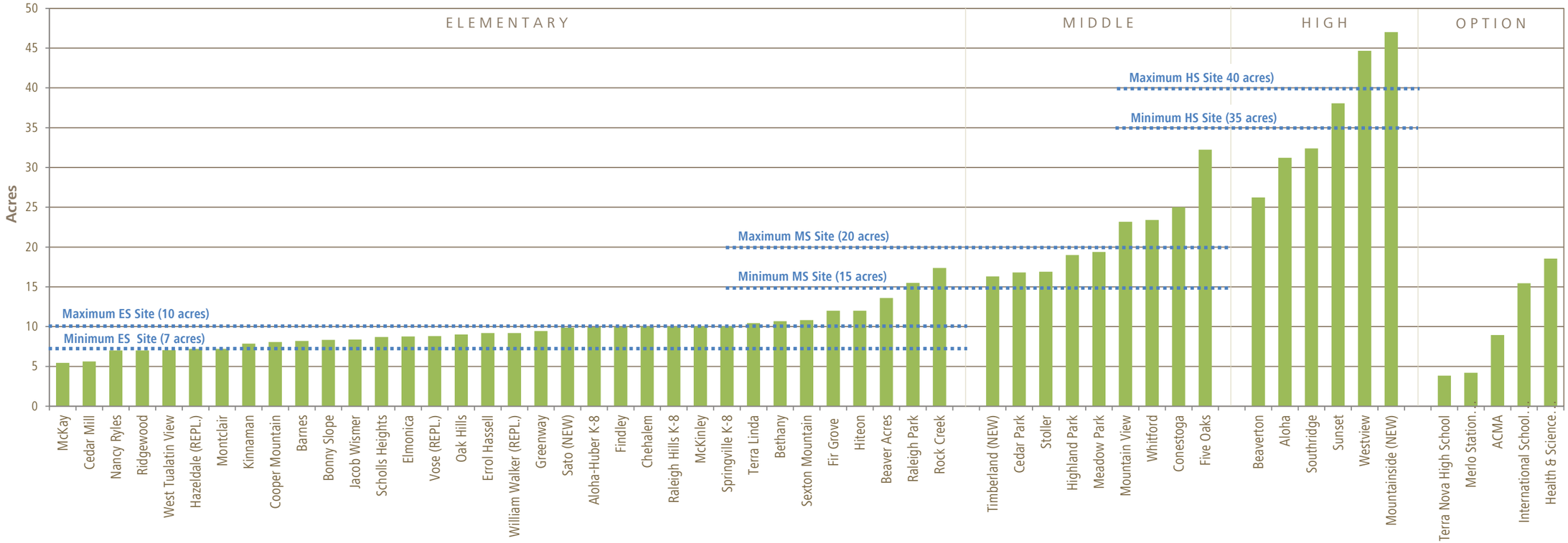
Four District high schools have permanent capacities below the District target of 2,200 students. Two schools are significantly low (more than 200 students), including Southridge and Westview. Sunset High School and the new Mountainside High School are at target capacity.

In terms of total facility capacity, both Southridge and Beaverton high schools are below the District target, and may provide opportunities for adding capacity. However, the Beaverton High School site is undersized and may limit potential expansion to add capacity.

Option Schools

Because of the diverse nature of these facilities, in terms of program, grade levels and enrollment, capacity targets are not typically set for option schools. All of the option schools in the District have capacities well below the District targets for traditional facilities at their grade levels.

BELOW:
Chart A-3: Existing Facility Site Size



FACILITY SITE SIZE

TARGET SITE SIZE

District sites were evaluated based on their actual size relative to site size targets for each school level that have been established by the Beaverton School District.

School sites must provide space for: school building(s), exterior instruction, play areas (hard, soft and covered), intramural / athletic activities, parking, and pedestrian and vehicular circulation. Site areas may need to meet other regulatory requirements, including: property line setbacks, easements, fire separations, fire truck access and / or environmental restrictions (e.g. wetlands).

District site size targets, as identified in the BSD Facilities Plan Update, June 2010, are as follows:

:: 7-10 acres for an elementary school site

:: 15-20 acres for a middle school site

:: 35-40 acres for a high school site

As shown in the chart above, the majority of existing school sites meet the minimum site size targets established by the District. Sites that are larger than the District target range may have the potential to house an additional facility or a larger facility type in the future.

Sites that are undersized are currently accommodating the existing facilities on them, but should be verified to confirm the viability of expansion or replacement of facilities in the future to add capacity. More in-depth evaluation of site capacity to house additional or different facilities, as well as maintaining operations during construction, is included later in this section.

EXISTING CONDITIONS

Elementary Schools

Of the 34 sites that house existing elementary schools in the District, there are only two that are below the minimum site size target of seven acres. These schools are Cedar Mill and McKay, with site sizes of 5.62 acres and 5.44 acres respectively. Although these sites are below the District's target site size, they currently accommodate the existing schools and their associated site requirements. Both schools are relatively small and well below target facility capacity.

Of the elementary school sites that over the maximum site size target of 10 acres, two schools are within the District's target size range for middle schools. These schools are Raleigh Park Elementary and Rock Creek Elementary, with site sizes of 15.50 acres and 17.37 acres respectively.

Middle Schools

All of the District's middle schools have sites that are at or above the target range of 15-20 acres. Five middle schools have site sizes within the target range and three other middle schools (Conestoga, Mountain View and Whitford) have larger sites, between approximately 23 and 25 acres. Five Oaks Middle School has a site size of 32.23 acres, which is almost large enough to meet high school site size targets and comparable to many of the District's existing high school sites.

High Schools

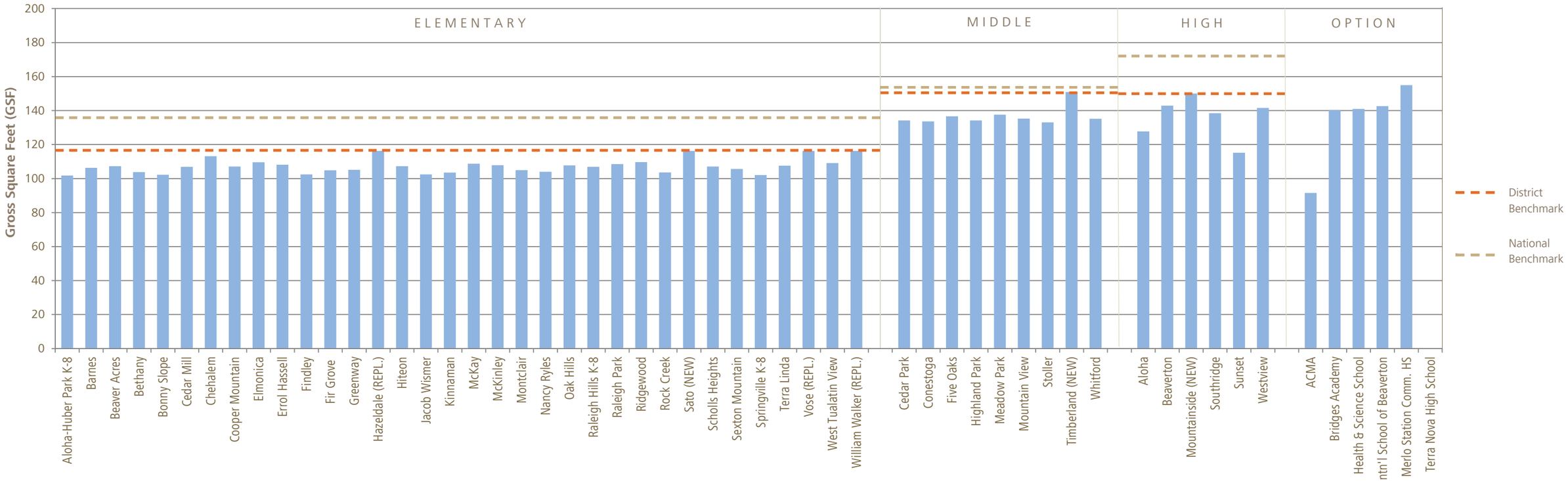
Four of the District's high school sites are at or below the site size target of 35-40 acres. Beaverton High School has the smallest site, at 26.23 acres. The remaining two high schools, Westview and the new Mountainside High School, have much larger sites, at 44.65 and 47.0 acres respectively.

Option Schools

Site sizes for the District's option schools vary widely, between three and 18 acres approximately. Because of the diverse nature and size of these facilities, site size targets have not been set for options schools.

If option school sites were to be considered for other functions in the future, the ACMA site (8.94 acres) is within the elementary school site target range and both the Health & Science School site (18.55 acres) and the International School of Beaverton site (15.45 acres) are within the middle school site target range.

BELOW:
Chart A-4: Area Per Student



AREA PER STUDENT

Gross square footage per student (GSF/student) is a high-level metric that can be used to compare program accommodation in school facilities. GSF/student is determined by taking the total gross square footage of a facility and dividing it by the student capacity of the building.

It is important to note that this metric is not necessarily a reflection of classroom size or particular amenities within a facility, as it takes into account all spaces within the building and provides the average amount of total space per student.

For the purposed of this study, area per student is based on permanent capacity and square footage.

COMPARING AREA PER STUDENT

A small amount of difference in GSF/student can have a big impact on the amount of space in a facility and how it is used. For example, the difference of 10 square feet per student equates to an additional 250 square feet per 25-student classroom. This additional space may provide break-out areas and/or other types of teaching and support space for the classrooms that a school with a lower GSF/student would not be able to have.

Schools with a significantly lower GSF/student for their level may indicate a less than ideal learning environment for students, and therefore, an opportunity for replacement or repurposing in the future, to promote equity in the District.

Schools with a higher GSF/student for their level may indicate the inclusion of amenities that support modern learning environments.

DISTRICT BENCHMARKS

For the purposes of this study, the GSF/student of the District's most recently planned or constructed facilities is used as a benchmark for comparison.

:: The most recently planned elementary school in the District, Sato Elementary, is planned to provide 116 GSF/student.

:: The most recently constructed middle school in the District, Timberland Middle School, provides 151 GSF/student.

:: The most recently constructed high school in the District, Mountainside High School, is planned to provide 150 GSF/student.

NATIONAL BENCHMARKS

According to the 2013 Annual School Construction Report, published by School Planning and Management, the national median in new schools completed in 2012 is as follows:

:: 136.7 GSF/student for elementary schools

:: 152.8 GSF/student for middle schools

:: 172.1 GSF/student for high schools

Although facility needs, and therefore the GSF/student, vary among school districts, comparison to a national benchmark can provide some perspective for comparison.

EXISTING CONDITIONS

Elementary Schools

As shown in the chart above, District elementary schools are all relatively similar in terms of area per student. Existing schools range from 102 to 113 GSF/student. The four new or replacement schools in the District (Hazeldale, Sato, Vose and William Walker) are planned to provide a slightly greater area per student, with 116 GSF/student.

Middle Schools

The District's newest middle school, Timberland, provides 151 GSF/student. The other eight existing middle schools each provide slightly less area per student, ranging between 133 and 138 GSF/student.

High Schools

Mountainside High School is planned to provide 150 GSF/student. The other five existing high schools each provide less area per student. Sunset High School is the lowest, at 115 GSF/student, and others range from 128 to 143 GSF/student.

Option Schools

Because of the diverse nature of these facilities and their programs, GSF/student can vary widely in option schools and are typically not useful for comparison to traditional schools. Most option schools in the District have a GSF/student ranging from 140 to 155 GSF/student, with the exception of ACMA, which has 173 GSF/student due to its specialized art facilities.

RIGHT:
Map Diagram: Existing Facility Capacity & Age - Elementary Schools

AREAS OF OPPORTUNITY

FACILITY CAPACITY & AGE

An analysis of facility capacity, in combination with facility age and geographic distribution, identifies schools that may provide opportunities to add capacity to the District in the future. This analysis uses total facility capacity (including portables) for all schools.

Schools that are significantly below the District's capacity targets (more than 100 below target) and in buildings that are currently more than 50 years old (and therefore will be more than 100 years old in 2065) may be good candidates for replacement. If replaced at target capacity, these facilities have the potential to increase enrollment capacity in the District.

ELEMENTARY SCHOOLS

The map diagram at right includes all District elementary schools and their catchment areas. It identifies schools that have existing facility capacities that are below the District target, as well as facilities that were built before 1966.

The majority of the District's 34 elementary schools have existing total facility capacities that are below the District's elementary school target capacity of 750 seats. Additionally, there are 12 elementary schools that were built prior to 1966 and are more than 50 years old.

School facilities that are significantly below target capacity and also built before 1966 provide an opportunity to increase capacity in the District without acquiring new sites.

:: All four schools that are more than 300 below target capacity were built before 1966 and are good candidates for future replacement

:: Two schools that are more than 200 below target capacity were built before 1966 and are good candidates for future replacement

:: Three schools that are more than 100 below target capacity were built before 1966 and are good candidates for replacement

Replacing all nine facilities at their target capacity could provide as many as 2,318 additional seats of elementary capacity in the District. It is important to note, however, that the viability of replacement must also take into account the areas where enrollment is projected to increase in the future.

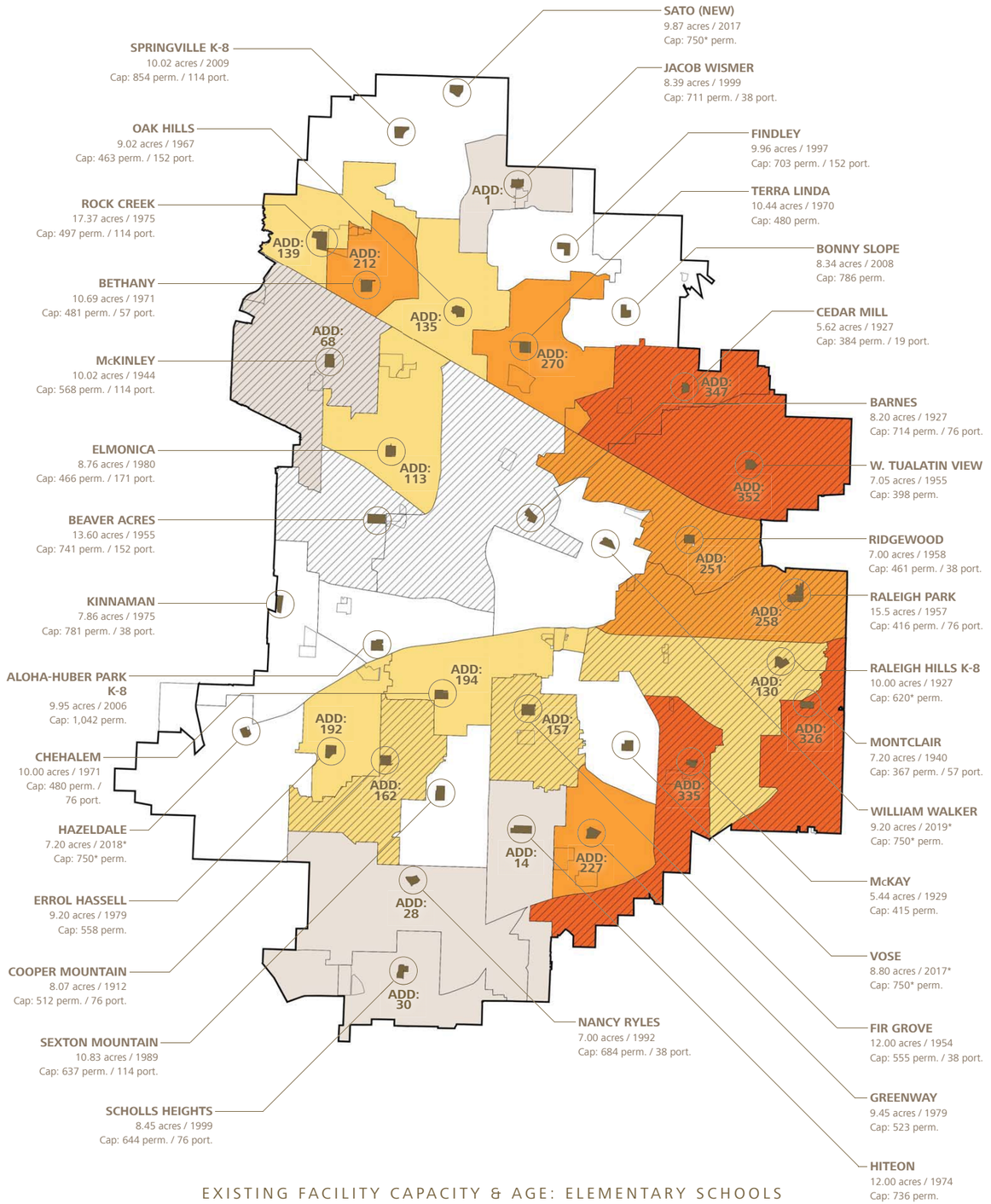
Looking at geographic distribution, elementary schools on the east side of the District meet both age and capacity criteria and are good candidates for replacement. Newer and larger facilities tend to be located in the north, west and south areas of the District, and provide less opportunity for increased capacity.

BUILDING CAPACITY (TOTAL)
Target: 750 seats

- 1-100 Below target (650-749)
- 101-200 Below target (550-649)
- 201-300 Below target (450-549)
- 300+ Below target (449 or less)

FACILITY AGE

- Constructed prior to 1966



EXISTING FACILITY CAPACITY & AGE: ELEMENTARY SCHOOLS

MIDDLE SCHOOLS

As illustrated at right, half of BSD's middle schools have existing capacities that are more than 100 seats below the District target of 1,100.

:: Whitford Middle School is 235 below target capacity

:: Meadow Park Middle School is 168 below target capacity

:: Highland Park Middle School and Cedar Park MS are both about 100 below target capacity

These four middle schools were also built prior to 1966 (and will be more than 100 years old in 2065), and are therefore good candidates for replacement in the next 50 years. Replacing these four facilities at their target capacity could provide as many as 608 additional seats of middle school capacity in the District.

Note: Catchment areas have not been updated to incorporate the new Timberland Middle School at the time of this study. Timberland is included at part of the Cedar Park catchment area and is at target capacity.

Geographically, replacement opportunities for middle schools are primarily in the eastern and central areas of the District. This is due to how the District has grown and developed over time, with expansion to the west, and is similar to the location of elementary opportunities for replacement.

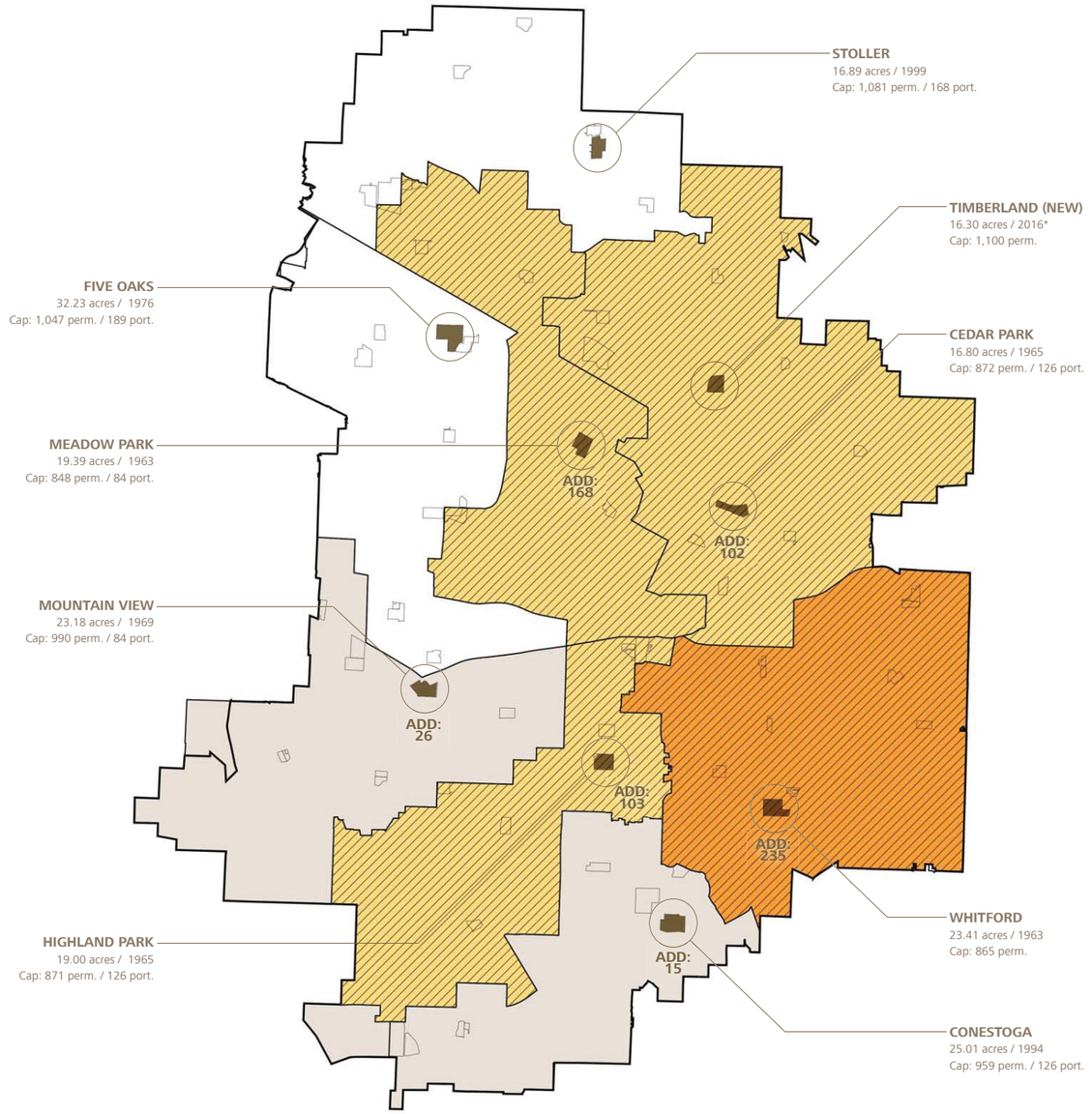
BUILDING CAPACITY (TOTAL)
Target: 1,100 seats

- 1-100 Below target (1,000-1,099)
- 101-200 Below target (900-999)
- 201-300 Below target (800-899)
- 300+ Below target (799 or less)

FACILITY AGE

- Constructed prior to 1966

BELOW:
Map Diagram: Existing Facility Capacity & Age - Middle Schools



EXISTING FACILITY CAPACITY & AGE: MIDDLE SCHOOLS

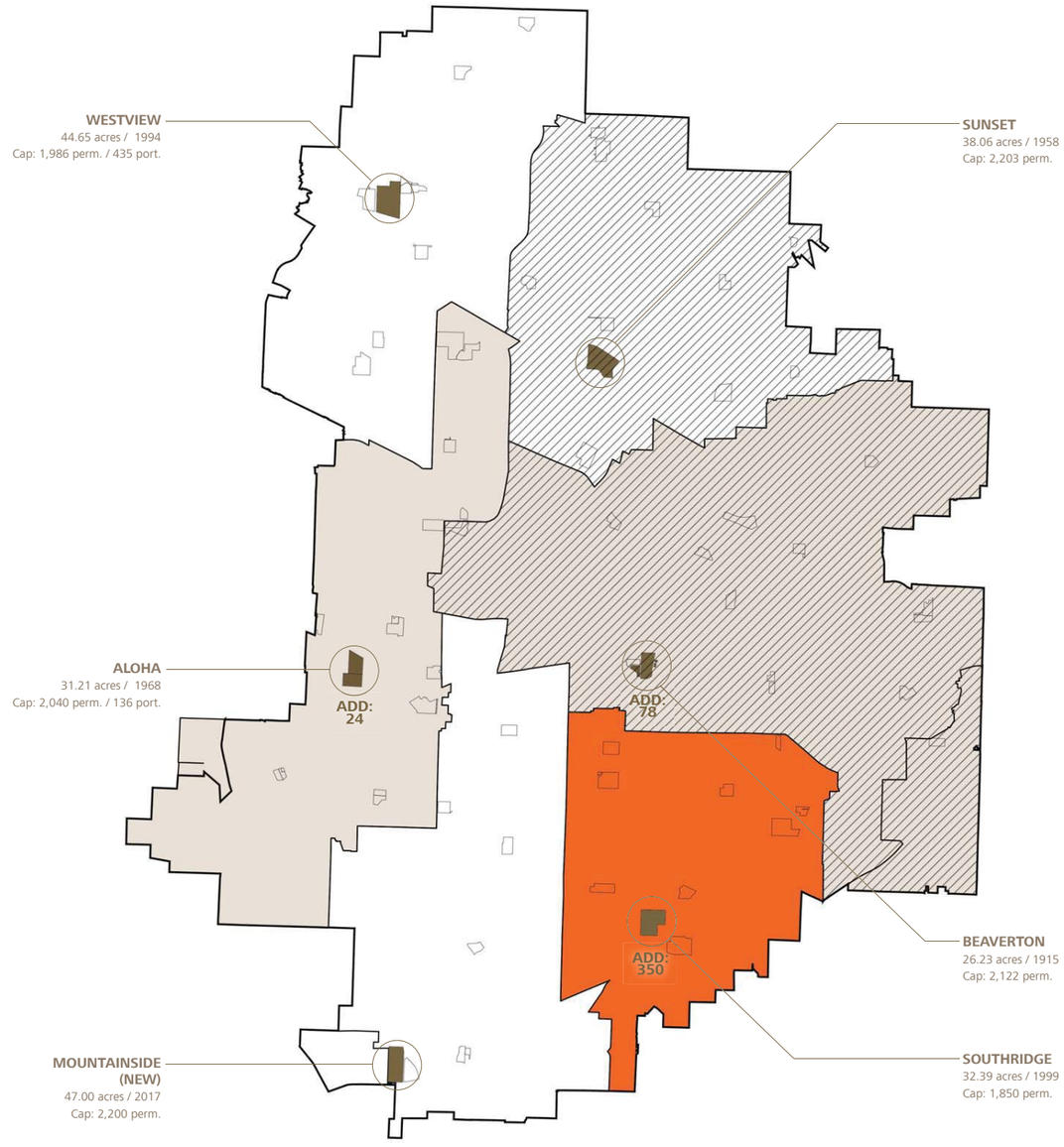
RIGHT:
Map Diagram: Existing Facility Capacity & Age - High Schools

HIGH SCHOOLS

Five of the District's six high schools are within 100 seats of their target capacity of 2,200, as shown in the map diagram at right. The one exception is Southridge High School, which is currently 350 seats under target capacity.

Two high schools, Sunset and Beaverton, were built prior to 1966, however replacement of these facilities at target capacity will not provide additional capacity for the District.

Replacement opportunities to add capacity are limited at the high school level.



BUILDING CAPACITY (TOTAL)
Target: 2,200 seats

- 1-100 Below target (2,100-2,199)
- 101-200 Below target (2,000-2,099)
- 201-300 Below target (1,900-1,999)
- 300+ Below target (1,899 or less)

FACILITY AGE

- Constructed prior to 1966

EXISTING FACILITY CAPACITY & AGE: HIGH SCHOOLS

FACILITY AGE & REPLACEMENT

For the purposes of this study, facilities were grouped into four age categories, based on original construction date, as shown in the key at right. Looking at the geographic location of older facilities can help determine what areas of the District may have opportunities for replacement and potentially increasing capacity and/or changing educational models.

One key metric to evaluate when looking at facility replacement is the ability to maintain the operations of the existing school on site while a replacement facility is constructed on the same site. This eliminates the need to provide a temporary location for the existing school while it is being replaced.

A high-level site analysis was completed for all District school sites to determine potential viability to maintain operations during replacement. Analysis included evaluation of site size, proportion and configuration, as well as access to the site. Actual viability will need to be confirmed with detailed analysis on a site-by-site basis.

ELEMENTARY SCHOOLS

The majority of the oldest elementary school facilities are located on the east side of the District, as shown in the map diagram at right. These facilities were built prior to 1966 and will be over 100 years old in 2065, making them ideal candidates for replacement. Many facilities on the west side of the District are less than 50 years old.

Most of the District's elementary school sites appeared to accommodate maintaining operations during replacement (hatched in the map diagram at right), with the exception of six sites.

All but one of the sites that have facilities over 50 years old were determined to have the potential to maintain operations during construction of a replacement facility. Cooper Mountain Elementary School was the exception. Even though the site is over eight acres in size, it did not appear that maintaining operations would be possible due to the location of the existing school facility and somewhat limited access to the site.

Two elementary sites, Cedar Mill and McKay, have small sites that are below the District's site size target range of seven to 10 acres. However, it appears likely that both sites would accommodate maintaining operations, due to the small size of the existing schools, site layout and accessibility.

Replacement schools at the target facility capacity of 750 on sites with small existing one-level schools would be larger that what is existing, in terms of square footage, but are

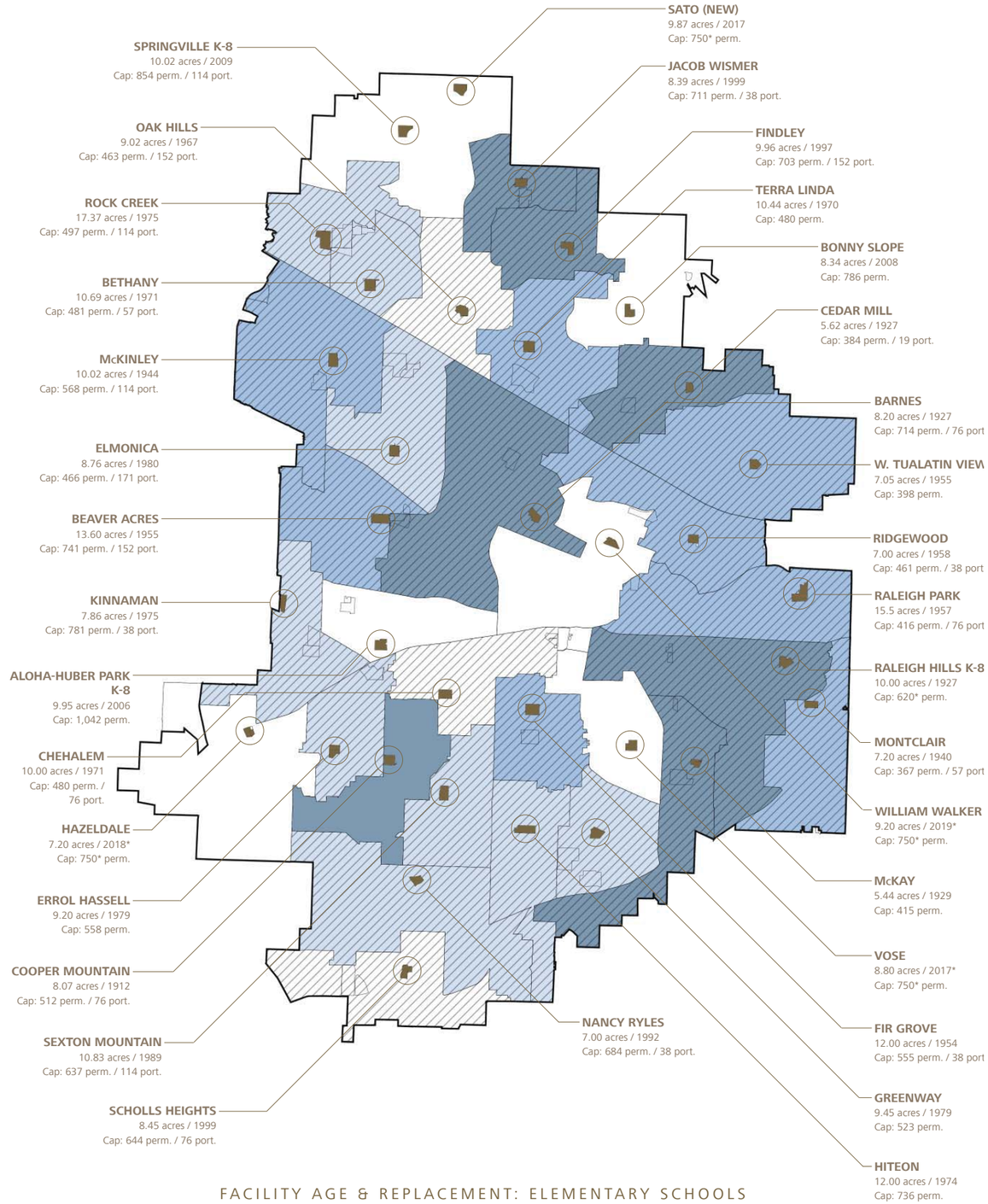
FACILITY AGE

- Less than 20 years old (1997+)
- 21-50 years old (1967-1996)
- 51-80 years old (1937-1966)
- More than 80 years old (pre-1936)

REPLACEMENT VIABILITY

- Maintain operations while replace

BELOW:
Map Diagram: Facility Age & Replacement Viability - Elementary Schools



FACILITY AGE & REPLACEMENT: ELEMENTARY SCHOOLS

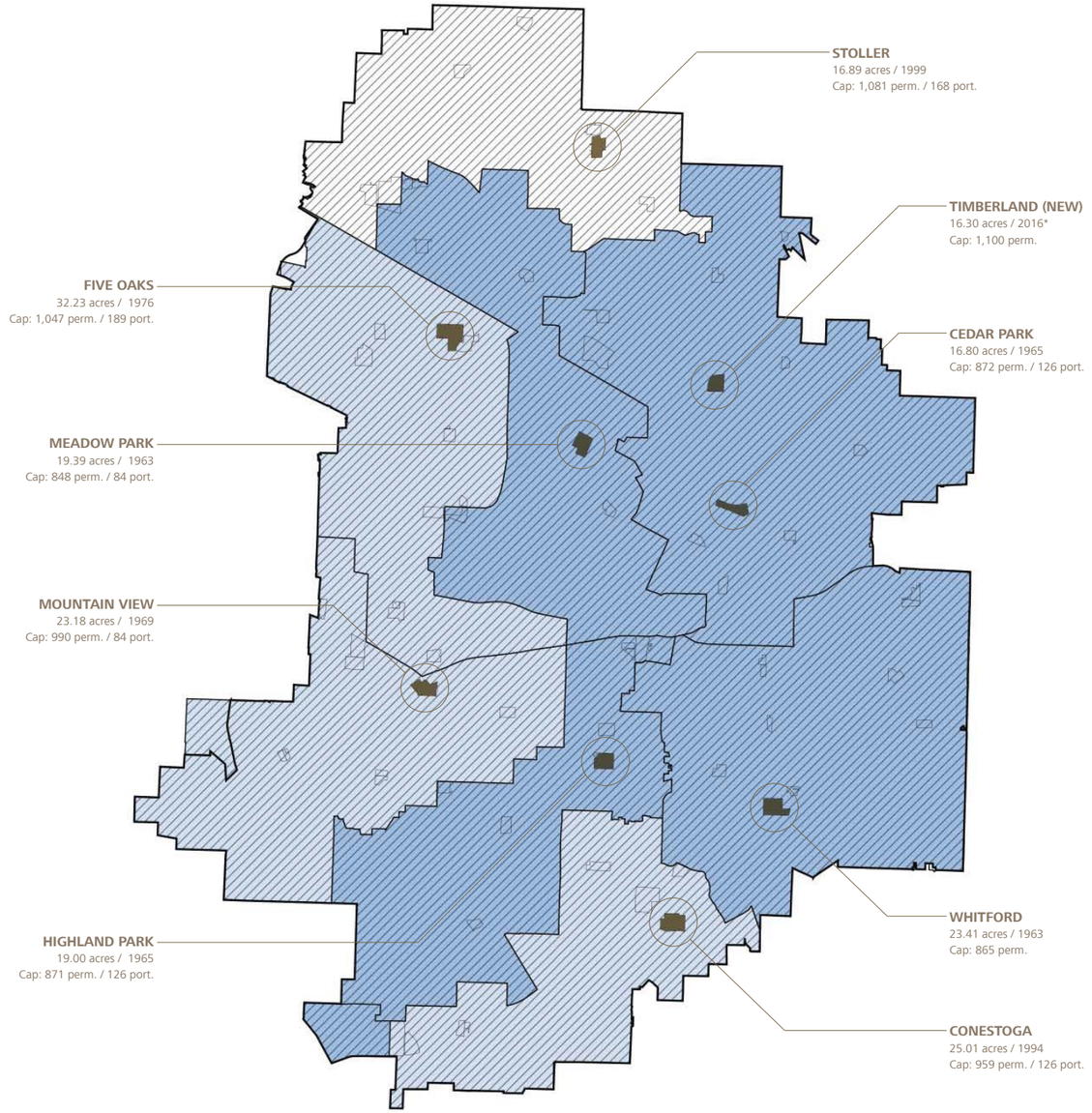
RIGHT:
Map Diagram: Facility Age & Replacement Viability - Middle Schools

assumed to be viable since new schools would likely be two-story and would typically not have a significantly larger footprint than the existing school. Increased parking, drop-off and other site amenities needed to accommodate the larger capacity should be tested and verified with more detailed analysis of each site.

MIDDLE SCHOOLS

The District does not have any middle schools that are more than 80 years old, but does have four facilities that were built before 1966 and are at least 50 years old. Cedar Park, Highland Park, Meadow Park and Whitford were all built in the early 1960s, and are located in the central and eastern parts of the District. (Note: Timberland Middle School, completed in 2016, is shown within the catchment area of Cedar Park, as updated boundaries were not complete at the time of this study.)

All of the District's middle schools are located on sites that are within or above the District target site size of 15-20 acres. High-level site analysis showed that all these sites have the potential to maintain operations while a replacement middle school is built on the same site.



FACILITY AGE

- Less than 20 years old (1997+)
- 21-50 years old (1967-1996)
- 51-80 years old (1937-1966)
- More than 80 years old (pre-1936)

REPLACEMENT VIABILITY

- Maintain operations while replace

FACILITY AGE & REPLACEMENT: MIDDLE SCHOOLS

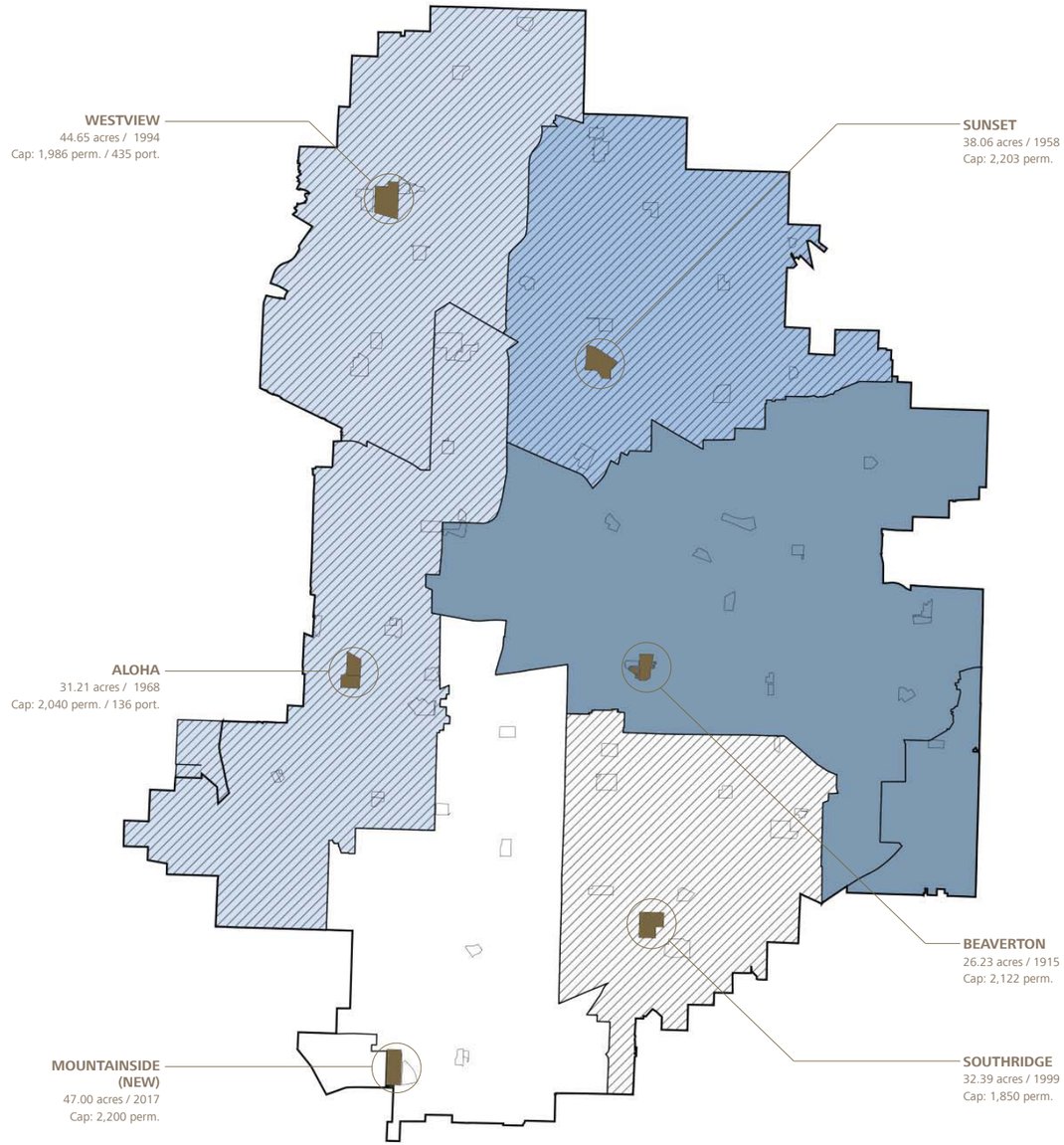
HIGH SCHOOLS

The District has one high school facility, Beaverton High School, that is over 80 years old. It was originally constructed in 1915, and has a catchment area that covers much of the eastern portion of the District.

Beaverton, Aloha and Southridge High Schools all have sites that are below the District target size of 35-40 acres. However, it appears that Southridge, which is less than three acres shy of target size, could accommodate maintaining operations on site while a replacement facility is built. This is also the case for the three high schools that are at or above the site size target: Sunset, Westview and Mountainside.

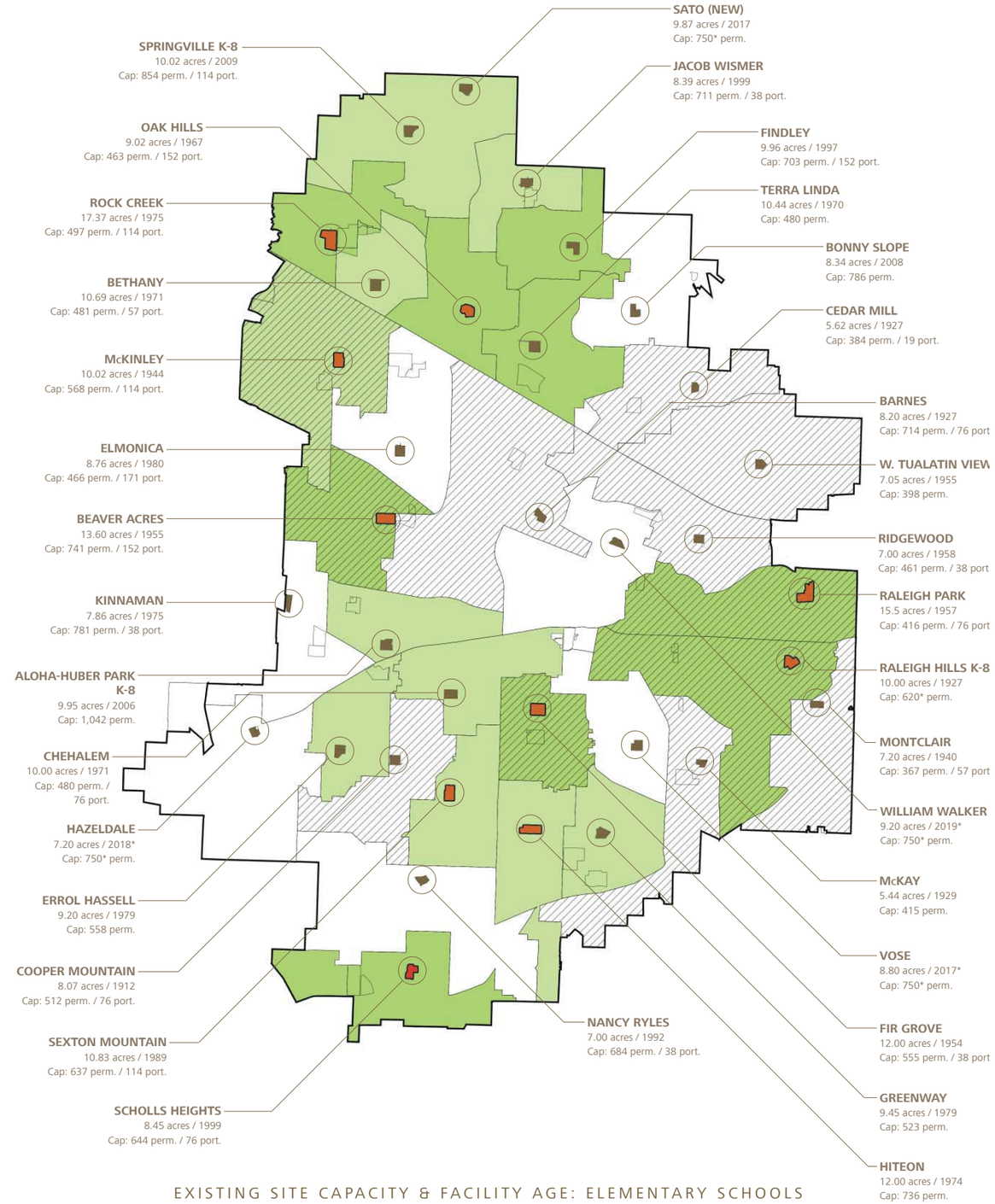
Beaverton and Aloha high schools have sites that appear to be too small to accommodate maintaining operations during replacement. Since Beaverton is significantly older, it would be the best candidate for replacement, based on these factors.

BELOW:
Map Diagram: Facility Age & Replacement Viability - High Schools



FACILITY AGE & REPLACEMENT: HIGH SCHOOLS

RIGHT:
Map Diagram: Existing Site Capacity & Facility Age - Elementary Schools



EXISTING SITE CAPACITY & FACILITY AGE: ELEMENTARY SCHOOLS

EXISTING SITE CAPACITY & FACILITY AGE

In addition to evaluating the ability of a site to accommodate maintaining operations during replacement, several other capacity metrics were studied to identify potential areas of opportunity in the District. These included the following:

:: Potential to co-locate another elementary school on the site with the existing school remaining

:: Potential to co-locate another elementary school on the site if the existing school was first replaced with a new school

:: Potential to change the use of the site and replace the existing facility with a facility type that has a higher capacity, such as replace an existing elementary school with a middle school

A high-level analysis of site configuration and access was used in determining these potential opportunities, and requires verification with more detailed study of each site.

It is also important to note that in most cases, co-location and conversion assume that there may be some sharing of site amenities, such as parking and fields, as well as the potential for reduced site amenities to below the level of current District standards.

Looking at site capacity potential with geographic location and age of existing facilities helps determine the best opportunities for replacement.

ELEMENTARY SCHOOL

There are nine elementary schools in the District that appear to be able to accommodate a second elementary school on site with the existing facility (or a new one), shown in darker green on the map diagram at right. There are also 10 additional sites that potentially could accommodate a second elementary school if the existing school was replaced, shown in lighter green on the map diagram at right.

These sites are located throughout the District, and most have existing facilities that are currently more than 50 years old. The exception is Springville K-8 to the north, which was built in 2009. (Note: Sato Elementary is shown within the Springville K-8 catchment area because updated boundaries were not available at the time of this study. Sato is not included as one of the schools with co-location potential.)

There are 10 existing elementary sites identified with the potential to convert to a middle school, shown in red on the map diagram at right. All of these sites currently have existing facilities that are more than 50 years old. This analysis

POTENTIAL SITE CAPACITY

- Potential to co-locate with existing ES
- Potential to co-locate with new ES
- Potential to convert to MS

FACILITY AGE

- Built before 1966 (50+ years old)

assumed replacement of the elementary school with a new middle school facility on the site.

Two of these schools, Raleigh Park in the northwest and Rock Creek on the east side, have sites that are within the District's target size for middle schools (15-20 acres), so could potentially provide site amenities at the District standard level if converted. The other sites are smaller, but appear to be able to accommodate conversion to a middle school function with some compromises to site amenities.

MIDDLE SCHOOLS

Seven of the District's nine middle schools appear to have sites that could accommodate co-location of a new elementary school with the existing middle school. The exceptions are Stoller and Timberland. Four of these middle schools, located in the center and east side of the District, were also built prior to 1966 and are also good candidates for replacement.

Stoller has the potential to accommodate a new elementary school if the existing middle school is replaced. However, Stoller is less than 20 years old, and will likely not require replacement within the time frame of this Futures Study.

There are three existing middle schools, Five Oaks, Mountain View and Conestoga, that have sites that appear to have the potential to accommodate a high school on the site, instead of a middle school. However, none of these sites meets the District's target site size for high schools of 35-40 acres, so would likely require compromises in site amenities if they became high school sites.

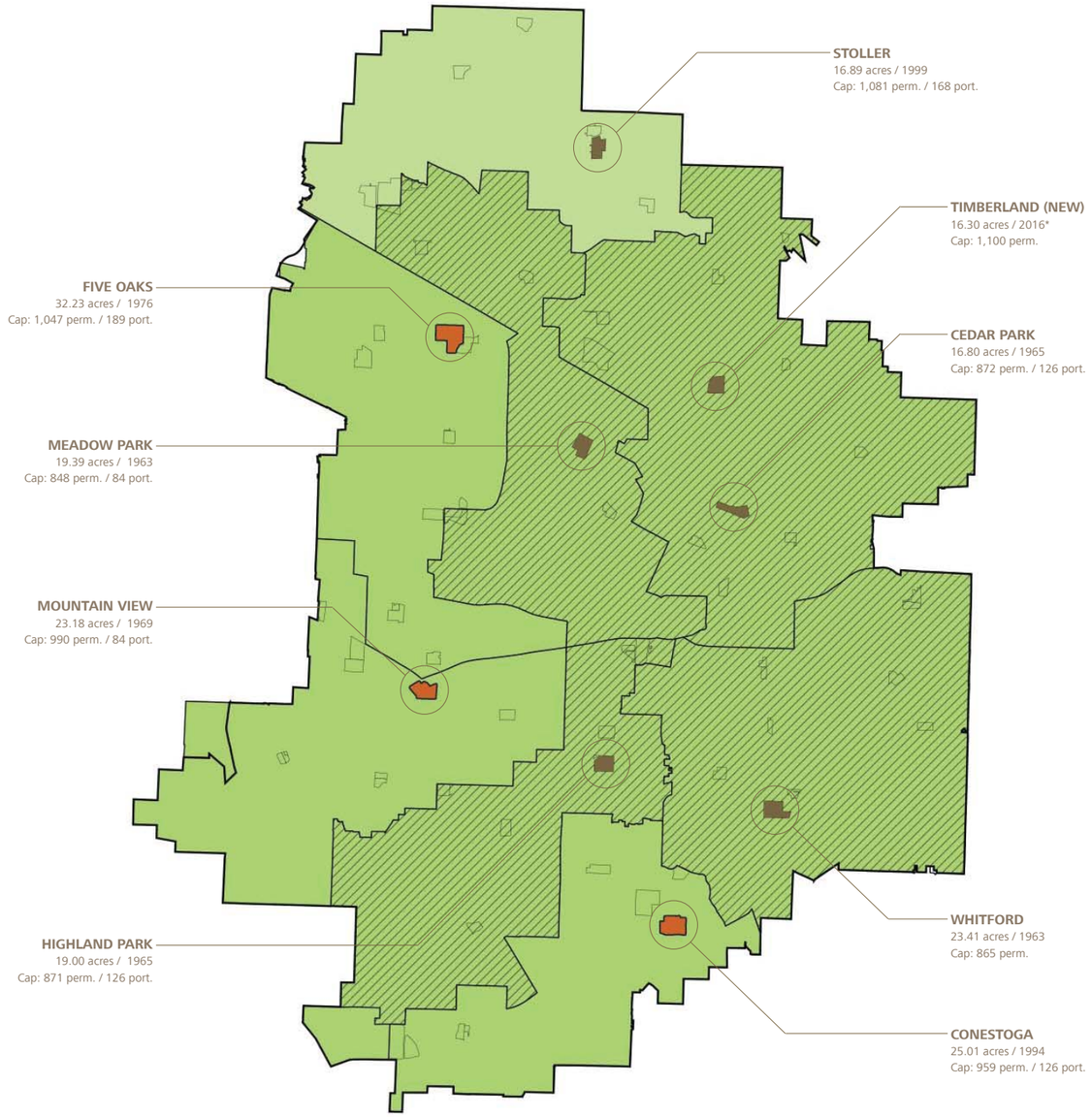
POTENTIAL SITE CAPACITY

- Potential to co-locate with existing MS
- Potential to co-locate with new MS
- Potential to convert to HS

FACILITY AGE

- Built before 1966 (50+ years old)

BELOW:
Map Diagram: Existing Site Capacity & Facility Age - Middle Schools



EXISTING SITE CAPACITY & FACILITY AGE: MIDDLE SCHOOLS

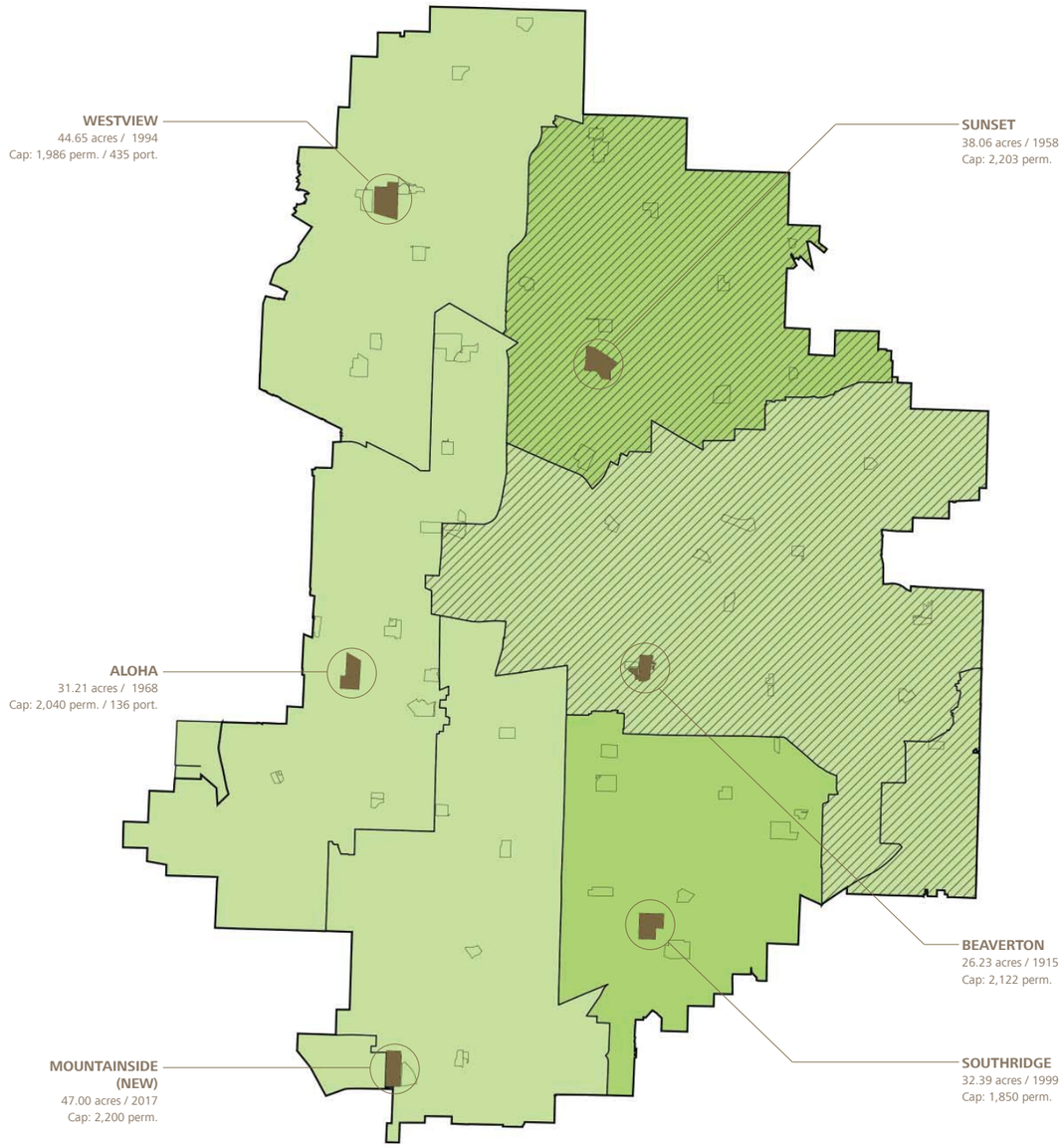
RIGHT:
Map Diagram: Existing Site Capacity & Facility Age - High Schools

HIGH SCHOOLS

Two of the District's existing high schools, Sunset and Southridge, appear to have the potential to accommodate a new elementary school on site with the existing high school remaining. The new Mountainside High School also has a large site and may be able to accommodate an elementary school on site in the future.

The three remaining high schools would likely accommodate co-location with a new elementary school if the existing facilities were replaced. However, Beaverton High School is the only one of these facilities that is currently over 50 years old.

Co-location of a new elementary school on any of the District's high school sites would likely require significant compromises (such as reduction, relocation or sharing) in available site amenities, such as parking, drop-off, fields and play areas. This is particularly true at the high school level due to the limited potential for shared use of fields and play areas with a wide variation in age groups.



POTENTIAL SITE CAPACITY

- Potential to co-locate with existing HS
- Potential to co-locate with new HS

FACILITY AGE

- Built before 1966 (50+ years old)

EXISTING SITE CAPACITY & FACILITY AGE: HIGH SCHOOLS

SUMMARY: OPPORTUNITIES

The diagrams at right and on the following page provide a graphic summary of potential opportunities that have been evaluated at each District school facility.

The first column shows the existing capacity of the school, as well as any additional capacity in portables (dashed square), if applicable. Facilities are shown in brown if they are existing and light orange if they are planned for replacement in the current (2014) bond cycle.

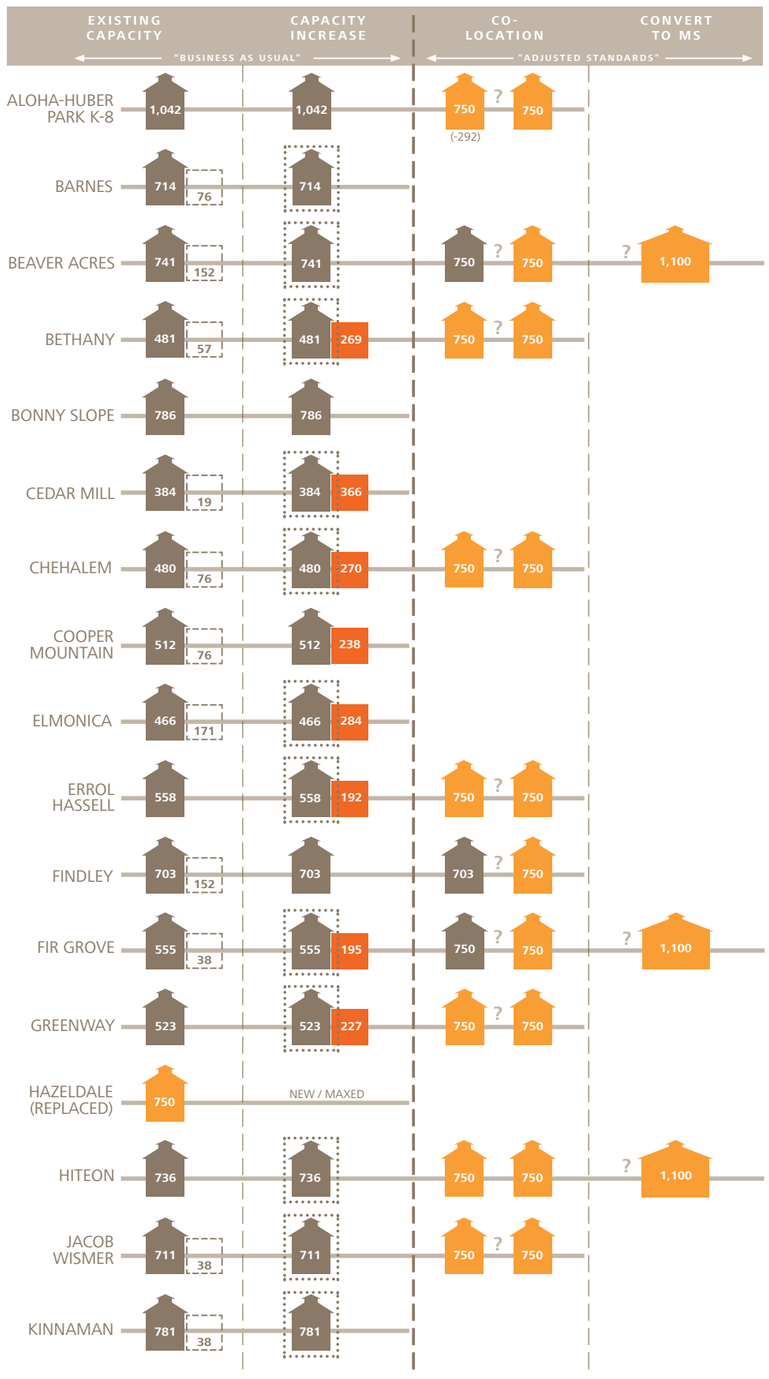
The second column ("Capacity Increase") shows potential capacity increases that could be implemented without changing the District's standard practices and size/capacity targets. Possible capacity increases, which could be accomplished by facility replacement and/or building additions, are shown in the dark orange square in this column. The dotted square around the school icon signifies that operations could be maintained during replacement on site.

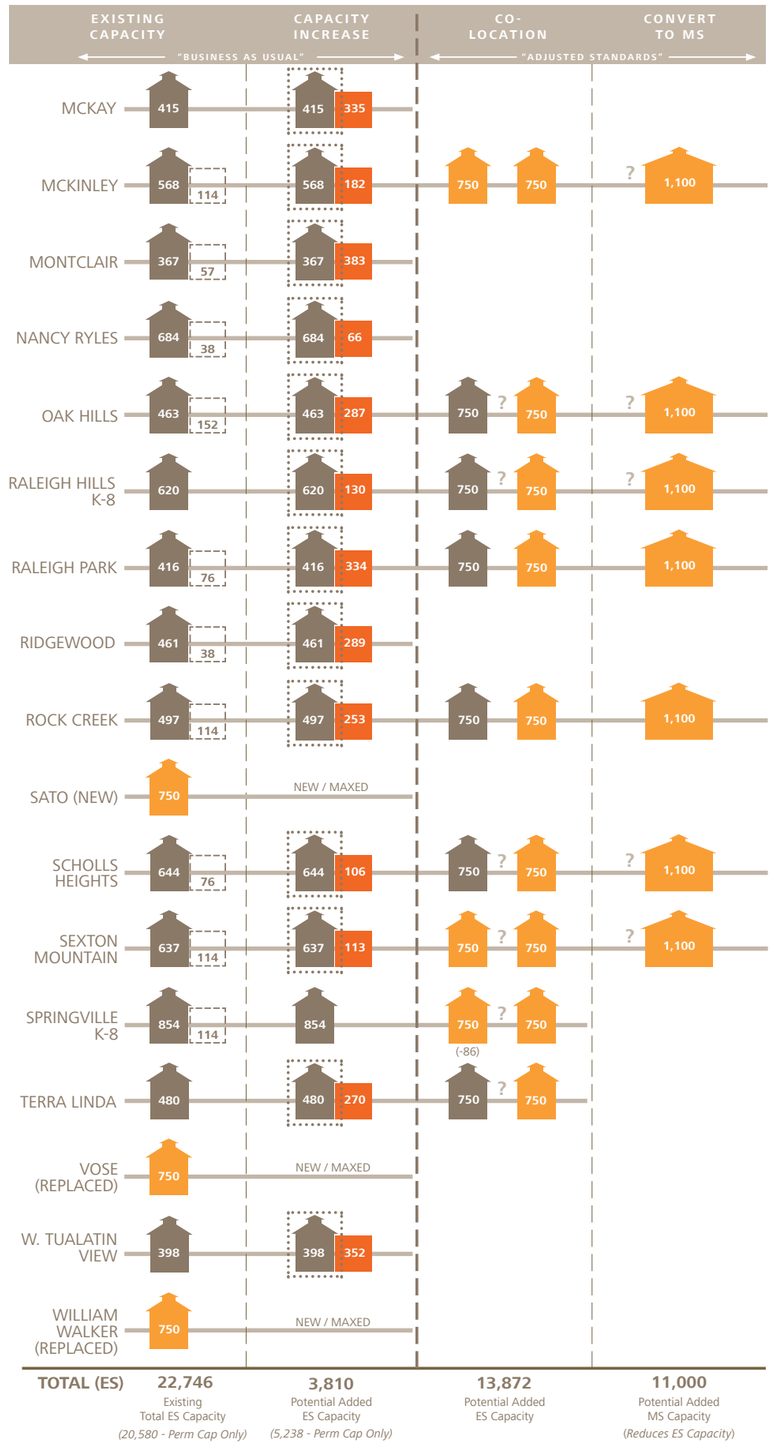
The last two columns of the chart summarize opportunities that would likely require an adjustment to the District's practices and or size/capacity targets.

Column three ("Co-location") indicates if co-location with a new elementary school may be possible, with existing facilities shown in brown, and new facilities shown in light orange. Column four ("Convert to MS") indicates the potential to change the function of the site to increase capacity, such as converting an elementary site to become a middle school site. Question marks in these two columns indicate a more limited potential was assessed at these sites.

Elementary facilities are included on the two charts at right, and middle and high school facilities are included on the two charts on the opposite page.

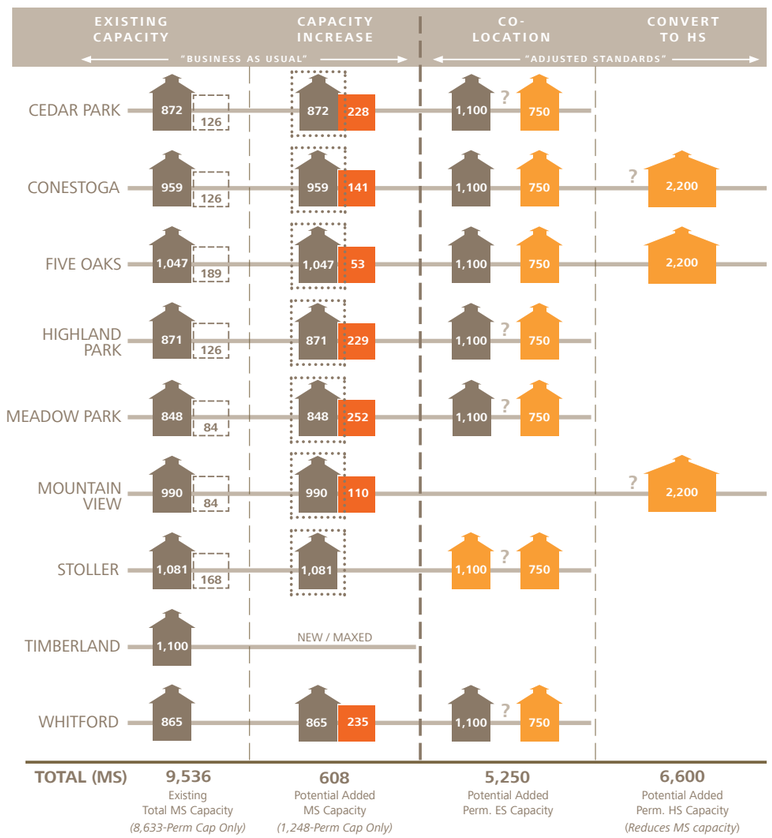
BELOW:
Diagram: Opportunities - Elementary Schools

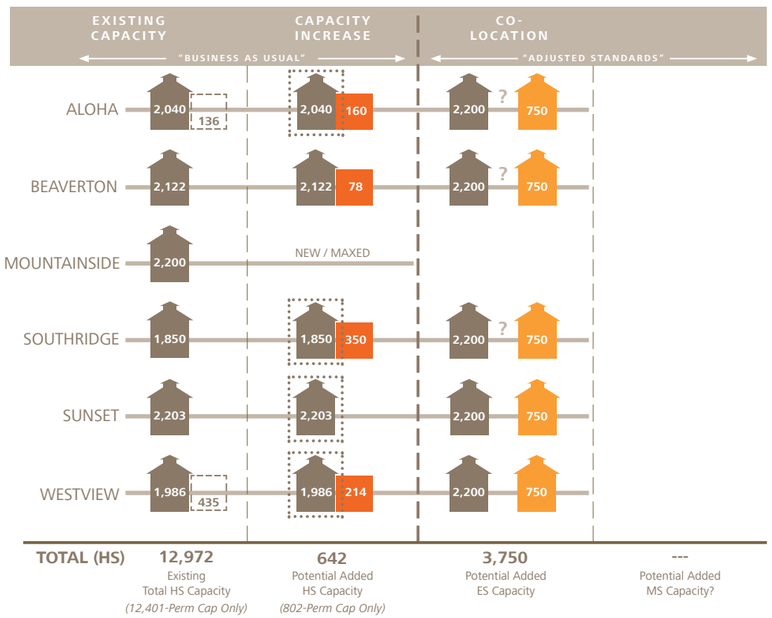


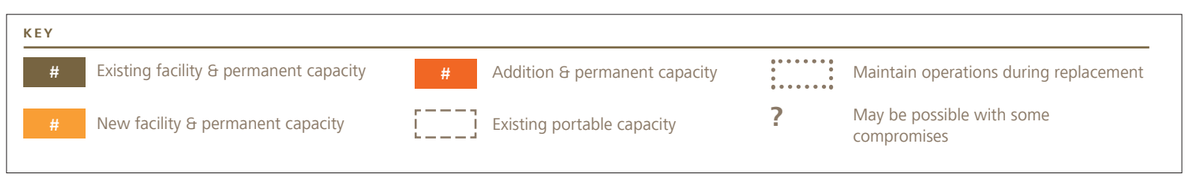


Continued at right.

RIGHT:
Diagram: Opportunities - Middle Schools
Diagram: Opportunities - High Schools







EXISTING CAPACITY & PROJECTED ENROLLMENT

An analysis of projected 2065 enrollment with the District's existing facilities provides a baseline for evaluating the potential impacts of future enrollment growth.

The map diagrams at right summarize the resulting conditions for elementary, middle and high school levels, and highlight areas where capacity may be a future concern. Darker colors represent greater capacity deficits, based on current facility conditions and 2065 enrollment projections.

Diagrams reflect 2016 school capacities and catchment areas, and uses the expected growth forecast, which does not include any preschool enrollment.

ELEMENTARY LEVEL

At the elementary level, the District is projected to have a total capacity deficit of approximately 3,250 seats. Areas in the north and south of the District, where the most growth is anticipated, are the areas of greatest concern.

Existing schools that would be more than 300 seats over capacity include McKinley Elementary and Springville K-8 (kindergarten through fifth grade component) in the north, and Nancy Riles and Scholls Heights elementary schools in the south.

CAPACITY DEFICIT: 2065 PROJECTION

- No deficit (equal or surplus capacity)
- 1-100 student capacity deficit
- 101-200 deficit
- 201-300 deficit
- 300+ deficit

Notes

* Reflects replacement date (if applicable) and planned capacity

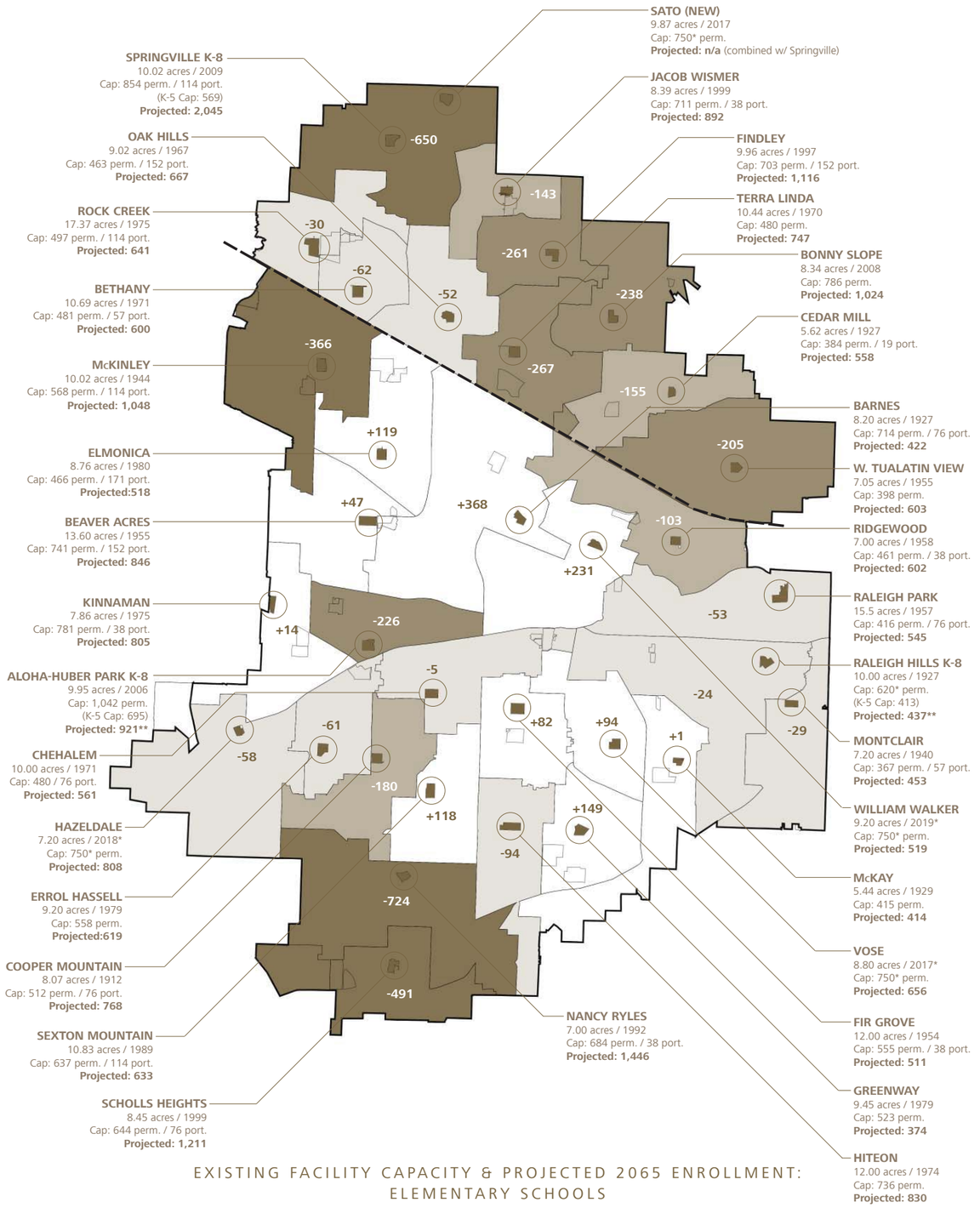
** Reflects K-5 capacity only

Total capacity includes existing portables, except at replacement schools

Kaiser Road capacity included in Springville K-8

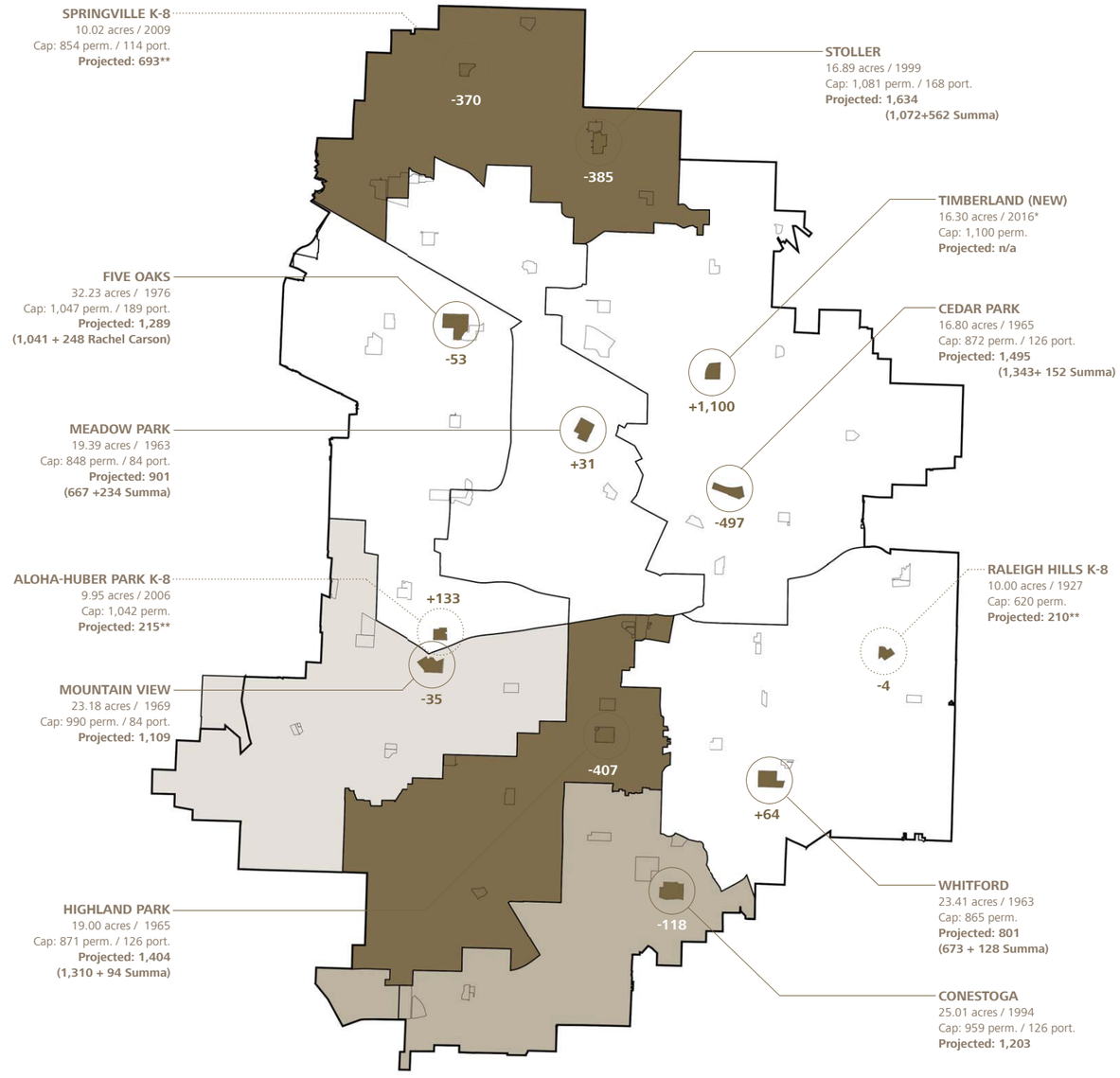
Elementary capacity at K-8 schools assumed to be 2/3 of total capacity

BELOW:
Map Diagram: Existing Facility Capacity & Projected 2065 Enrollment - Elementary Schools



EXISTING FACILITY CAPACITY & PROJECTED 2065 ENROLLMENT: ELEMENTARY SCHOOLS

RIGHT:
Map Diagram: Existing Facility Capacity & Projected 2065 Enrollment - Middle Schools



EXISTING FACILITY CAPACITY & PROJECTED 2065 ENROLLMENT:
MIDDLE SCHOOLS

CAPACITY DEFICIT: 2065 PROJECTION

- No deficit (equal or surplus capacity)
- 1-100 student capacity deficit
- 101-200 deficit
- 201-300 deficit
- 300+ deficit

Notes

* Reflects replacement date (if applicable) and planned capacity (Timberland will not be used as a middle school until 2019)

** Reflects 6-8 enrollment projection only

Middle school capacity of K-8 schools assumed to be one-third of total capacity and is included in middle school catchment areas

MIDDLE SCHOOL LEVEL

Similar conditions are projected at the middle school level, with the greatest areas of concern in the north and south of the District. However, the scale of the deficit is much smaller, partially due to the added capacity of the new Timberland Middle School.

The districtwide capacity deficit at the middle school level is projected to be approximately 540 seats, including projected enrollment for the Summa and Rachel Carson programs, which are housed within neighborhood middle school facilities. Middle school enrollment for option schools in separate, dedicated facilities (ACMA, HSS, and ISB) are not included.

Both Stoller Middle School and Springville K-8 (sixth through eighth grade component) in the north are projected to have a capacity deficit of over 300 seats, as well as Highland Park Middle School in the south.

HIGH SCHOOL LEVEL

District high schools are also projected to have the greatest capacity deficits in the north and south areas of the District. Westview High School in the north and Mountainside High School in the south will both have capacity deficits of more than 600 seats, based on 2065 enrollment projections.

The districtwide capacity deficit at the high school level is projected at approximately 960 seats. This does not include projected high school enrollment for option schools in separate, dedicated facilities (ACMA, HSS, ISB and Merlo Station Community High School).

CAPACITY DEFICIT: 2065 PROJECTION

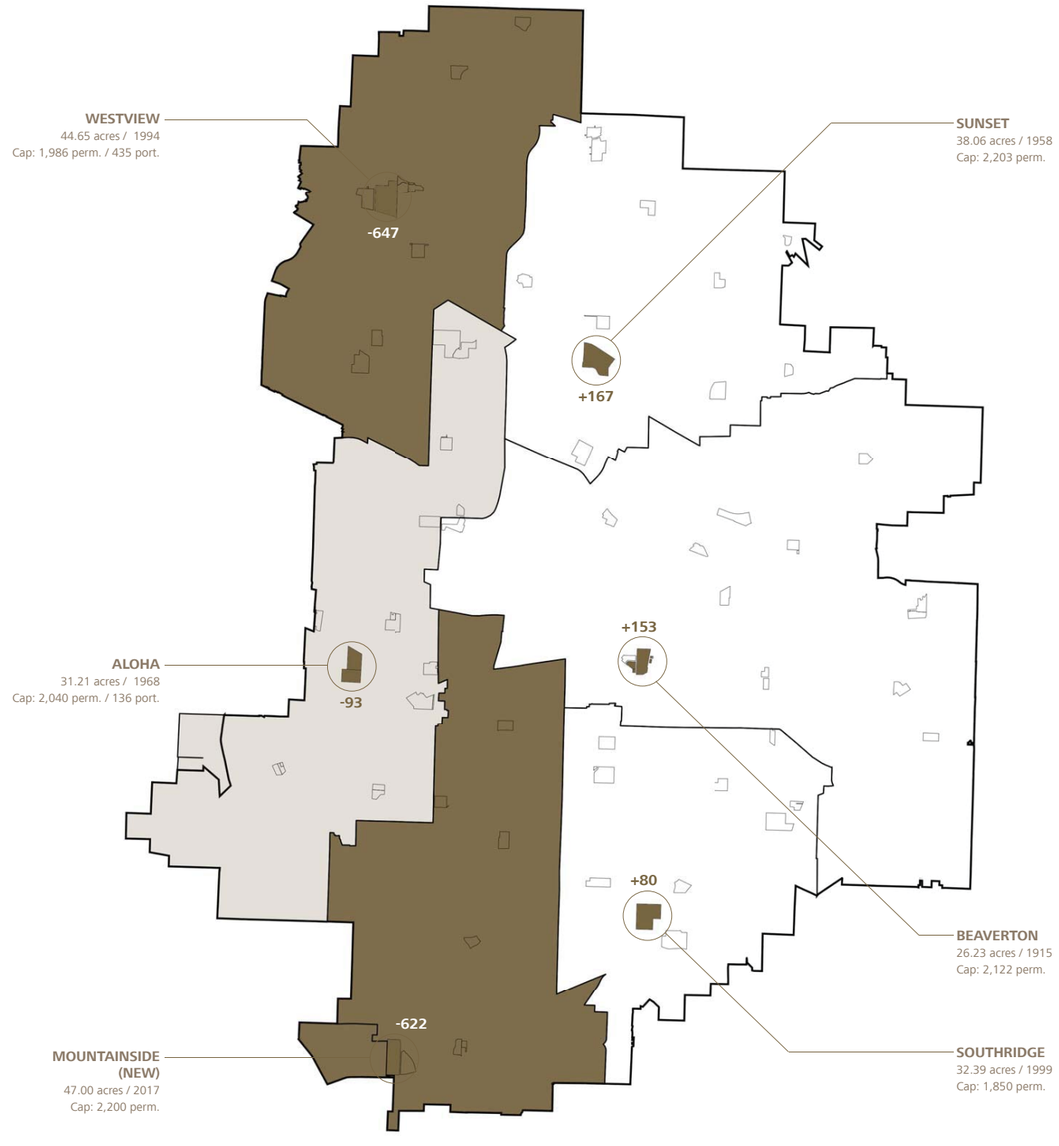
- No deficit (equal or surplus capacity)
- 1-100 student capacity deficit
- 101-200 deficit
- 201-300 deficit
- 300+ deficit

Notes

* Reflects replacement date (if applicable) and planned capacity

Total capacity includes existing portables, except at replacement schools

BELOW:
Map Diagram: Existing Facility Capacity & Projected 2065 Enrollment - High Schools



EXISTING FACILITY CAPACITY & PROJECTED 2065 ENROLLMENT: HIGH SCHOOLS

EXISTING CONDITIONS DATA

The table at right and on the following pages summarizes the existing conditions data provided by the Beaverton School District.

NOTES:

:: List of facilities includes new and replacement facilities funded in the 2014 bond

:: K-8 facilities are included in the Elementary School category, including associated middle school capacity (however, elementary and middle school capacity and enrollment are separated for these facilities in the planning scenarios)

:: Construction date reflects original date of construction

:: FCI (Facility Condition Index) scores were developed by the District in 2010 and only reflect facility deficiencies (deferred maintenance) as related to replacement cost; functional deficiencies were not considered

:: Capacity reflects permanent general education space (SPED and ELL capacities are deducted; portables are not included)

- Permanent capacity reflects building capacity only (as determined by BSD)
- Total capacity includes permanent capacity and portable capacity (as determined by BSD)

:: Amount over / under capacity targets are based on the following BSD capacity and site targets:

- Elementary: 750-seat facility / 7-10 acre site
- Middle: 1,100-seat facility / 15-20 acre site
- High: 2,200-seat facility / 35-40 acre site

:: "Realistic" columns (shown in red) reflect the amount over / under capacity targets, taking into account the reality of facility use. The following parameters are assumed:

- Schools that are currently above target capacity stay at current capacity (not reduced to target capacity)
- Schools that are within 50 seats of target capacity stay at current capacity (it is typically not feasible to construct an addition of only one or two classrooms)

The "realistic" numbers are what was used to analyze capacity of existing facilities.

		FACILITY SIZE		FAC. COND.		CAPACITY								SITE SIZE		
	Facility	GSF (Perm. Capacity)	GSF/Stud. (Perm. Capacity)	Constr. Date	FCI Score	F2016 Perm. Capacity	Added Capacity ('14 Bond)	Total Perm. Capacity	2016 Port. Capacity	Total Capacity (w/ Port.)	Over/Under Target (Perm.)	Over/Under Target (w/ Port.)	Over/Under Target-Perm (Realistic)	Over/Under Target-w/ Port. (Realistic)	Acres	Over/Under Target (Min.)	Over/Under Target (Max.)
ELEMENTARY SCHOOL																	
1	Aloha-Huber Park K-8	106,046	102	2006	0.01	1,042		1,042	-	1,042	292	292	n/a	n/a	9.95	2.95	(0.05)
2	Barnes	75,900	106	1927	0.04	714		714	76	790	(36)	40	n/a	n/a	8.20	1.20	(1.80)
3	Beaver Acres	79,507	107	1955	0.11	741		741	152	893	(9)	143	(9)	n/a	**13.60**	6.60	3.60
4	Bethany	49,913	104	1971	0.12	481		481	57	538	(269)	(212)	(269)	(212)	10.69	3.69	0.69
5	Bonny Slope	80,405	102	2008	0.00	786		786	-	786	36	36	n/a	n/a	8.34	1.34	(1.66)
6	Cedar Mill	41,055	107	1927	0.11	384		384	19	403	(366)	(347)	(366)	(347)	5.62	(1.38)	(4.38)
7	Chehalem	54,316	113	1971	0.05	480		480	76	556	(270)	(194)	(270)	(194)	10.00	3.00	-
8	Cooper Mountain	54,821	107	1912	0.12	512		512	76	588	(238)	(162)	(238)	(162)	8.07	1.07	(1.93)
9	Elmonica	51,063	110	1980	0.09	466		466	171	637	(284)	(113)	(284)	(113)	8.76	1.76	(1.24)
10	Errol Hassell	60,345	108	1979	0.18	558		558	-	558	(192)	(192)	(192)	(192)	9.20	2.20	(0.80)
11	Findley	72,052	102	1997	0.01	703		703	152	855	(47)	105	n/a	n/a	9.96	2.96	(0.04)
12	Fir Grove	58,181	105	1954	0.08	555		555	38	593	(195)	(157)	(195)	(157)	12.00	5.00	2.00
13	Greenway	54,991	105	1979	0.07	523		523	-	523	(227)	(227)	(227)	(227)	9.45	2.45	(0.55)
14	Hazeldale (REPLACE)	51,300	108	2018	0.15	477	273	750	-	750	-	-	-	n/a	7.20	0.20	(2.80)
15	Hiteon	78,972	107	1974	0.07	736		736	-	736	(14)	(14)	n/a	n/a	12.00	5.00	2.00
16	Jacob Wismer	72,863	102	1999	0.01	711		711	38	749	(39)	(1)	n/a	n/a	8.39	1.39	(1.61)
17	Kinnaman	80,837	104	1975	0.11	781		781	38	819	31	69	n/a	n/a	7.86	0.86	(2.14)
18	McKay	45,111	109	1929	0.31	415		415	-	415	(335)	(335)	(335)	(335)	5.44	(1.56)	(4.56)
19	McKinley	61,265	108	1944	0.08	568		568	114	682	(182)	(68)	(182)	n/a	10.02	3.02	0.02
20	Montclair	38,526	105	1940	0.06	367		367	57	424	(383)	(326)	(383)	(326)	7.20	0.20	(2.80)
21	Nancy Ryles	71,119	104	1992	0.07	684		684	38	722	(66)	(28)	(66)	n/a	7.00	-	(3.00)
22	Oak Hills	49,890	108	1967	0.24	463		463	152	615	(287)	(135)	(287)	(135)	9.02	2.02	(0.98)
23	Raleigh Hills K-8	56,647	107	1927	0.12	530	90	620	-	620	(130)	(130)	(130)	(130)	10.00	3.00	-
24	Raleigh Park	45,166	109	1957	0.12	416		416	76	492	(334)	(258)	(334)	(258)	15.50	8.50	5.50
25	Ridgewood	50,559	110	1958	0.13	461		461	38	499	(289)	(251)	(289)	(251)	7.00	-	(3.00)
26	Rock Creek	51,505	104	1975	0.15	497		497	114	611	(253)	(139)	(253)	(139)	17.37	10.37	7.37
27	Sato (NEW)	87,200	116	2017	0.00	-	750	750	-	750	-	-	-	-	9.87	2.87	(0.13)
28	Scholls Heights	68,941	107	1999	0.00	644		644	76	720	(106)	(30)	(106)	n/a	8.45	1.45	(1.55)
29	Sexton Mountain	67,318	106	1989	0.03	637		637	114	751	(113)	1	(113)	n/a	10.83	3.83	0.83
30	Springville K-8	87,206	102	2009	0.00	854		854	114	968	104	218	n/a	n/a	10.02	3.02	0.02
31	Terra Linda	51,636	108	1970	0.09	480		480	-	480	(270)	(270)	(270)	(270)	10.44	3.44	0.44
32	Vose (REPLACE)	87,200	116	2017	0.00	-	750	750	-	750	-	-	-	-	8.80	1.80	(1.20)
33	West Tualatin View	43,447	109	1955	0.21	398		398	-	398	(352)	(352)	(352)	(352)	7.05	0.05	(2.95)
34	William Walker (REPLACE)	51,092	112	2019	0.00	457	293	750	-	750	-		-	n/a	9.20	2.20	(0.80)
Subtotal: Elementary Schools		***2,136,395***	***107 (avg)***			***18,521***	***2,156***	***20,677***	***1,786***	***22,463***	***(4,823)***	***(3,037)***	***(5,150)***	***(3,800)***	***322.50***		

	Facility	FACILITY SIZE GSF (Perm. Capacity)	GSF/Stud. (Perm. Capacity)	FAC. COND. Constr. Date	FCI Score	CAPACITY F2016 Perm. Capacity	Added Capacity ('14 Bond)	Total Perm. Capacity	2016 Port. Capacity	Total Capacity (w/ Port.)	Over/Under Target (Perm.)	Over/Under Target (w/ Port.)	Over/Under Target-Perm (Realistic)	Over/Under Target-w/ Port. (Realistic)	SITE SIZE Acres	Over/Under Target (Min.)	Over/Under Target (Max.)
MIDDLE SCHOOL																	
1	Cedar Park	117,054	134	1965	0.09	872		872	126	998	(228)	(102)	(228)	(102)	16.80	1.80	(3.20)
2	Conestoga	128,179	134	1994	0.12	959		959	126	1,085	(141)	(15)	(141)	n/a	25.01	10.01	5.01
3	Five Oaks	143,039	137	1976	0.02	1,047		1,047	189	1,236	(53)	136	(53)	n/a	32.23	17.23	12.23
4	Highland Park	116,892	134	1965	0.12	871		871	126	997	(229)	(103)	(229)	(103)	19.00	4.00	(1.00)
5	Meadow Park	116,682	138	1963	0.04	848		848	84	932	(252)	(168)	(252)	(168)	19.39	4.39	(0.61)
6	Mountain View	133,942	135	1969	0.05	990		990	84	1,074	(110)	(26)	(110)	n/a	23.18	8.18	3.18
7	Stoller	143,788	133	1999	0.04	1,081		1,081	168	1,249	(19)	149	n/a	n/a	16.89	1.89	(3.11)
8	Timberland (NEW)	166,000	151	2016	0.00	-	1,100	1,100	-	1,100	-	-	-	-	16.30	1.30	(3.70)
9	Whitford	116,962	135	1963	0.09	865		865	-	865	(235)	(235)	(235)	(235)	23.41	8.41	3.41
Subtotal: Middle Schools		***1,182,538***	***137 (avg)***			***7,533***	***1,100***	***8,633***	***903***	***9,536***	***(1,267)***	***(364)***	***(1,248)***	***(608)***	***192.21***		
HIGH SCHOOL																	
1	Aloha	260,677	128	1968	0.04	2,040		2,040	136	2,176	(160)	(24)	(160)	n/a	31.21	(3.79)	(8.79)
2	Beaverton	303,158	143	1915	0.07	2,122		2,122	-	2,122	(78)	(78)	(78)	(78)	26.23	(8.77)	(13.77)
3	Mountainside	330,000	150	2017	0.00	-	2,200	2,200	-	2,200	-	-	-	-	47.00	12.00	7.00
4	Southridge	256,070	138	1999	0.02	1,850		1,850	-	1,850	(350)	(350)	(350)	(350)	32.39	(2.61)	(7.61)
5	Sunset	253,727	115	1958	0.06	2,203		2,203	-	2,203	3	3	n/a	n/a	38.06	3.06	(1.94)
6	Westview	281,183	142	1994	0.05	1,986		1,986	435	2,421	(214)	221	(214)	(214)	44.65	9.65	4.65
Subtotal: High Schools		***1,684,815***	***133 (avg)***			***10,201***	***2,200***	***12,401***	***571***	***12,972***	***(799)***	***(228)***	***(802)***	***(642)***	***219.54***		
OPTION SCHOOL																	
1	ACMA (REPLACE)	65,900	92	1949	0.10	330	390	720	-	720	-	-			8.94	-	-
2	Bridges Academy	10,800	140	1970	0.04	77		77	-	77	-	-			*incl below*	-	-
3	Health & Science School	105,883	141	1970	0.04	751		751	-	751	-	-			18.55	-	-
4	Intn'l School of Beaverton	75,585	143	1911	0.07	530		530	276	806	-	-			15.45	-	-
5	Merlo Station Comm. HS	51,125	155	1979	0.11	330		330	46	376	-	-			4.20	-	-
6	Vacant (Terra Nova HS)	11,800	-	1938	0.31	-		-	-	-	-	-			3.83	-	-
Subtotal: Option Schools		***321,093***	***112 (avg)***			***2,018***	***390***	***2,408***	***322***	***2,730***					***50.97***		
SUPPORT FACILITY																	
1	Administration Center	35,995	n/a	1972	0.15	-	-	-	-	-	-	-			3.27	-	-
2	Admin. - Aloha Branch	4,929	n/a	1950	0.20	-	-	-	-	-	-	-			2.86	-	-
3	ESL Welcome Center	leased	n/a	n/a	n/a	-	-	-	-	-	-	-			*n/a*	-	-
4	Maintenance Center	34,428	n/a	1971	0.05	-	-	-	-	-	-	-			6.54	-	-
5	Transp. & Support Ctr.	53,390	n/a	1973	0.00	-	-	-	-	-	-	-			13.67	-	-
6	Transportation - Allen	9,779	n/a	1969	0.19	-	-	-	-	-	-	-			5.36	-	-
7	Transp. - 5th St. Sta. N.	5,139	n/a	1977	0.06	-	-	-	-	-	-	-			3.43	-	-
8	Transp. - 5th St. Stat. S.	25,800	n/a	1965	0.20	-	-	-	-	-	-	-			2.94	-	-
Subtotal: Support Facilities		***169,460***													***38.07***		
DISTRICT TOTAL		**5,494,301**				**38,273**	**5,846**	**44,119**	**3,582**	**47,701**	**(6,889)**	**(3,629)**			**823.29**		