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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This report and its appendices identify sources of information, assumptions, and analytic techniques used in the analysis. Within the limitations imposed by uncertainty and the project budget, ECONorthwest and the Beaverton school District have made every effort to check the reasonableness of the data and assumptions and to test the sensitivity of the results of the analysis to changes in key assumptions. They acknowledge that any forecast of the future is uncertain. The fact that ECONorthwest evaluates assumptions as reasonable does not guarantee that those assumptions will prevail.

The ECONorthwest team prepared this report based on (1) its general knowledge of planning, demographics, development, and the economy in Washington County, models for K-12 education, and school facilities; and (2) information derived from government agencies, private statistical services, the reports of others, interviews of individuals, or other sources believed to be reliable. ECONorthwest has not verified the accuracy of all such information, however, and makes no representation regarding its accuracy or completeness. Any statements nonfactual in nature constitute the authors' current opinions, which may change as more information becomes available.

This report was prepared by ECONorthwest and its consultant partners for consideration by the staff and Board of the Beaverton School District. It does not necessarily reflect views or policies of District. Notwithstanding the substantial help it received on this project, this report is the product of ECONorthwest, who is responsible for its content and any errors it may contain.

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:

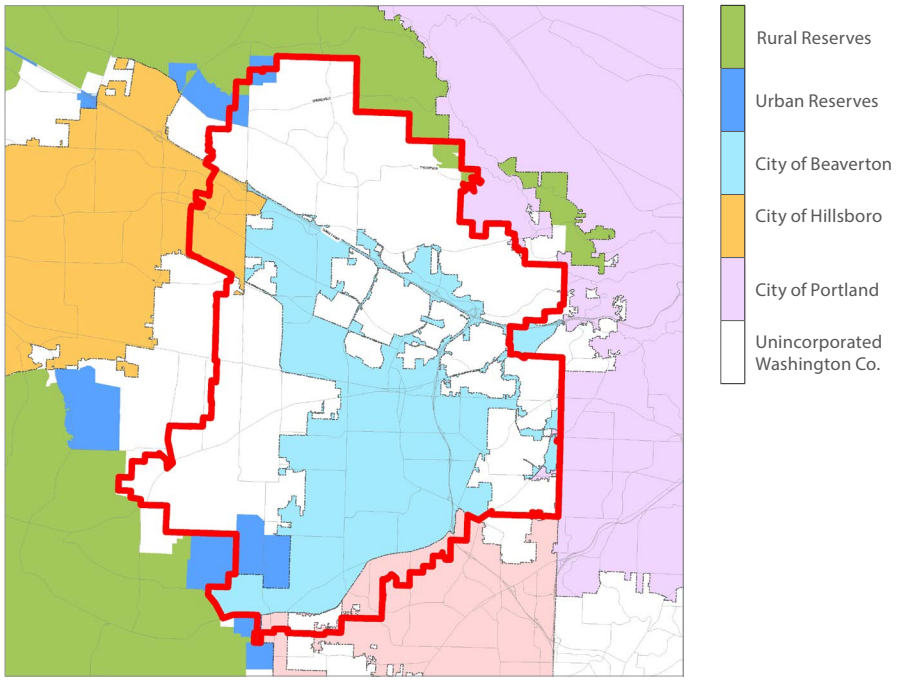
Engage our students in rigorous and joyful learning experiences that meet their individual needs so they may thrive, contribute, compete, and excel.

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.

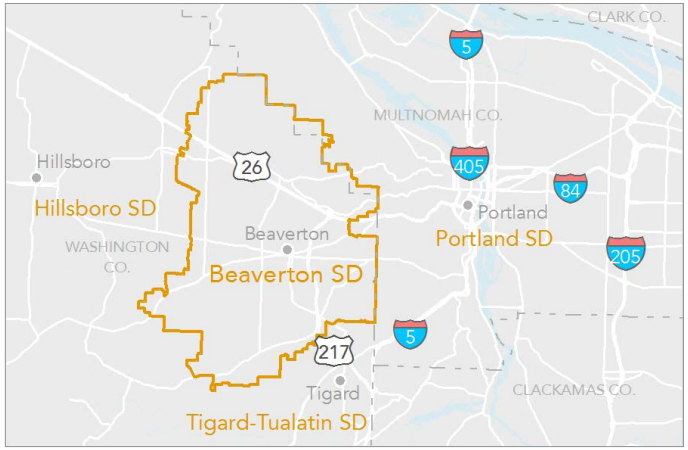
In 2014, the Beaverton School District passed, what was at the time, the largest capital bond program for school construction in the history of Oregon. That program will fund facility needs for the next 8–10 years.[1]

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.

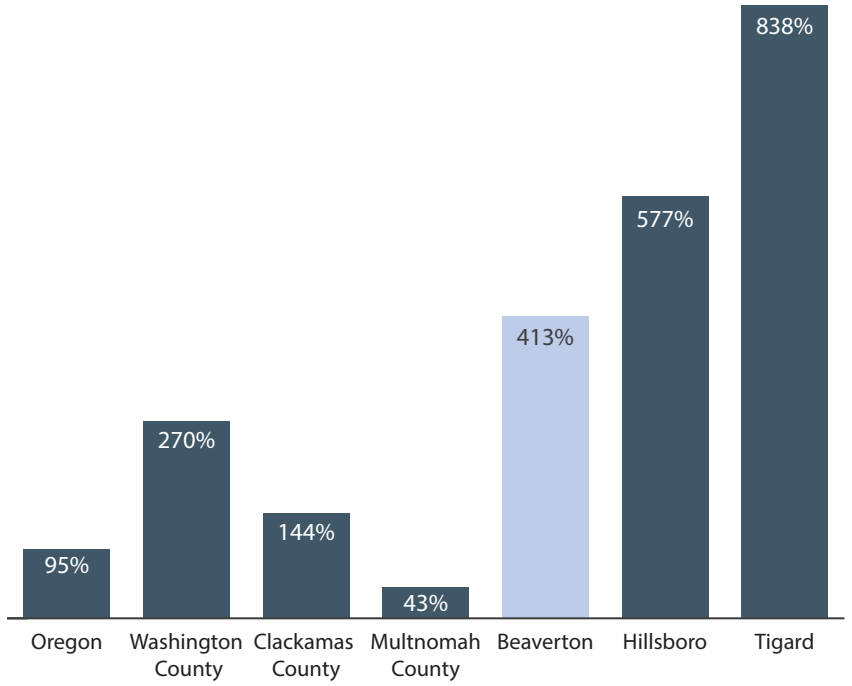
This Study's expected-growth forecast is that over the next 50 years, K-12 enrollment in the District will increase by about 15,000 students, from roughly 40,000 to 55,000 students. The Study's high-growth forecast estimates that the District will add almost 19,000 students. District-wide growth in enrollment 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

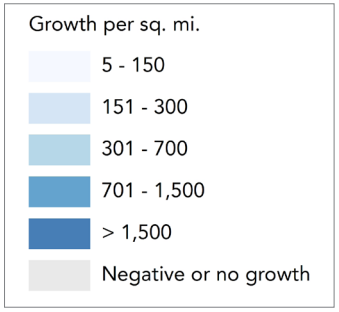
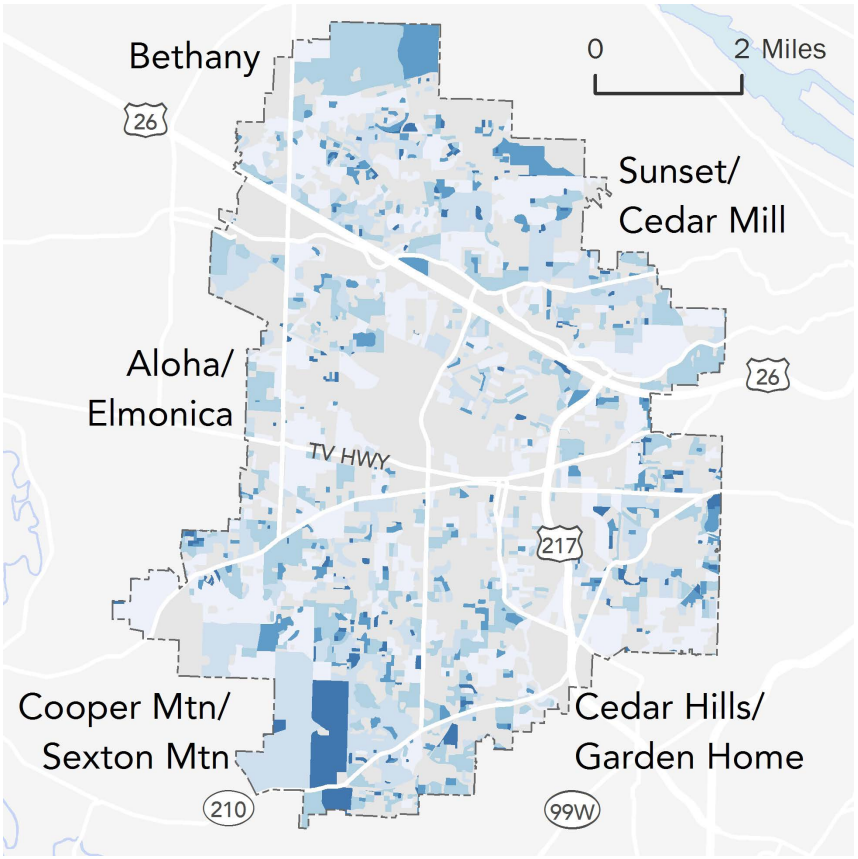


Exhibit 3-2. Projected Growth in Number of K-12 School-aged Children per Square Mile, Beaverton School District, 2015–2025



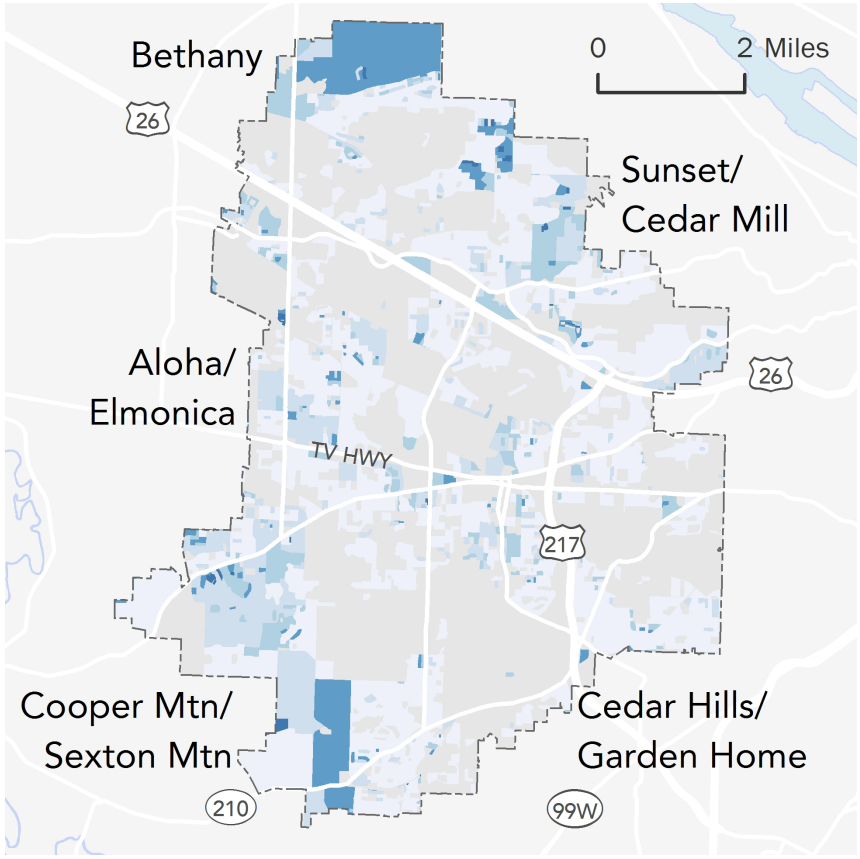
Source: ECONorthwest

[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.

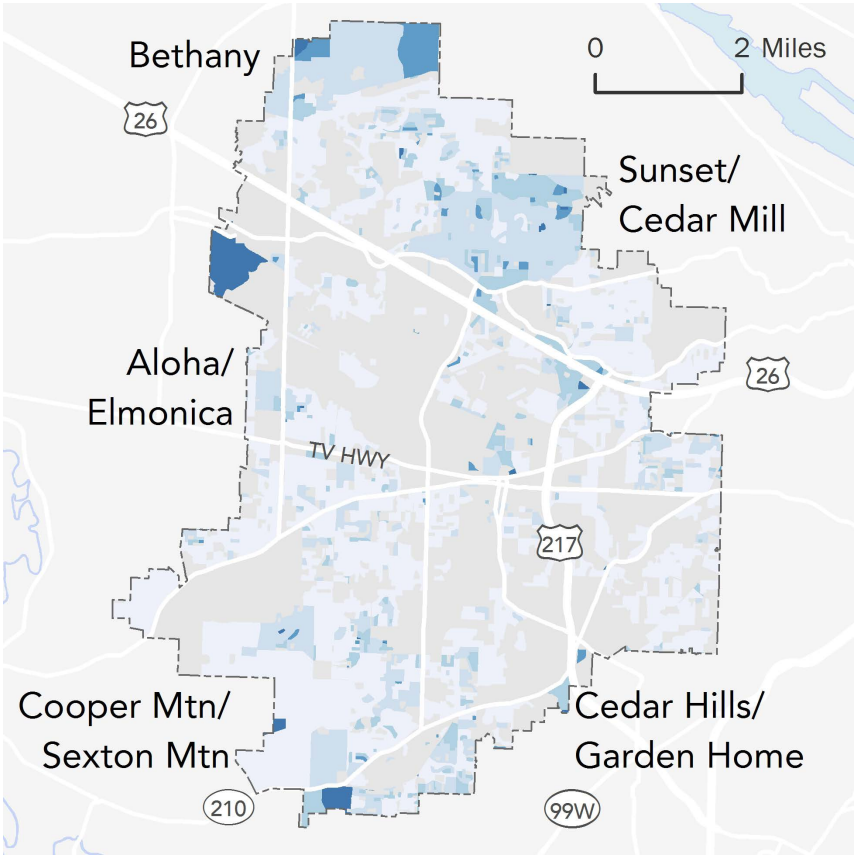
[6]Appendix A contains more detail (e.g., tables showing forecasted growth of school-aged children by age, year, and location). Chapter 7 explains how to get that appendix.

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.

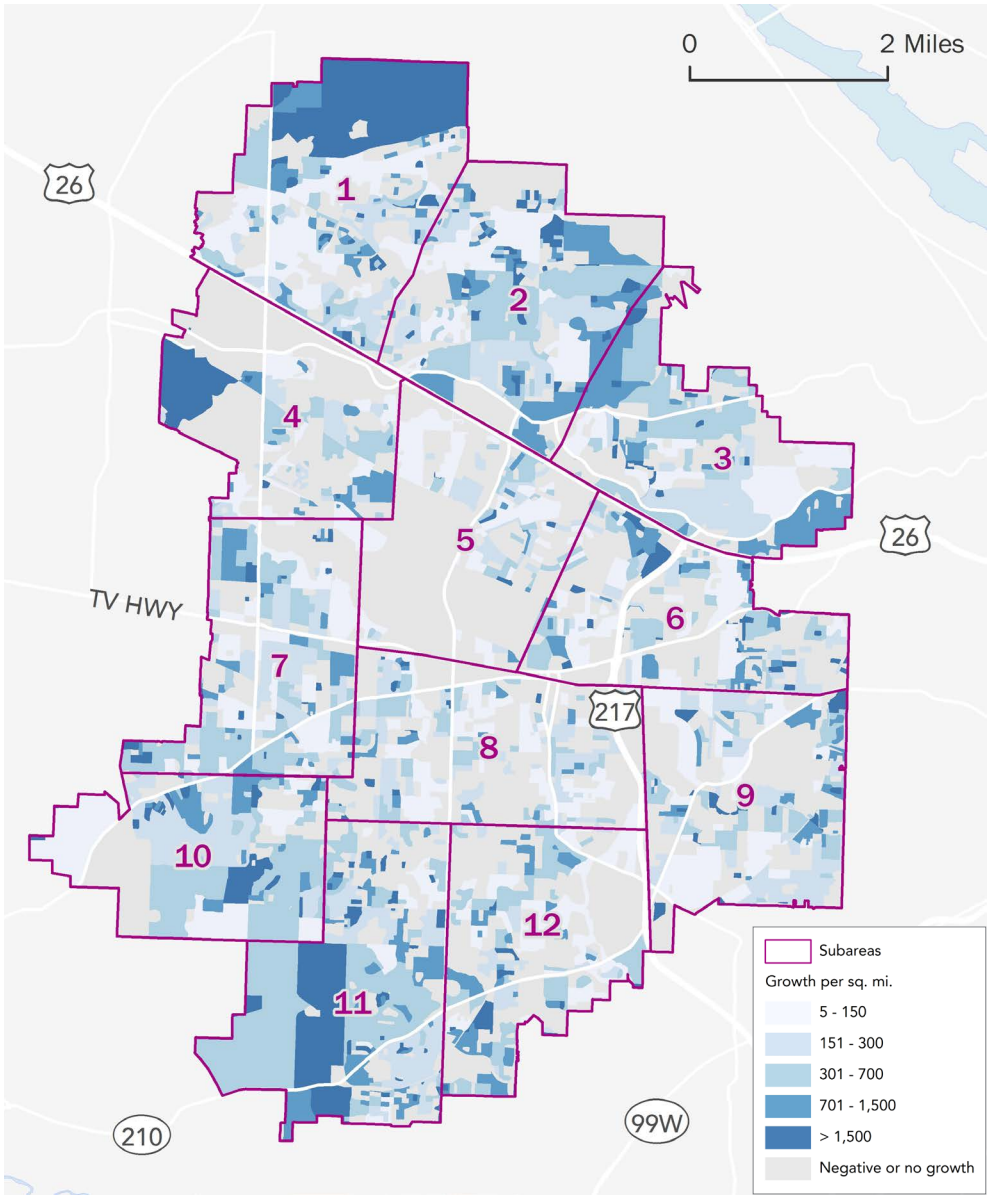
Exhibit 3-5 sums up all the growth shown in Exhibits 3-2, 3-3, and 3-4. It shows total (cumulative) growth in school-aged children for 50 years, from 2015 to 2065.

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.

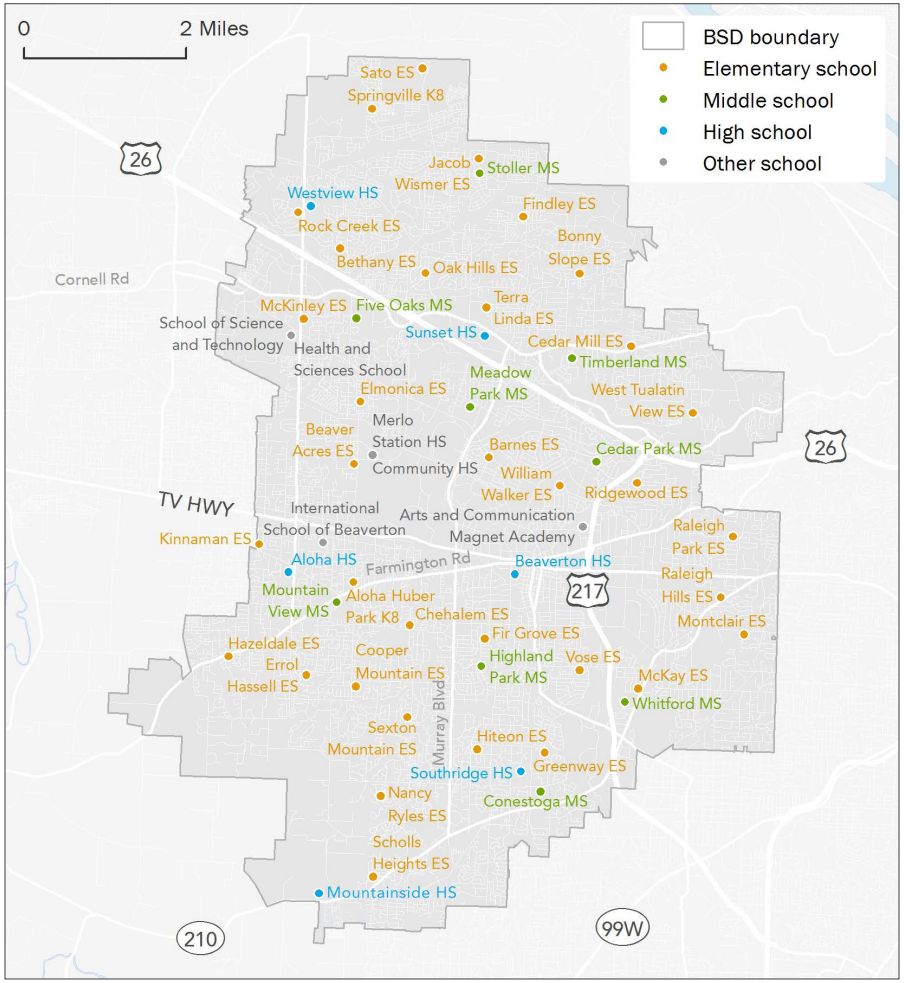
Step 2: Replace Schools

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)

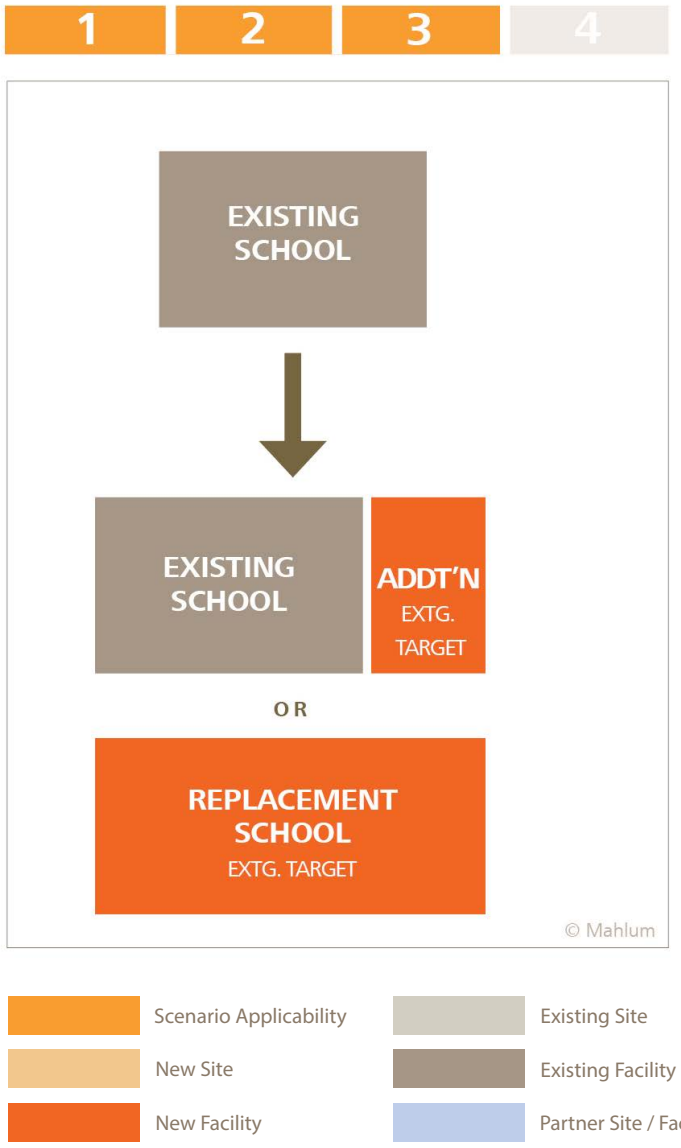
Application Areas

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

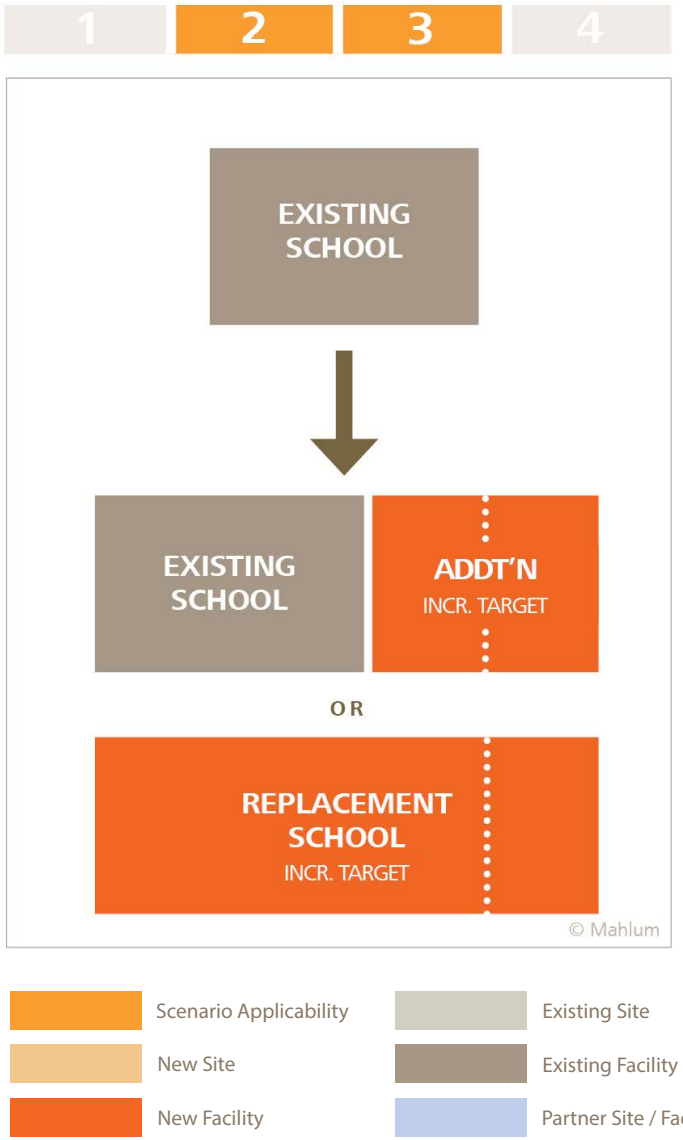


Replace or Add to Existing Schools to Achieve District Target Capacity

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.

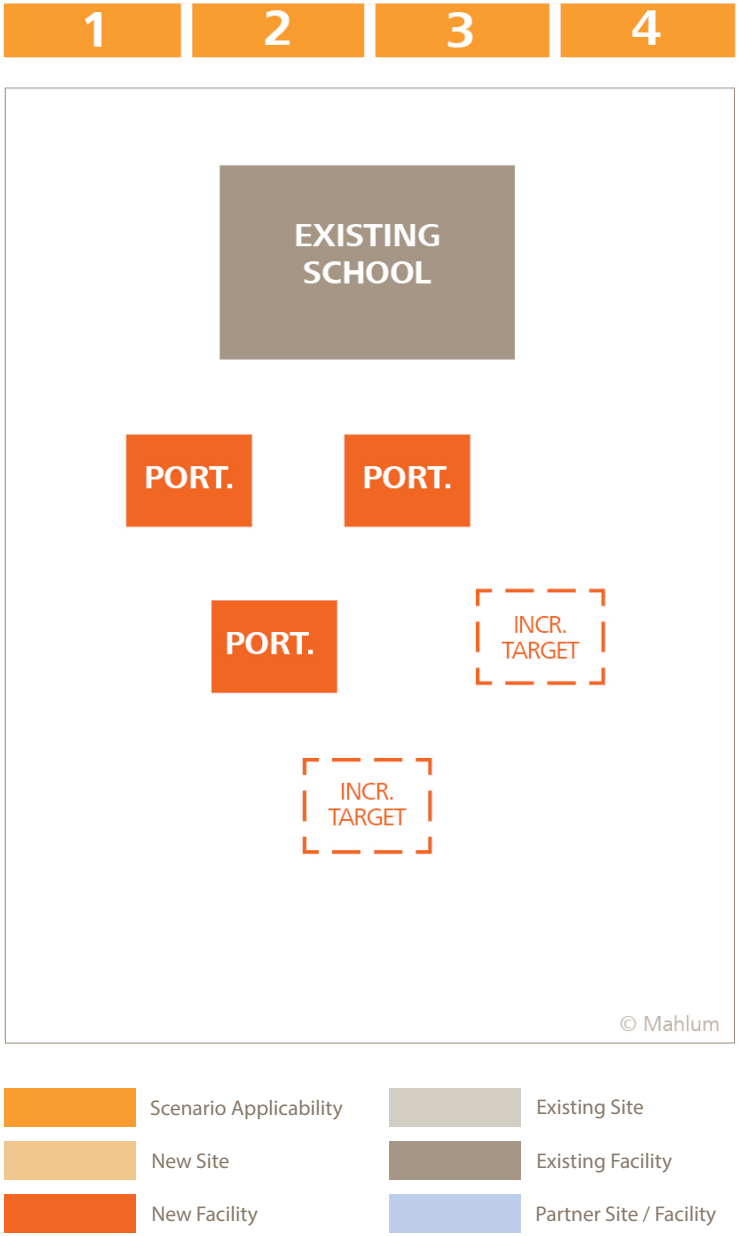


Replace or Add to Existing Schools to Achieve *Increased* Target Capacity

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.

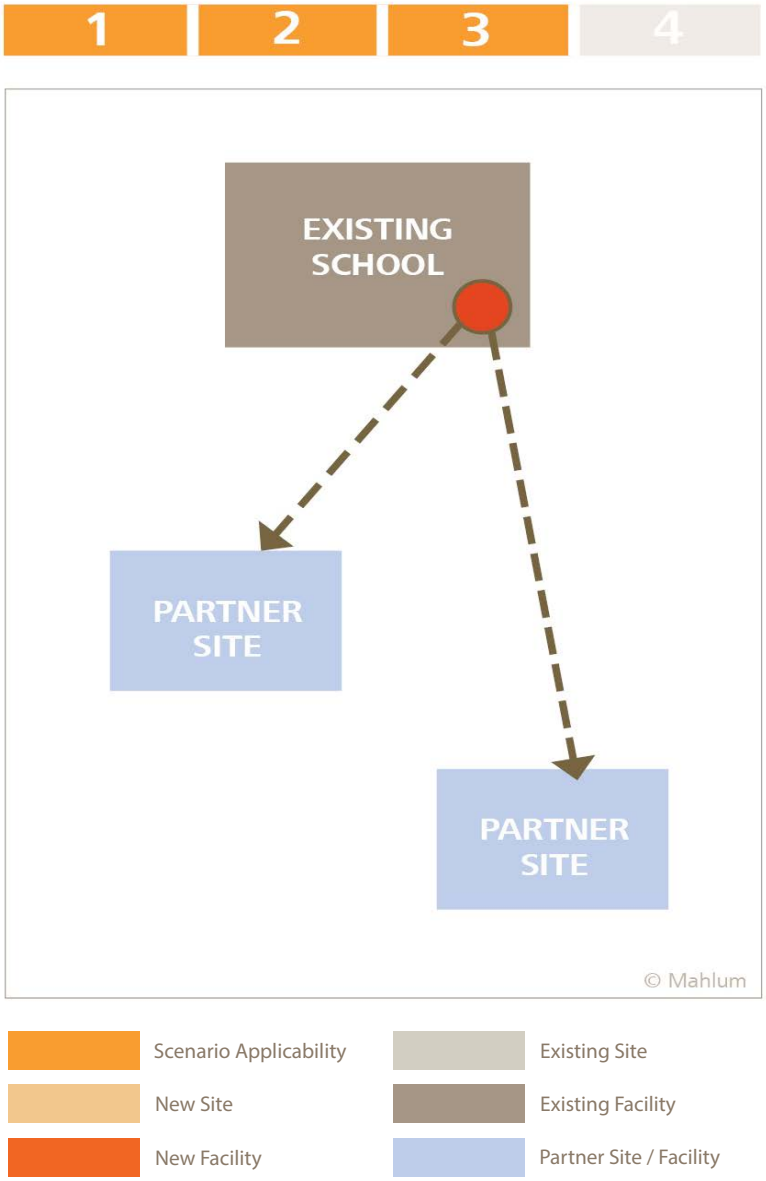
Modular classroom buildings are an affordable and flexible method for increasing the number of seats at a given school site. The use of modular buildings must be balanced, however, with site considerations and issues of educational quality, safety, and equity between schools. There is a growing body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

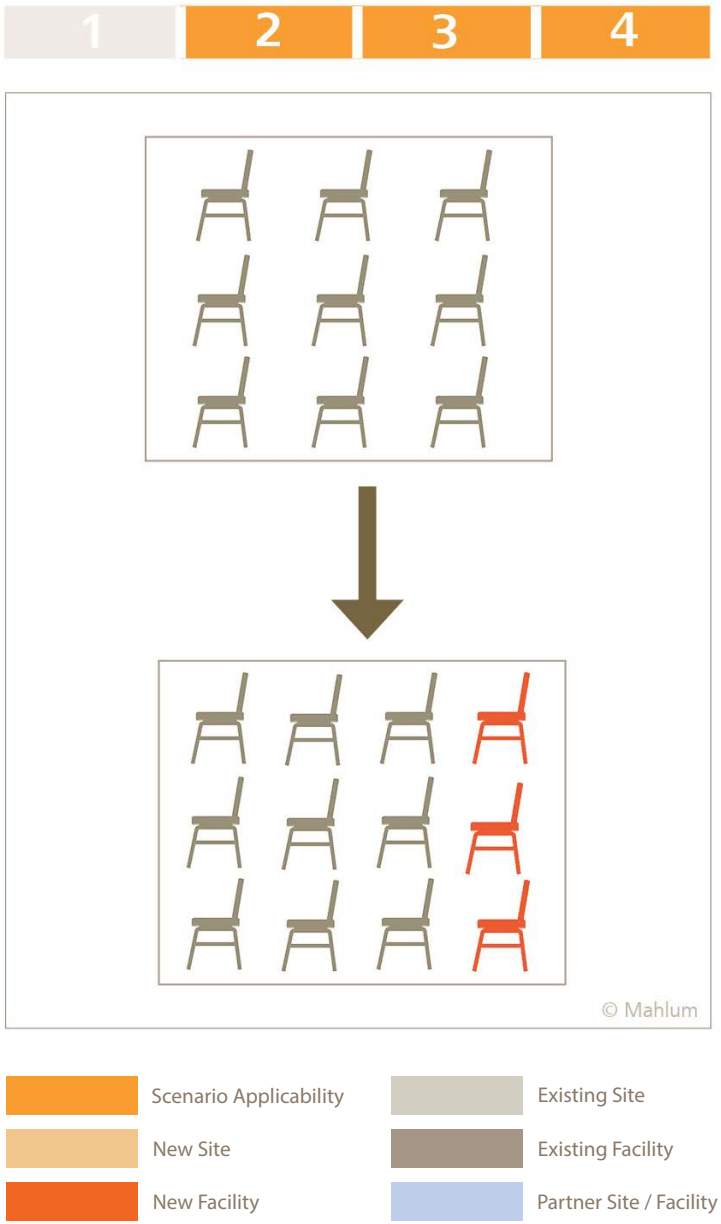


Move Enrollment Off-Site (Partnerships)

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.

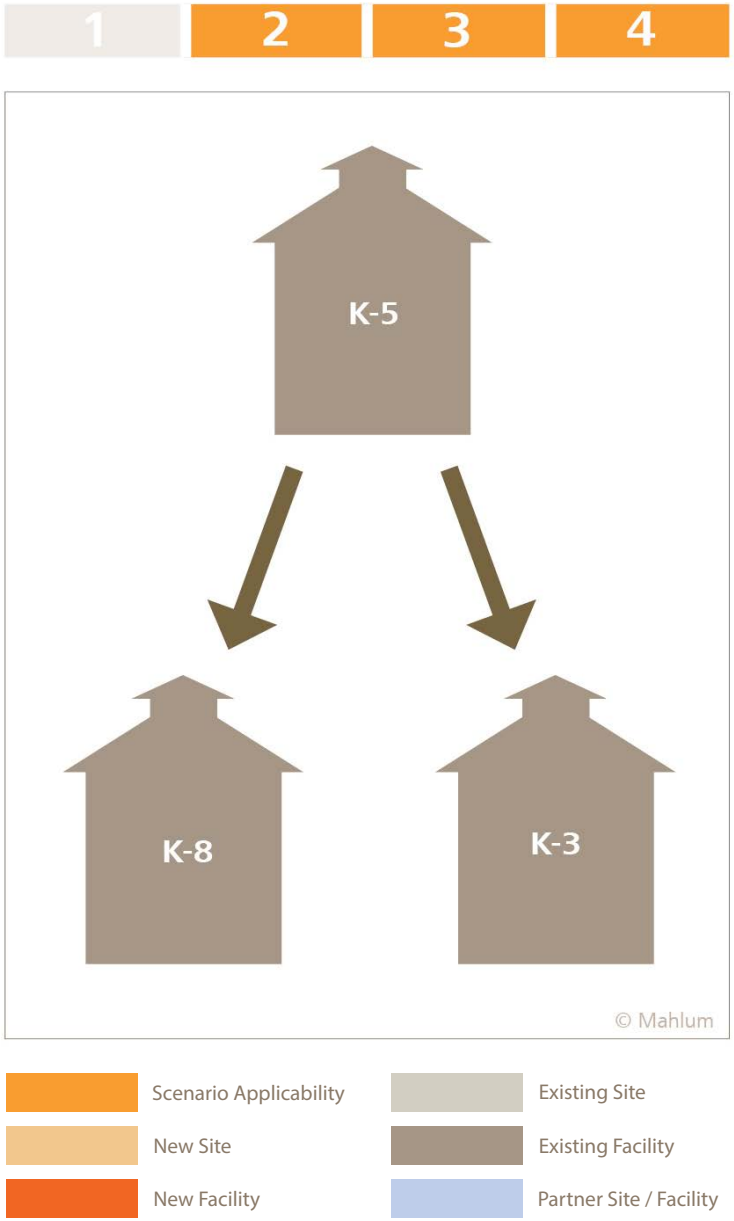


Increase Target Class Size

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.

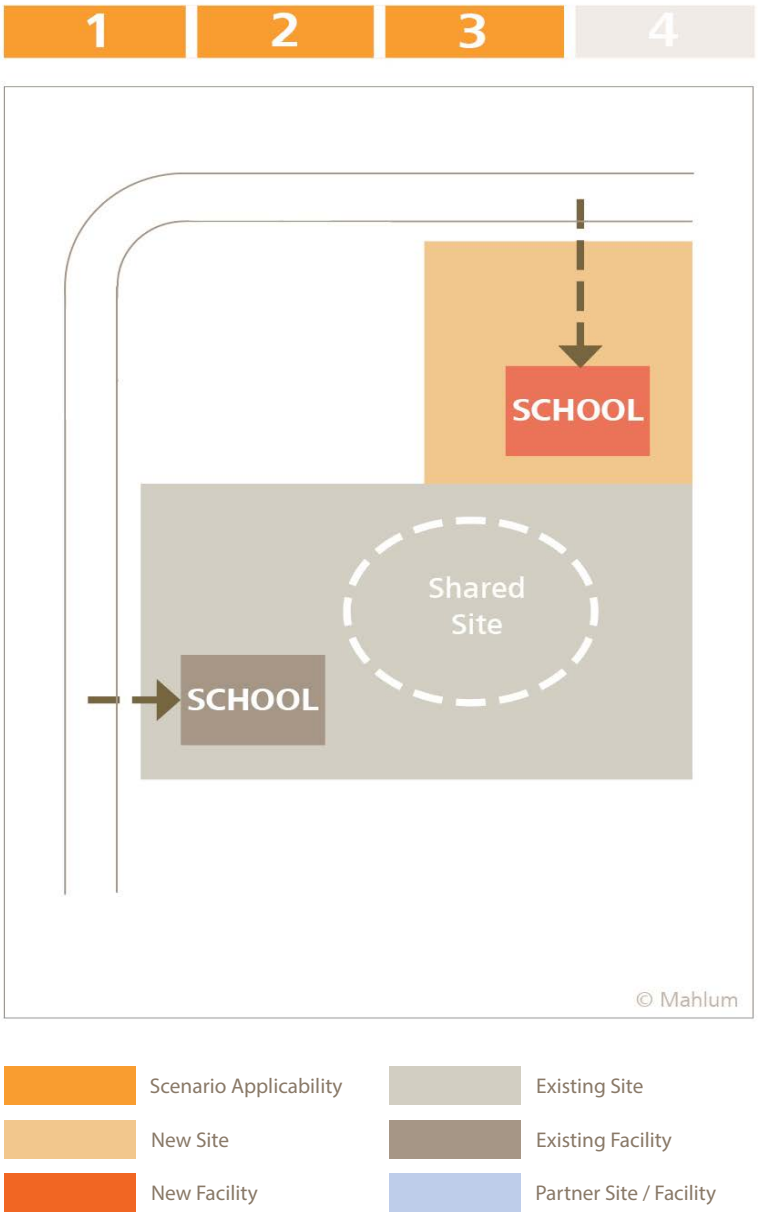
Site-Level Applications

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.

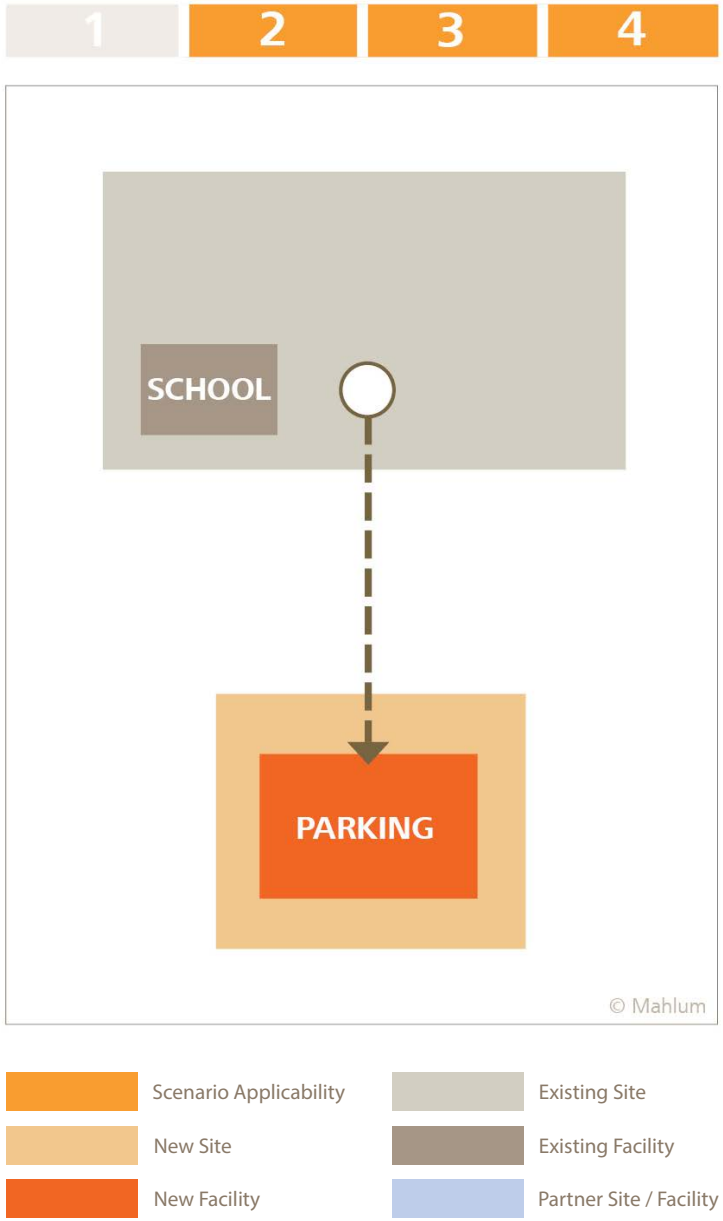


Acquire Adjacent Property to Expand Existing School Sites

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.

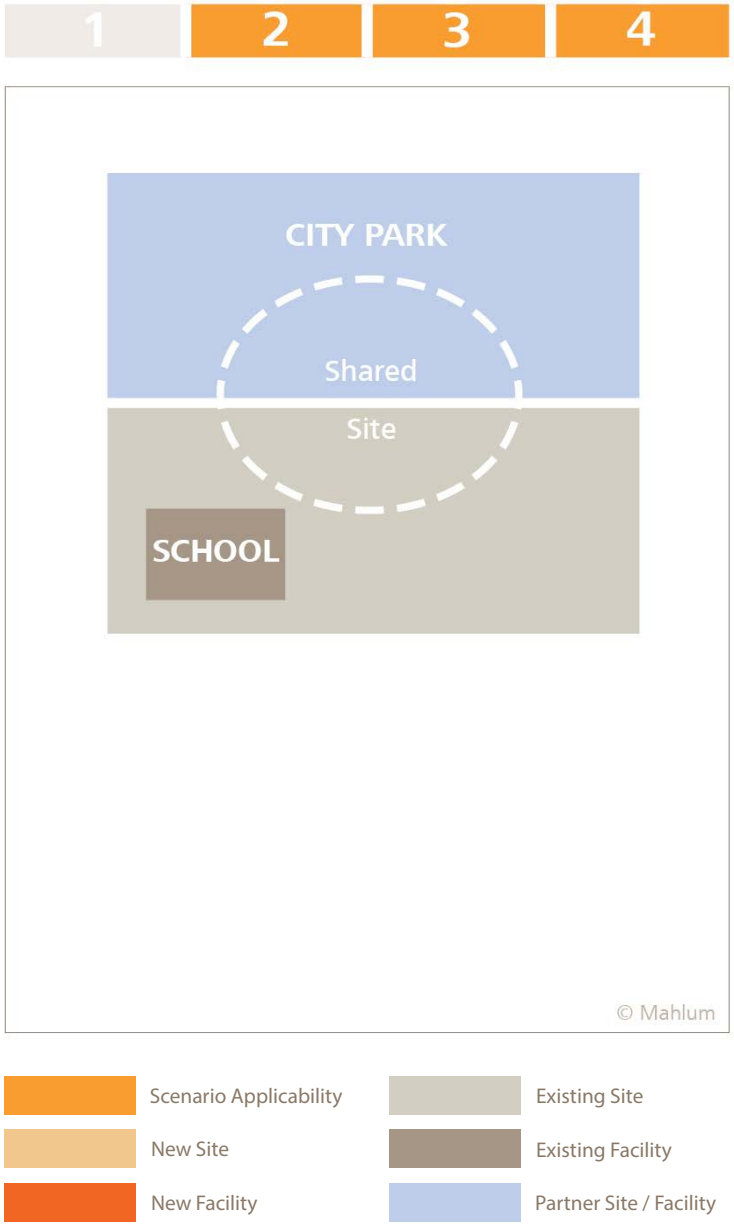


Disperse Site Functions

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.)

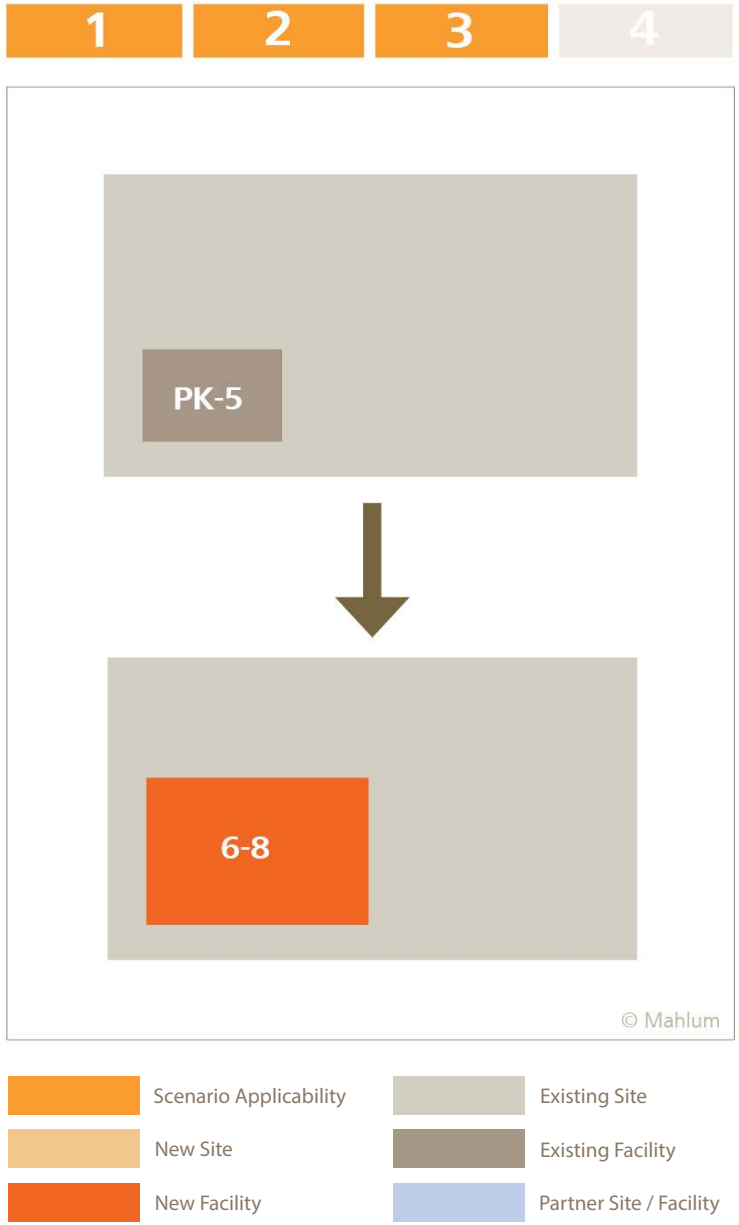


Share Site Functions: Partnership

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.

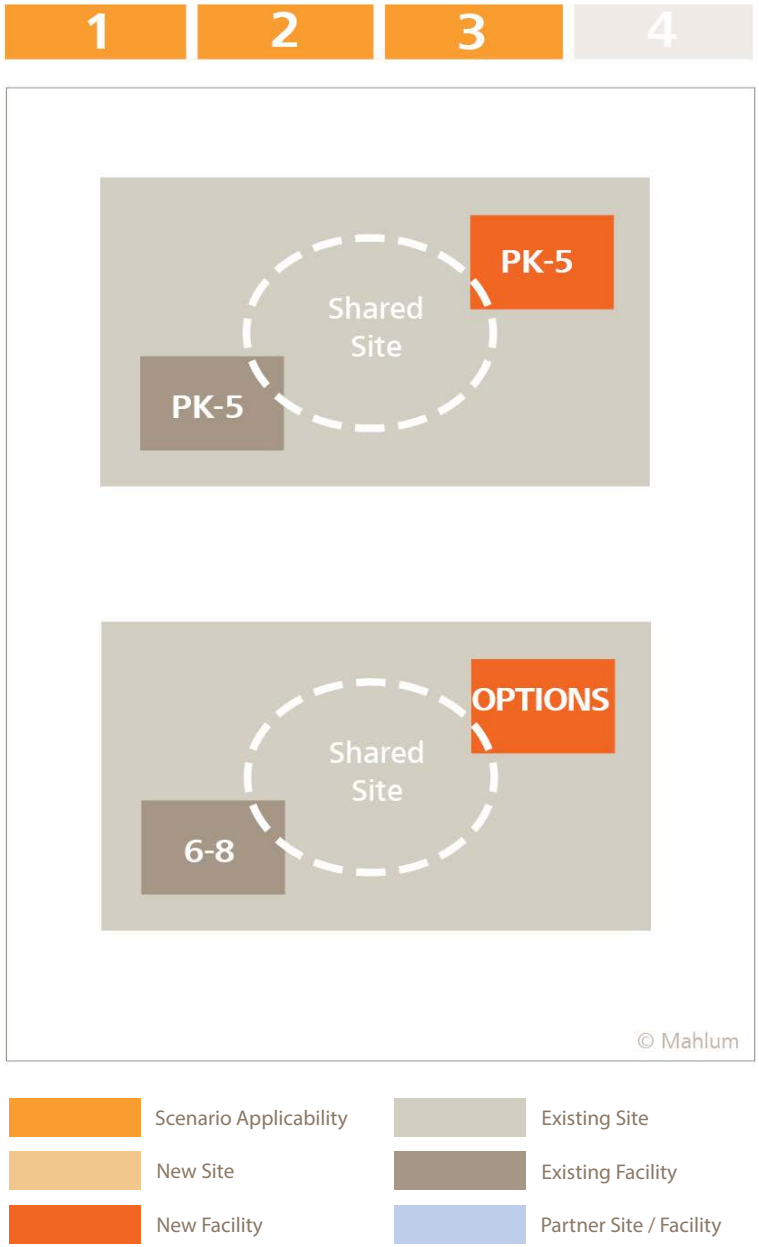


Change Site Function: Grade Level

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.

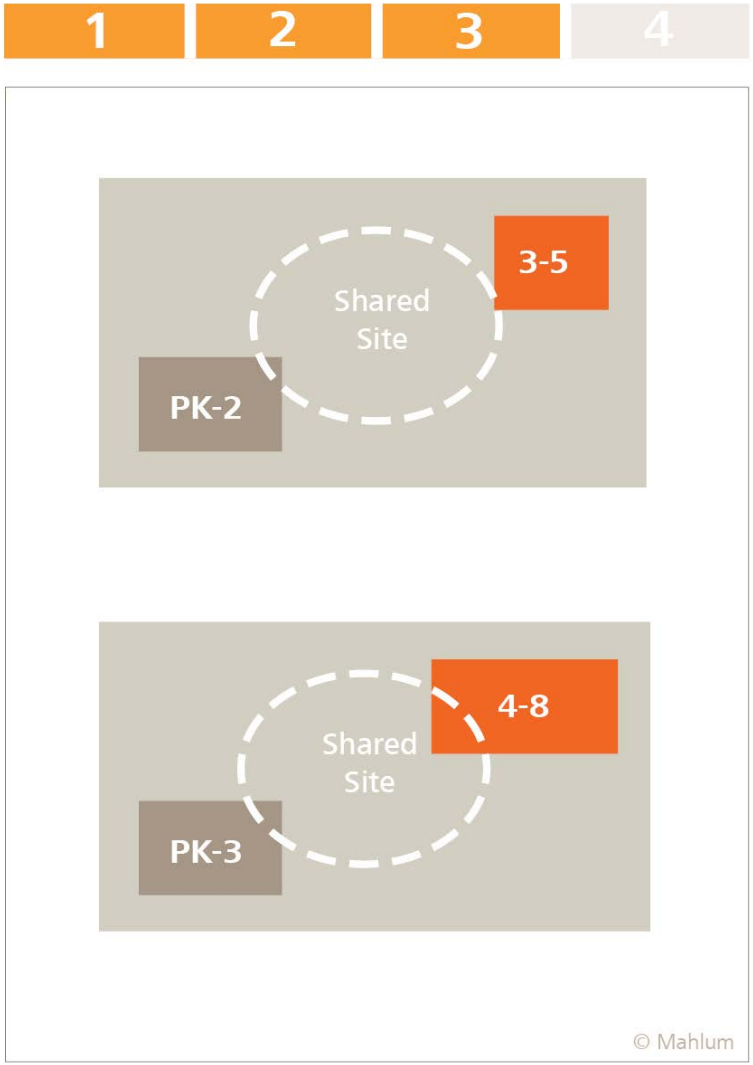


Co-location on Existing Sites: Separate Facilities

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

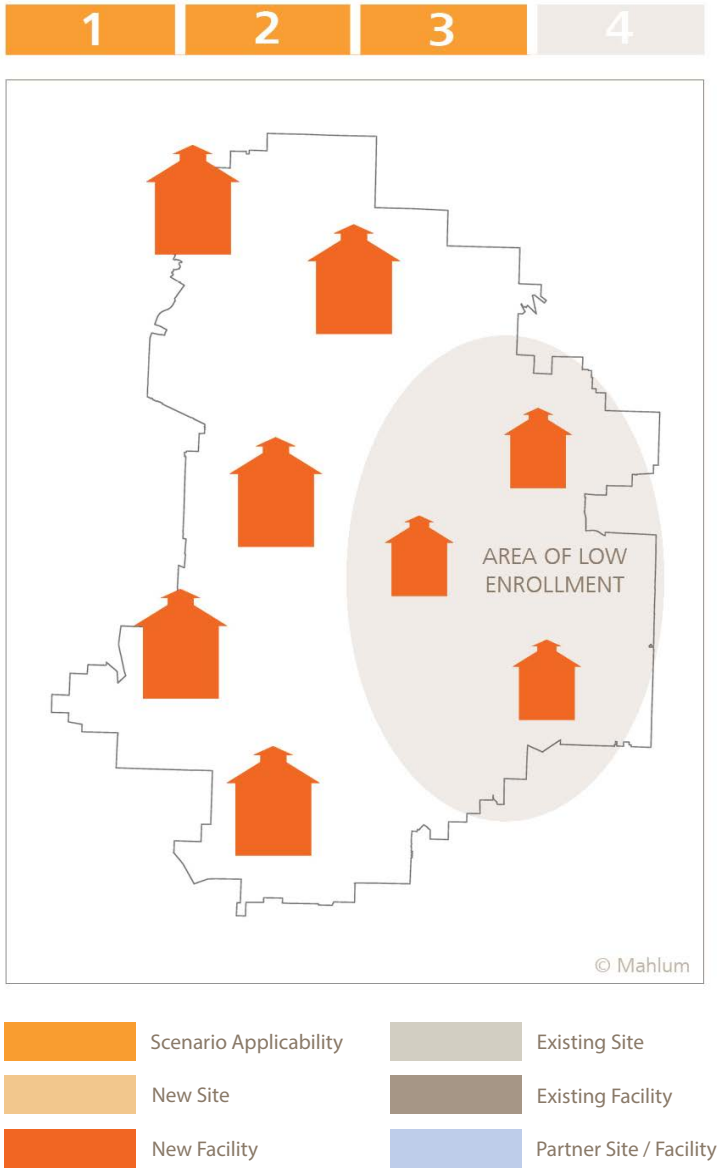
Replace at Target Size and Consolidate Schools

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.

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



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.

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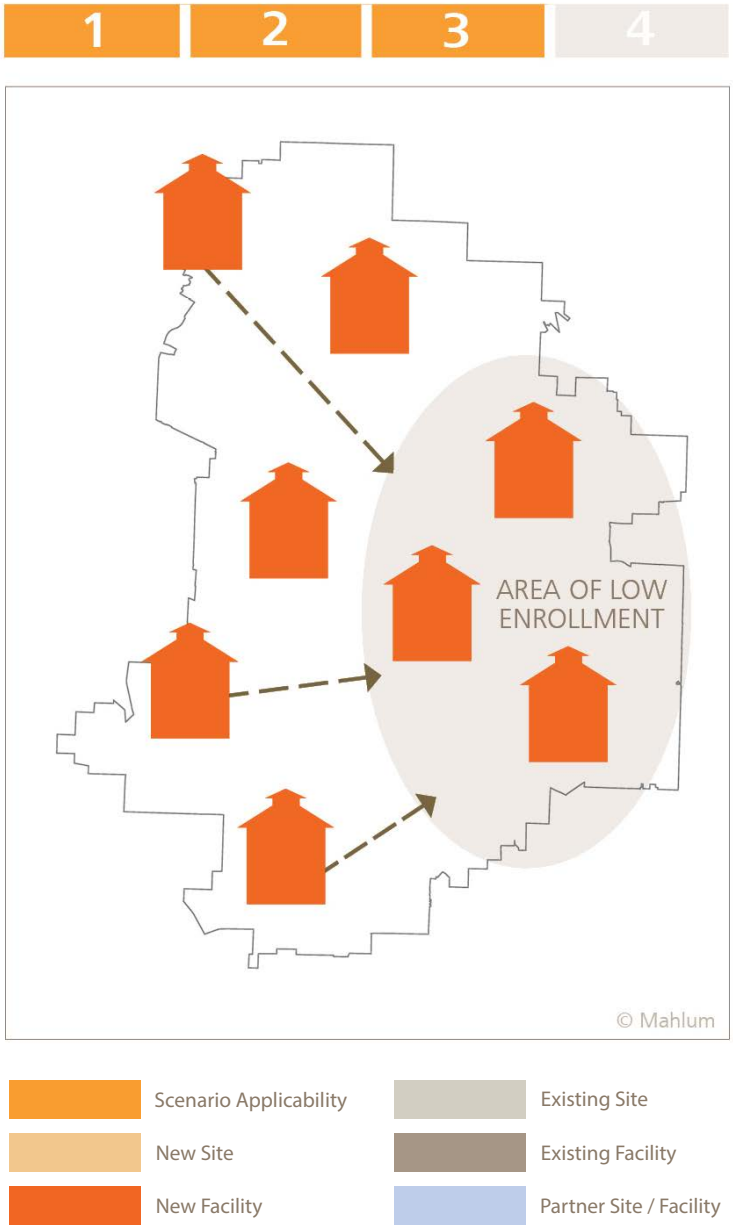

Replace at Target Size and Shift Enrollment (Boundaries/Busing)

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.

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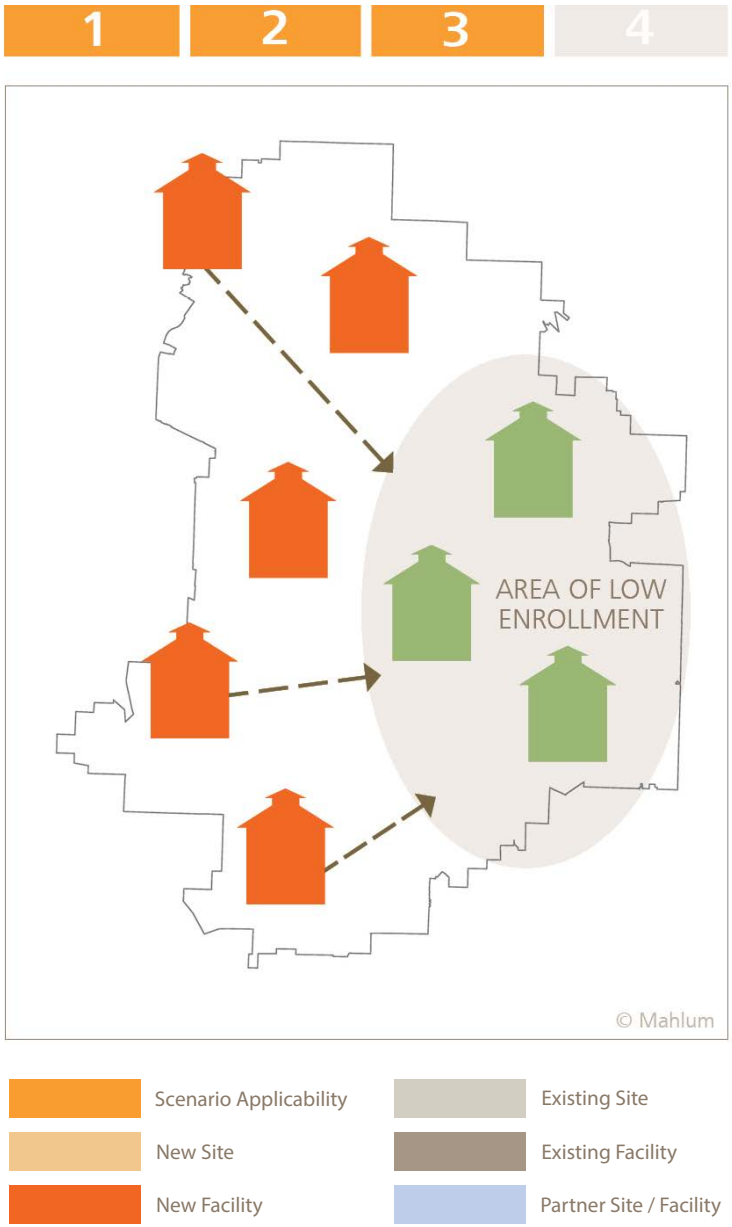


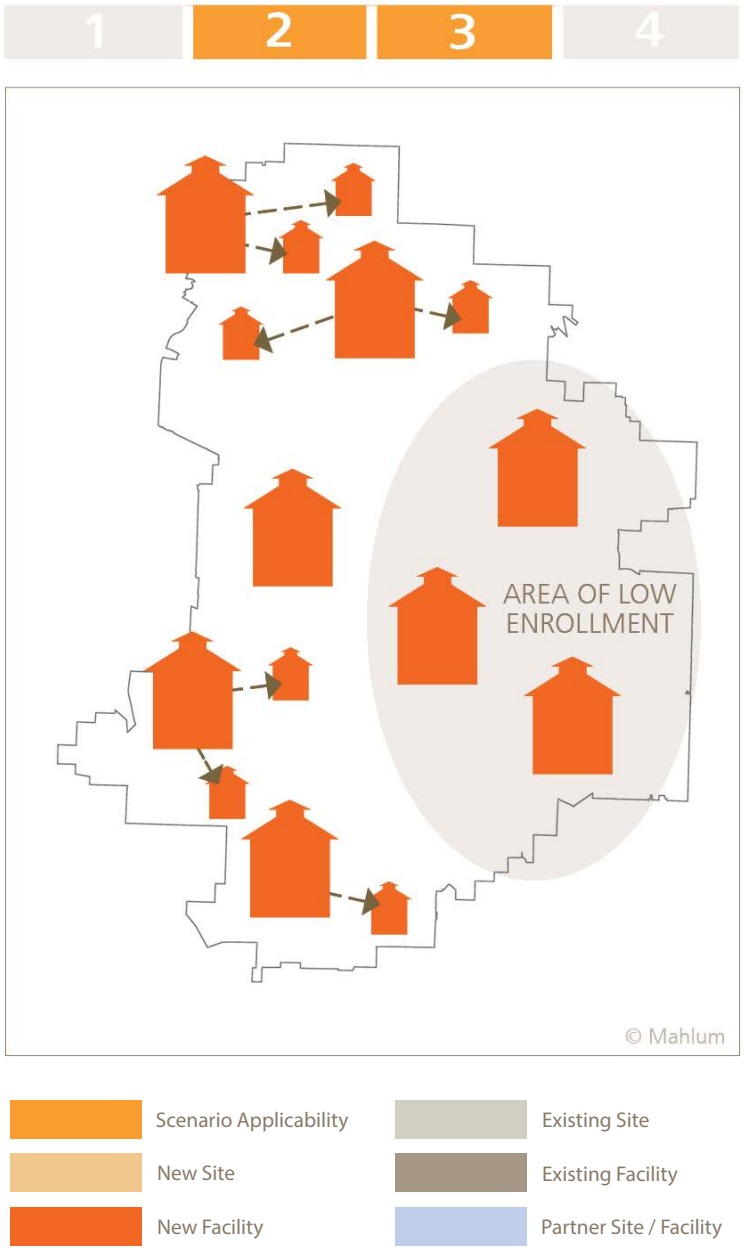
Replace at Target Size and Create Magnet Programs

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

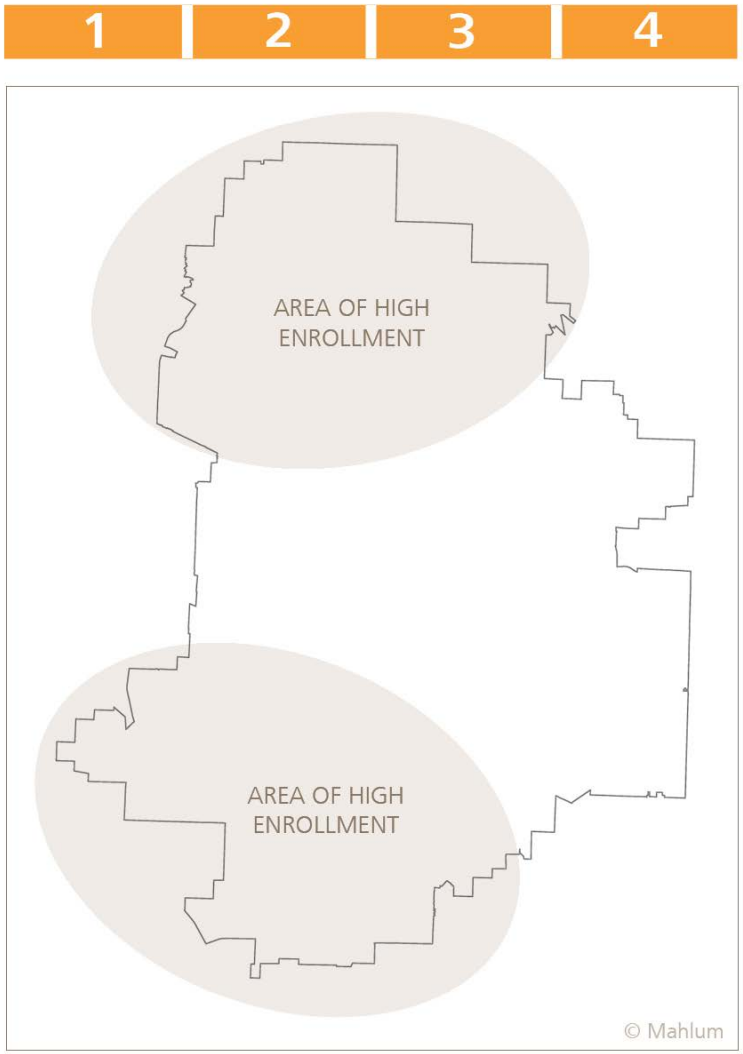
The District could create smaller schools throughout the District, particularly in areas with high levels of projected enrollment and limited site acquisition options, in conjunction with other strategies to provide additional capacity in high-need areas. This strategy would be particularly useful in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

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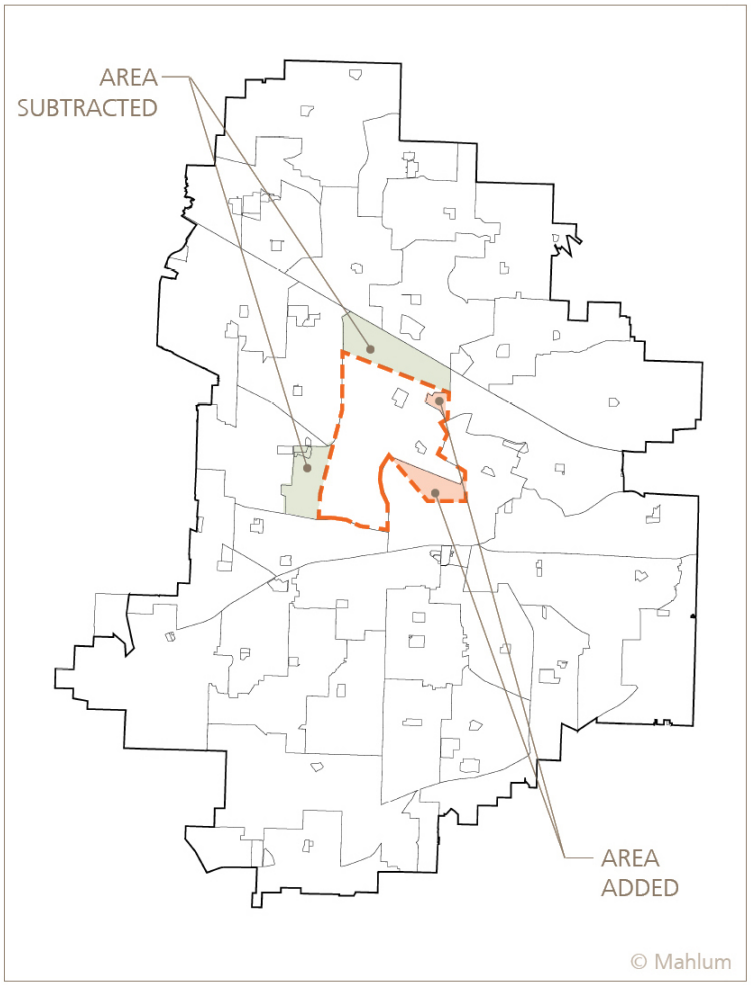


Scenario Applicability
New Site
New Facility
Existing Site
Existing Facility
Partner Site / Facility

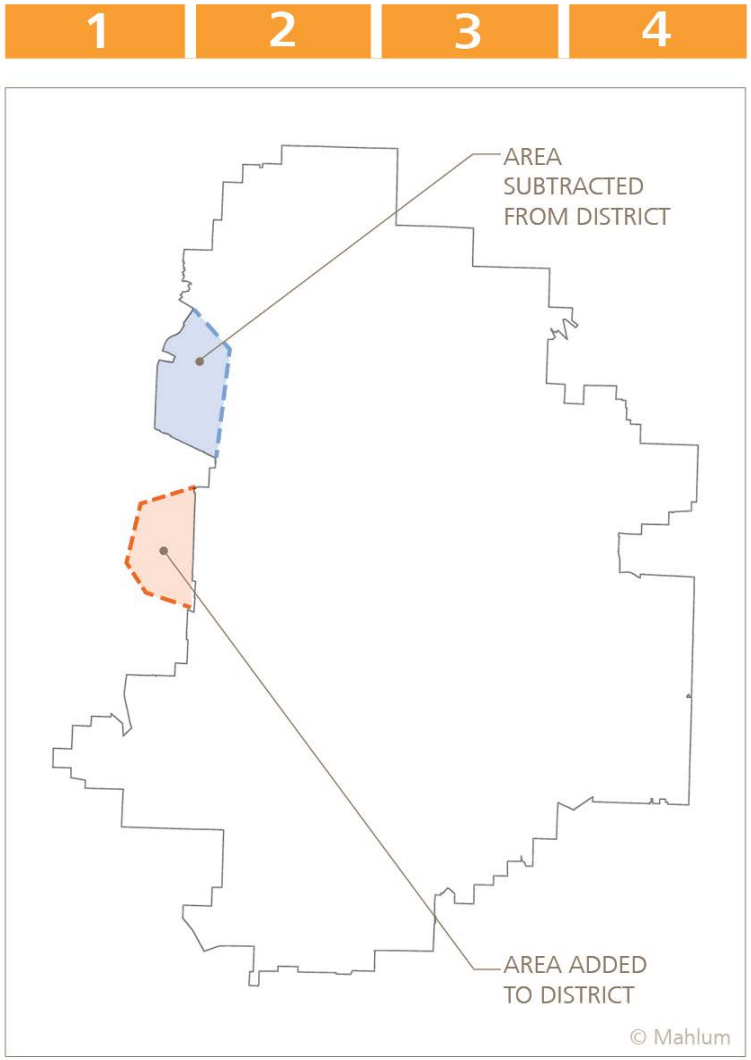
Adjust School Attendance Boundaries Areas

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

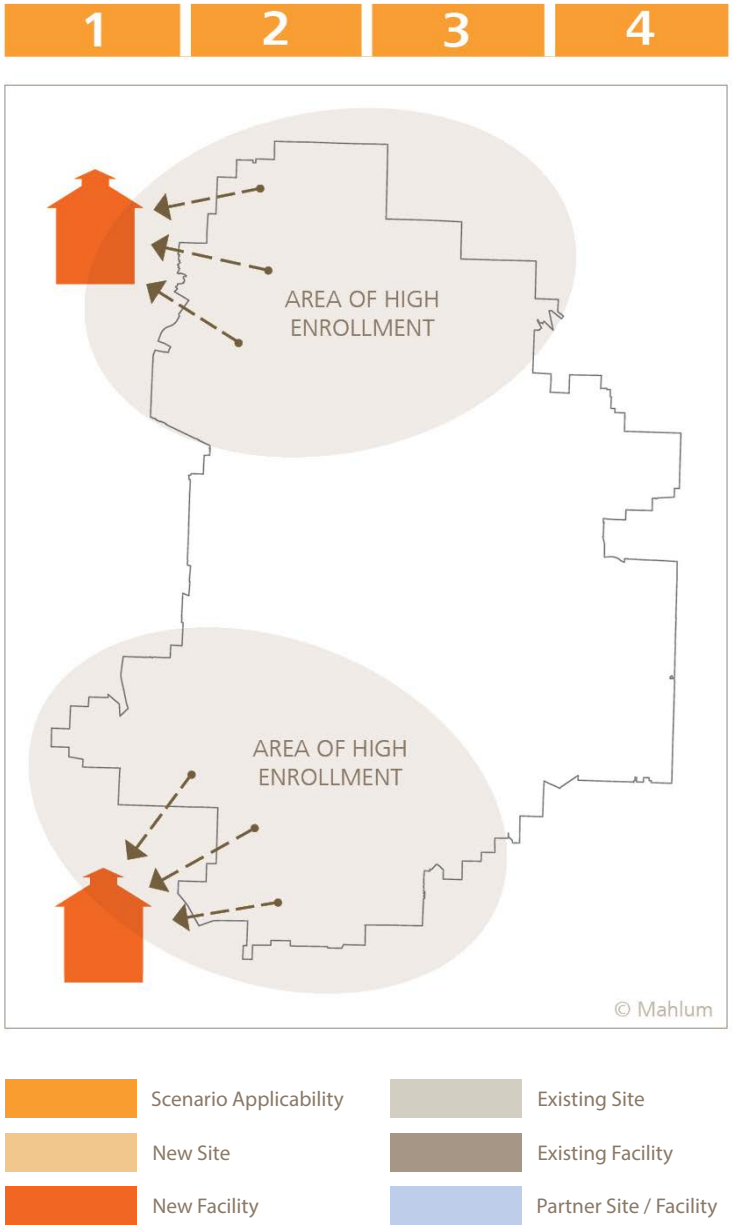
Adjusting the District's boundaries requires working with adjacent school districts to shift enrollment between districts in a way that benefits both entities. It is a complex process. A variety of impacts must be evaluated, including impacts to current and future students, property owners, and alignment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



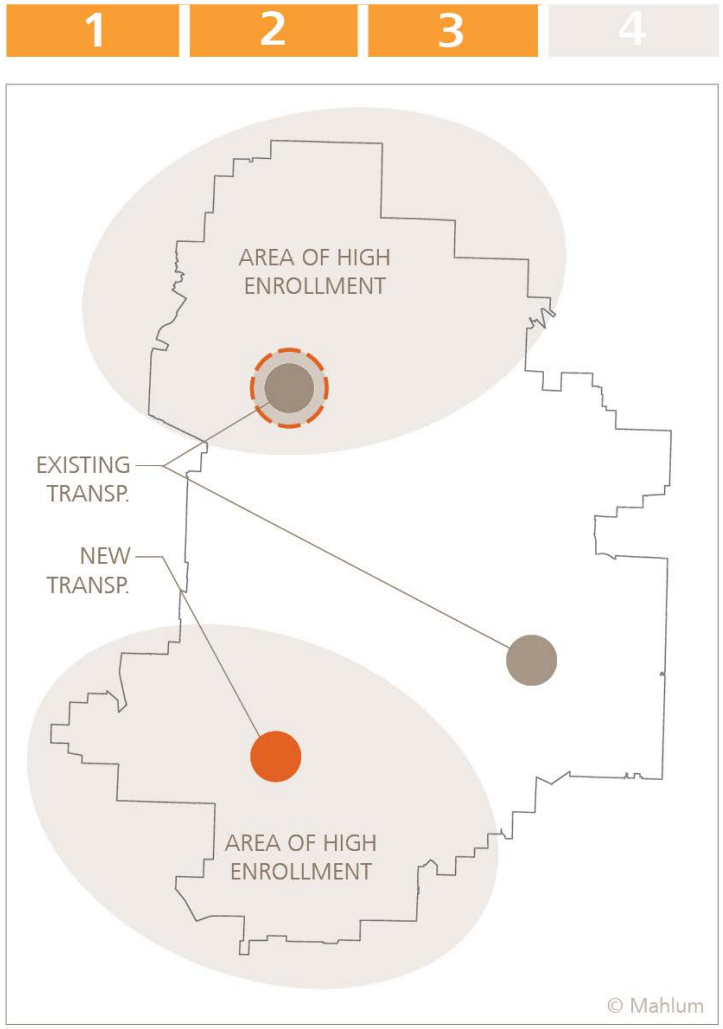
Locate Schools Outside District Boundary

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

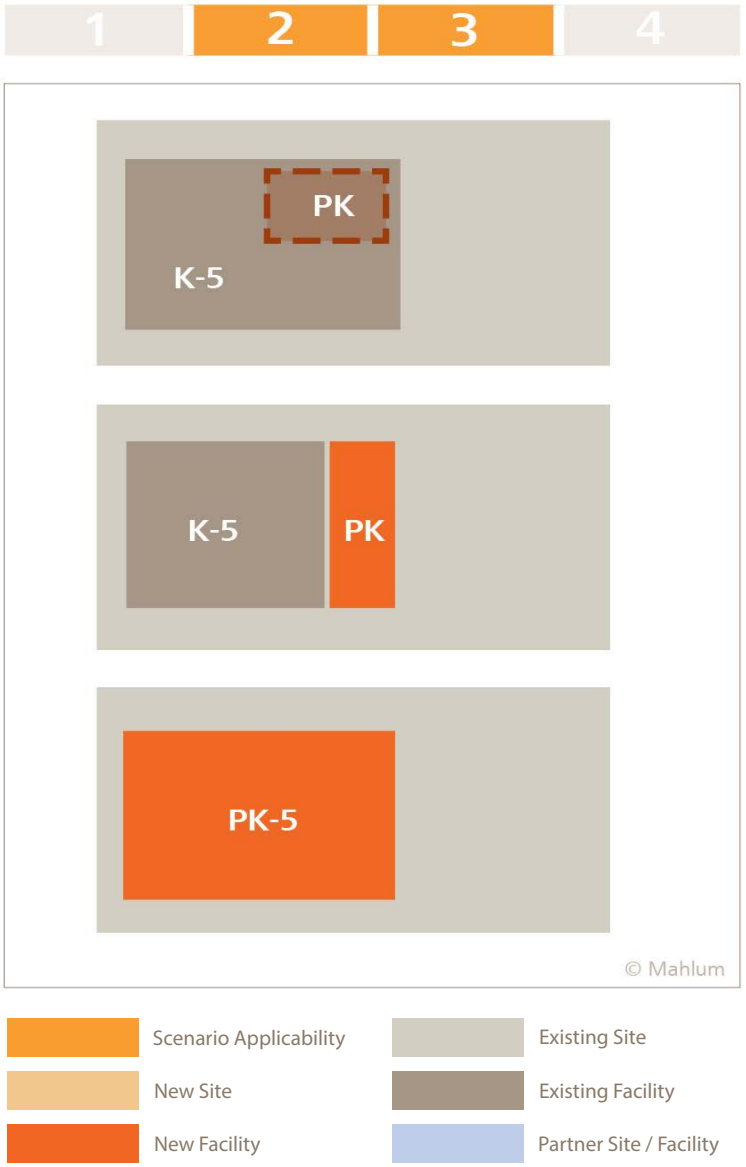
Projected growth in the District over the next 50 years will impact District support functions, such as administration and transportation. Administrative needs may be able to be accommodated in existing facilities, but needs must be considered as the District grows. Transportation will be directly impacted 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

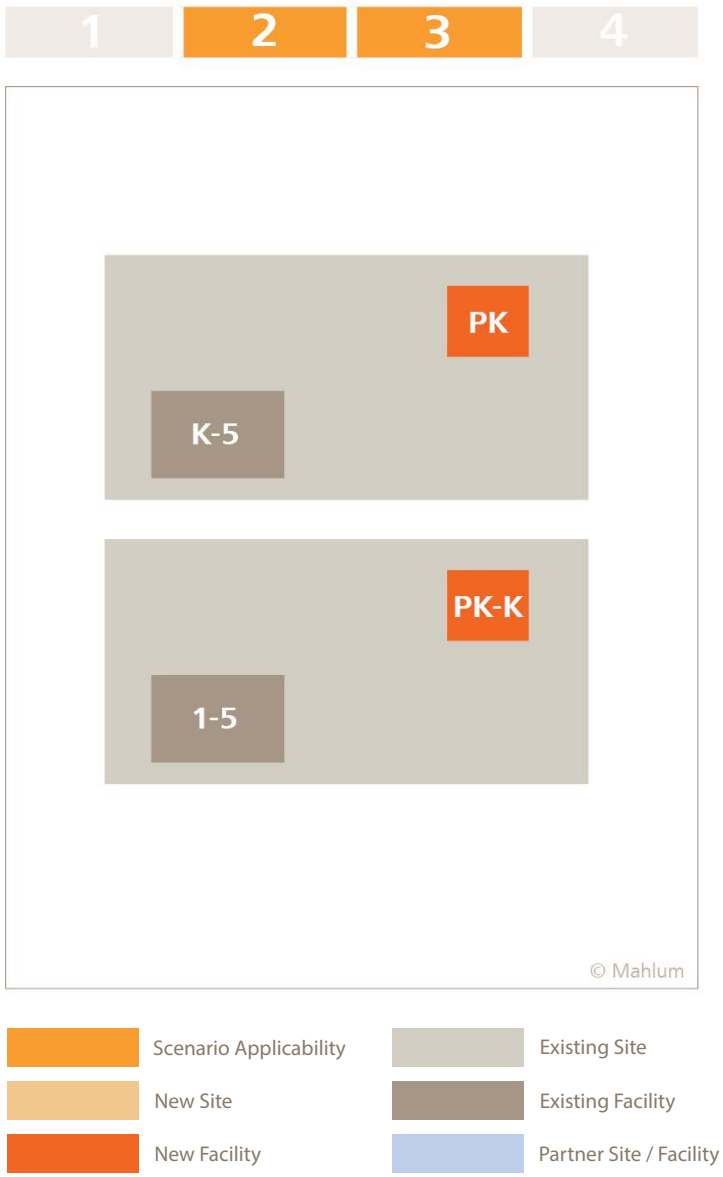


Locate Preschool Classrooms within Each Elementary School

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.

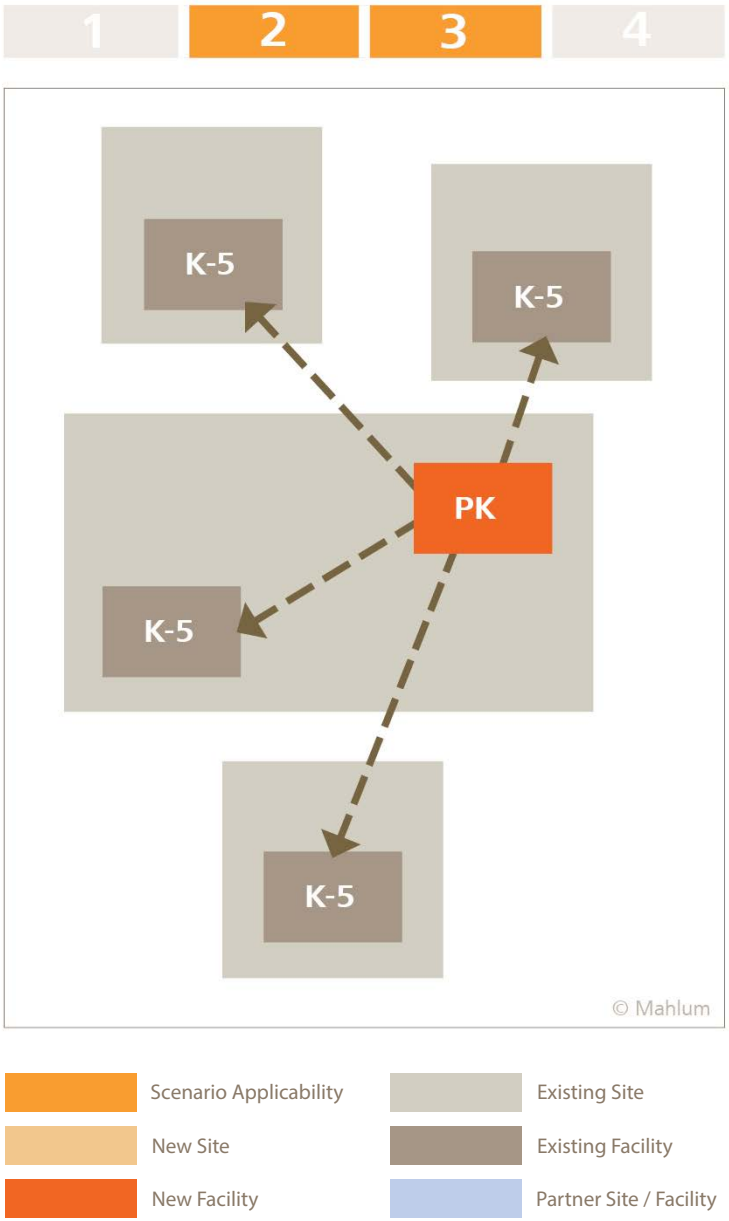


Create Separate Preschool Facilities on Each Elementary School Site

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.



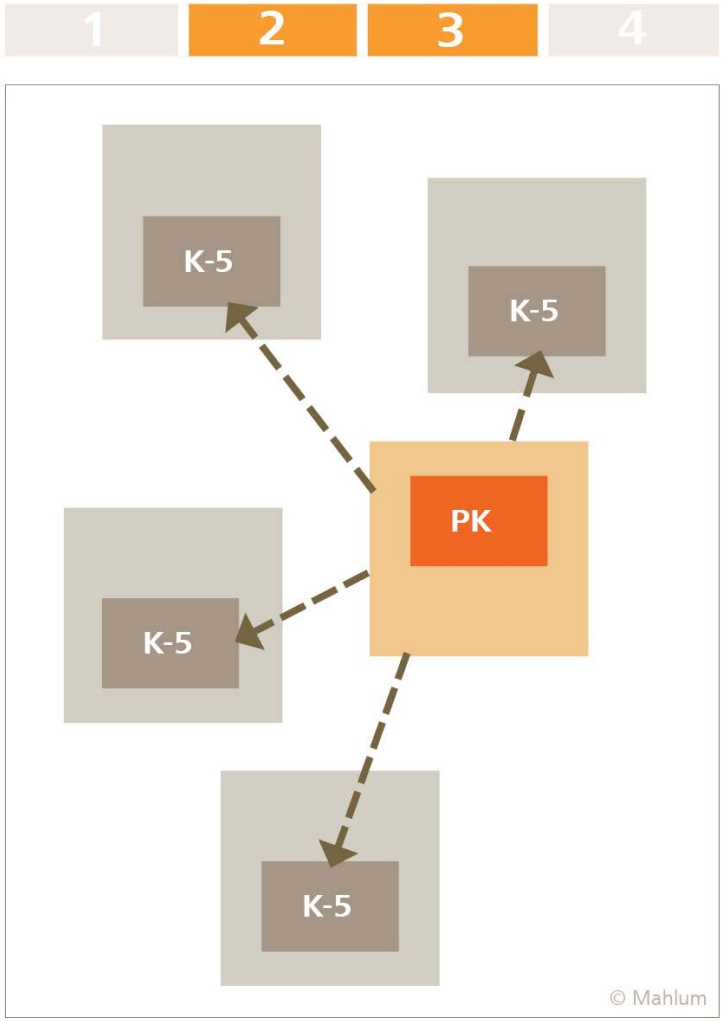
Co-locate Satellite Preschool Facility on an Existing Site

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)