

AGENDA

Beaverton School District (BSD) Futures Study Update

4/4/2017

6:30 pm – 7:30 pm

6:30 – 6:35 pm	Welcome and Introductions	Steve Sparks, BSD
6:35 – 7:00 pm	Futures Study Update: Scenario Results	Terry Moore and Alexandra Reese, ECONorthwest
7:00 – 7:30 pm	Q&A	

DATE: 29 March 2017
TO: Board Members, Beaverton School District
FROM: Terry Moore and Alexandra Reese
SUBJECT: BOARD WORK SESSION: PRELIMINARY RESULTS OF THE *FUTURES STUDY*

This *Futures Study* looks at how District facilities and services might evolve over the next 50 years. ECONorthwest (ECO) is leading a team of consultants in developing and exploring the implications of possible futures. ECO and Frank Angelo presented an overview of the Study to the School District Board at a meeting in December.

At a Board work session on April 4, ECO will present its work since September. This presentation will focus on how the team evaluated scenarios, and the results of that evaluation. The facility models—the number of facilities by type and location, and the system-wide cost for all facilities in a single scenario—are the evaluation. ECO will walk through how the consultant team developed facility models for each scenario and the high level results.

Accompanying this memorandum is a packet of information that will help Board members prepare for the work session. Some guidance:

- The files start with numbers that put them in a logical order:
 - *1_CoverMemo*. This memorandum
 - *2_Agenda*
 - *3_DraftReport*. This is a *partial* draft. Chapters 1, 2, and 3 are complete. Chapter 4 is partially complete: it describes what scenarios are in general, and how we have defined them for this Study, but it does not provide the evaluation of the scenarios. We will provide an overview of that evaluation at the work session. The consultant team will write Chapter 5 after the work session.
- We know you have busy schedules. Here's some guidance on how to get through the material.
 - If you have no time, skip the review. You will still be able to follow the presentation that ECO will make at the beginning of the work session.
 - If you have 10 minutes, Read *2_Agenda*, and Chapters 1 and 2 of *3_DraftReport*. Those chapters are only 2 pages each.
 - If you have 20 minutes, in addition to the items above, read the Summary of Chapter 3, and Sections 4.1 and 4.2 of Chapter 4.
 - If you have 30 minutes, also read all of *3_DraftReport*.

Futures Study

Beaverton School District

March 2017

Prepared for:
Beaverton School District

PARTIAL DRAFT REPORT

For BSD Board Review Prior to Meeting on April 4

For discussion only. Do not cite or quote.

ECONorthwest
ECONOMICS • FINANCE • PLANNING

with
Mahlum Architects
Getting Smart
Sapient Solutions

Table of Contents

1	INTRODUCTION	3
2	STUDY FRAMEWORK	5
2.1	OVERVIEW OF LONG-RUN SCENARIO PLANNING	5
2.2	SCENARIO PLANNING IN THIS STUDY	6
3	FORECASTS OF STUDENTS	8
3.1	PURPOSE AND METHODS	8
3.2	FORECASTS OF STUDENT ENROLLMENT IN THE DISTRICT	9
	Summary	9
	Assessment of the Forecasts	12
4	SCENARIO EVALUATION	17
4.1	PRINCIPLES	18
4.2	OVERVIEW OF THE SCENARIOS USED IN THIS STUDY	18
4.3	SPECIFICATION AND EVALUATION OF THE SCENARIOS	20
	Scenario 1: Business as Usual	20
	Education Model	21
	Facility Model	21
	Opportunities and Challenges	21
	Scenario 2: High Growth	21
	Education Model	21
	Facility Model	22
	Opportunities and Challenges	22
	Scenario 3: Increased Competition	22
	Education Model	22
	Facility Model	23
	Opportunities and Challenges	23
	Scenario 4: Constrained Funding	23
	Education Model	23
	Facility Model	24
	Opportunities and Challenges	24
4.4	SUMMARY COMPARISON OF OPPORTUNITIES AND CHALLENGES	24
5	IMPLICATIONS FOR FACILITY PLANNING	25

Add List of Appendices when done

1 Introduction

This document takes a long-run (50-year) look at forces that will affect the ability of the Beaverton School District to carry out its mission of providing quality education to students enrolled in its schools. It considers changes in (1) the number and location of students, (2) the educational models and technologies by which that 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 District Board about policies related to educational models and facilities—particularly about the capital improvement planning for facilities.

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

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.

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? And 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:

- **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 this impact facility investment decisions?
- **Education Models.** What educational models will the District provide? 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.
- **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—efficiently and fairly—to its 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 report has four 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, 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 5, Implications for Facility Planning:** What do the results of the scenario evaluation imply for decision the District will be making in the next five to 10 years about educational models and facility improvements?
- **Appendix A, TBD**
- **Appendix B, TBD**
- **Appendix C, TBD**
- **Appendix D, TBD**
- **Appendix E, TBD**

NOTE TO BOARD In this draft document, Chapters 1, 2, and 3 are full drafts. Chapter 4 is a partial draft: it describes the scenario process and defines the Study's four scenarios, but does not include detail on the facility models for each scenario. ECONorthwest will make a presentation of that evaluation at the Board meeting on April 4.

On April 4, ECONorthwest will ask Board members for their ideas about implications (based on the evaluation of scenarios that ECONorthwest will present). In April and May the consulting team and BSD staff will do more research and thinking to create Chapter 5.

2 Study Framework

That the future is uncertain is a truism. No one working on this Study believes it is possible to accurately predict over a 50-year period *the* future for growth in Washington County and for facilities for the Beaverton School District. They do believe, however, that a thoughtful identification and consideration of key forces affecting that future 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*. 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 and 4 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 often not.

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

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.

This is only one example of how new technologies can fundamentally shape the world in a way no one (or very few) accurately predicts.

Scenario planning is a strategic planning tool that embraces 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.

The process for creating and evaluating scenarios in this Study has 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 X 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 X 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 4 and Appendix X 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 so to more clearly illustrate facility differences. Chapter 4 describes the four scenarios that 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 5 contains the consultants' ideas about those implications.

3 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, enrollment in the District will increase by about 15,000 K-12 students, from roughly 40,000 to 55,000 students. The Study's high growth enrollment forecast estimates that the District will add almost 19,000 new K-12 students over the next 50 years. District-wide growth in enrollment will occur faster at first, and then slow over time. 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 Purpose and Methods

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

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

In-migration rates vary for many reasons. The most obvious are: 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 and 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 magnitudes of their influences on one another is much harder. Harder still is making long-run predictions of growth. One can easily hypothesize scores of changes in society, demographics, technology, the economic, 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. The profession is shifting from single *predictions* of a future (with high and low variations) to multiple *simulations* of futures.

These considerations influenced the forecasting methods used in this Study. In summary, the 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 the forecast required two phases: ¹

- *Estimate school-aged children living in District boundaries.* The Study based this estimation on a forecast that Washington County developed using MetroScope² for the 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 to estimate the number of children living in those households.
- *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 attainment area by the capture rate of the school in that attainment area to estimate enrollment.

3.2 Forecasts of Student Enrollment in the District

Summary

Exhibit 1 shows *expected growth enrollment* by subarea and by school level in 2015, 2020, 2025, 2030, 2035, and 2065. The Study uses subareas solely as a method for aggregating data; the subareas have no official administrative use. The exhibits that show population growth include black outlines of the subareas (see page 13).

¹ Appendix X provides additional documentation to describe our methods, including further detail to explain these steps.

² MetroScope is a regional model of development maintained by Metro, the regional planning agency.

Exhibit 1. Beaverton School District K-12 Enrollment by Subarea and Grade Level, 2015-2035 and 2065, Expected Growth Forecast

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

Source: ECONorthwest

Notes: Green shading indicates growth rates that surpass the District average. Red shading indicates that they grow slower. High School growth rates for Cooper Mtn/Sexton Mtn are for 2020-2065, because 2015 has zero students. Enrollment in K-8 schools is split, with those in grades K-5 counted as elementary and those in grades 6-8 counted as middle school.

In 2015, the District had 38,889 enrolled students. 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 students. About two-thirds of that growth happens in the next 20 years. The last three columns of **Error! Reference source not found.** provide three ways of evaluating the growth: by amount, by total percent increase, or by average annual increase (with colors showing the rate relative to the rate for the District as a whole).

Exhibit 2 uses the enrollment numbers in Exhibit 1 to calculate the percentage of total District enrollment for each subarea and grade level. The shading indicates whether an area will increase (green) or decrease (red) its share of District students.

Exhibit 2. Share of Total K-12 Enrollment by Subarea and Grade Level, 2015-2035 and 2065, Expected Growth Forecast

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

Source: ECONorthwest

*High School growth rates for Cooper Mountain/Sexton Mountain are for 2020-2065, because there was no high school in that subarea in 2015.

Note: Green shading in the “Change in Share of District” column indicates that the share of the district overall increases, while red shading indicates a decline. In the “AAGR” column, green shading indicates an above-average growth rate, while red shading indicates below average.

Cedar Hills/Garden Home subarea had the largest share of students in 2015, with 11,924 of the District’s 38,889 students (31%). By 2065, it will have 2,315 more students, but its share of the District’s population drops to 27%. In contrast, enrollment in schools located inside the Cooper Mountain/Sexton Mountain subarea grows much faster than the District overall, due largely to the soon-to-be-opened Mountainside High School. Its enrollment more than doubles over the 50-year forecast period.

Exhibit 3 shows student enrollment by subarea and grade level under the high growth forecast. It starts with the same number of enrolled students in 2015, 38,889. Growth rates in the high growth forecast parallel those of the expected growth forecast from 2015 through 2050. After 2050, growth in the expected growth forecast flattens while growth in the high growth forecast continues to increase. The share of students by subarea is relatively consistent between the two forecasts.

Exhibit 3. Beaverton School District K-12 Enrollment by Subarea and Grade Level, 2015-2035 and 2065, High Growth Forecast

	Enrollment						Enrollment Change 2015 - 2065		
	2015	2020	2025	2030	2035	2065	#	%	AAGR
Aloha/Elmonica	7,129	6,710	6,692	7,059	7,566	8,973	1,844	26%	0.5%
Elementary	3,534	2,976	3,021	3,380	3,604	4,440	906	26%	0.5%
Middle	1,658	1,875	1,587	1,602	1,807	2,108	450	27%	0.5%
High	1,937	1,859	2,084	2,077	2,155	2,425	488	25%	0.5%
Bethany Area	4,674	4,153	4,873	5,560	6,118	8,598	3,924	84%	1.2%
Elementary	1,968	2,021	2,316	2,706	3,189	3,818	1,850	94%	1.3%
Middle	153	174	308	404	500	918	765	500%	3.6%
High	2,553	1,958	2,249	2,450	2,430	3,862	1,309	51%	0.8%
Cedar Hills/Garden Home	11,924	11,733	12,740	13,158	13,210	14,809	2,885	24%	0.4%
Elementary	5,318	4,997	5,121	5,463	5,501	5,954	636	12%	0.2%
Middle	3,333	3,398	4,076	4,252	4,215	5,012	1,679	50%	0.8%
High	3,273	3,337	3,544	3,443	3,494	3,843	570	17%	0.3%
Cooper Mtn/Sexton Mtn	4,464	7,222	8,096	8,988	9,568	10,701	6,237	140%	1.8%
Elementary	3,622	4,495	5,123	5,240	5,860	6,502	2,880	80%	1.2%
Middle	842	917	961	1,036	1,084	1,189	347	41%	0.7%
High*	0	1,809	2,012	2,712	2,624	3,010	3,010	166%	1.0%
Sunset/Cedar Mill	7,035	6,567	7,299	7,863	7,772	9,345	2,310	33%	0.6%
Elementary	3,903	4,031	4,748	5,081	4,786	6,011	2,108	54%	0.9%
Middle	1,008	888	932	1,037	1,049	1,107	99	10%	0.2%
High	2,124	1,649	1,620	1,745	1,937	2,228	104	5%	0.1%
Options Schools	3,663	3,784	4,129	4,433	4,600	5,411	1,748	48%	0.8%
Total Subarea	38,889	40,169	43,830	47,061	48,834	57,838	18,949	49%	0.8%
Elementary	18,345	18,520	20,329	21,870	22,940	26,725	8,380	46%	0.8%
Middle	6,994	7,253	7,864	8,331	8,656	10,334	3,340	48%	0.8%
High	9,887	10,612	11,509	12,427	12,639	15,367	5,480	55%	0.9%

Source: ECONorthwest

Notes: Green shading indicates growth rates that surpass the District average. Red shading indicates that they grow slower. High School growth rates for Cooper Mtn/Sexton Mtn are for 2020-2065, because 2015 has zero students. Enrollment in K-8 schools is split, with those in grades K-5 counted as elementary and those in grades 6-8 counted as middle school.

Assessment of the Forecasts

The previous section summarizes the *student enrollment* forecasts by subarea for both the expected growth and high growth forecasts. This section explains the factors driving those forecasts: regional development patterns and the expected location of dwelling units with *school-aged children*.³

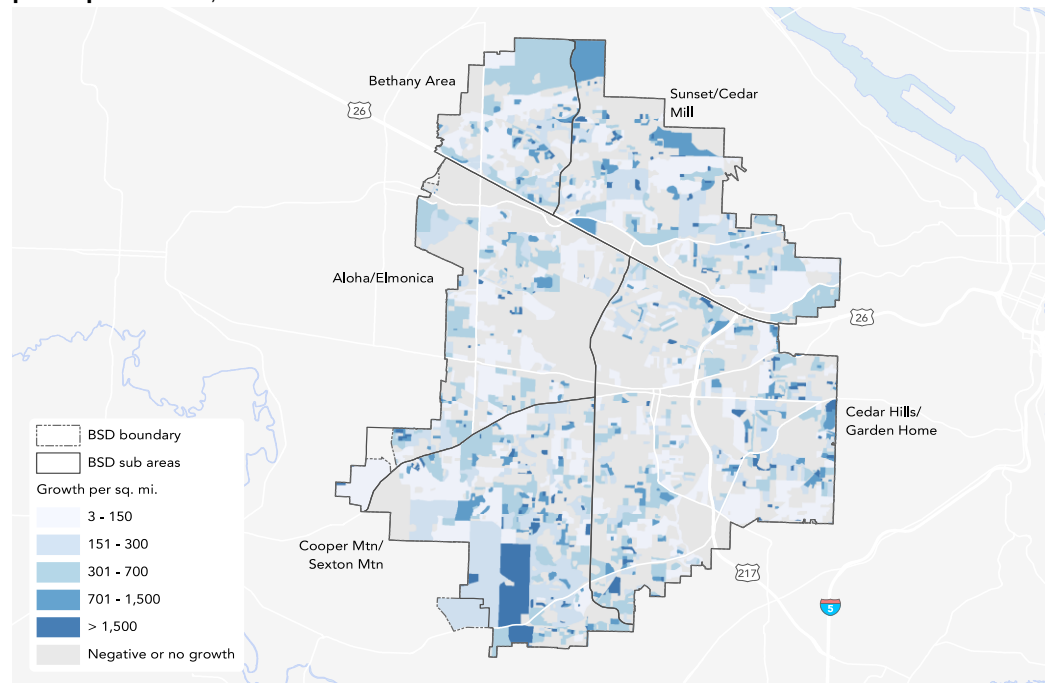
Exhibit 4 through Exhibit 6 show where within the District the population of K-12 school-aged children is expected to increase for the *expected growth forecast* only. Exhibit 4 shows expected growth from 2015 to 2025. Exhibit 5 shows expected growth from 2015 to 2035. Exhibit 6 shows expected growth from 2015 to 2065. The blue shading indicates the amount of growth; darker blue equals more growth.

The exhibits show school-aged children *per square mile*. That is a proxy measure of the intensity of the likely growth in number of enrolled students. By normalizing the data to “per square mile” the maps avoid the problem of

³ Note that because this section is using data about households, it is talking about “school-aged children” not “students.” In general, about 90% of the school-aged children in the District are students enrolled in the District.

showing large areas of intense growth just because the underlying area of analysis is large.⁴

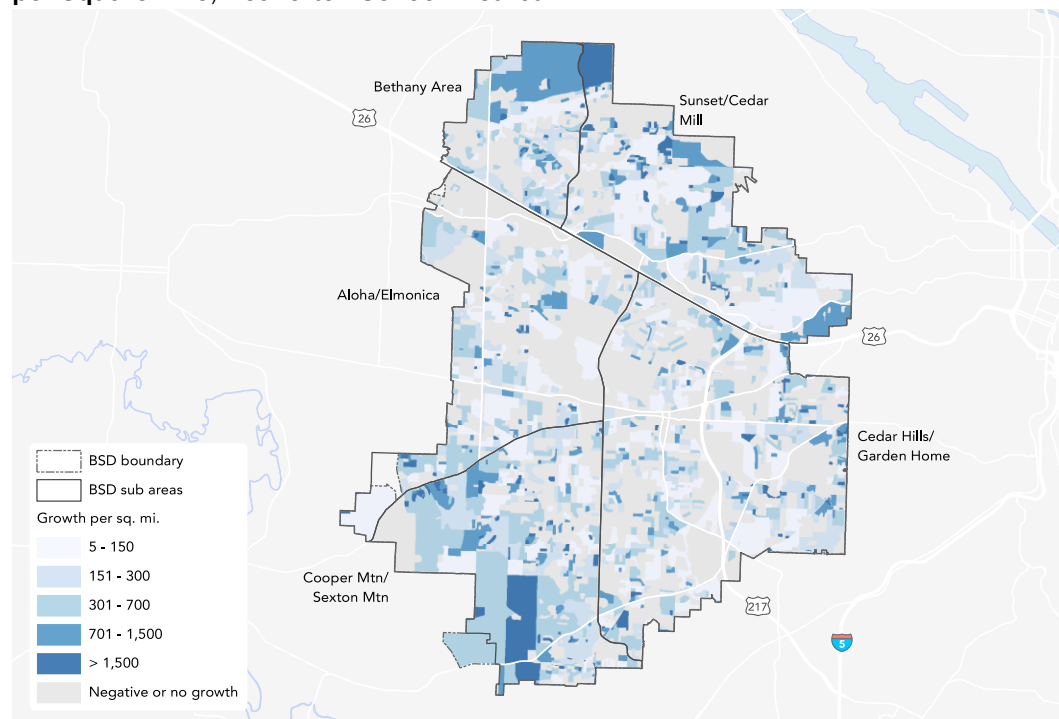
Exhibit 4. Projected Growth in Number of K-12 School-Aged Children, 2015-2025, per Square Mile, Beaverton School District



Source: ECONorthwest

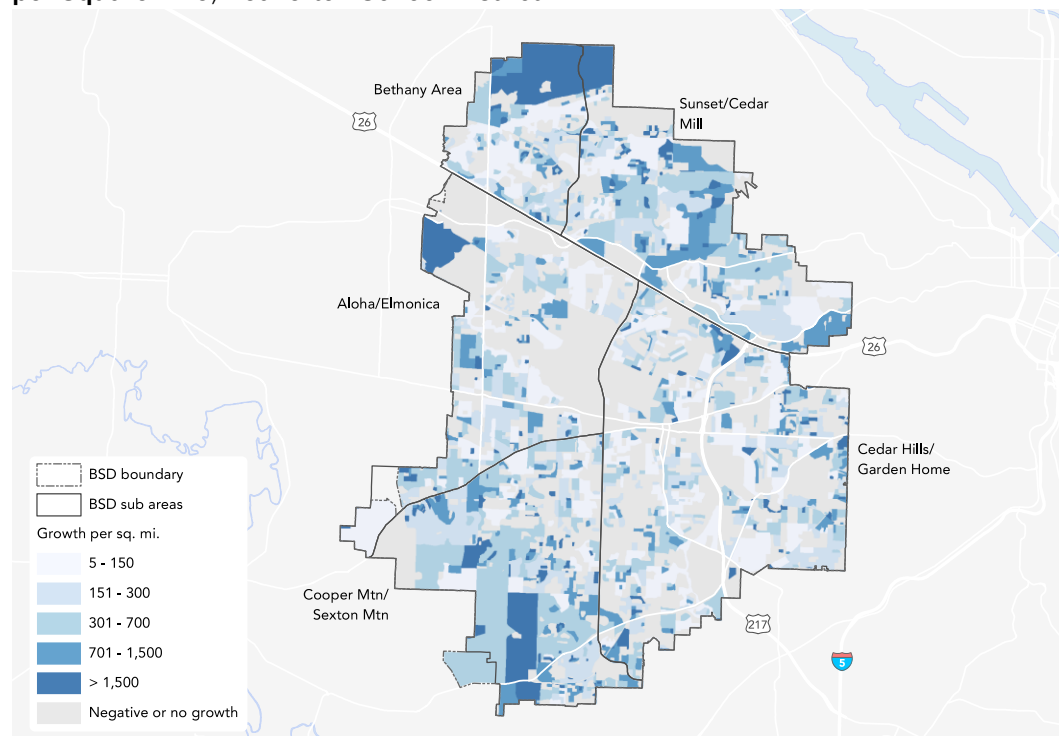
⁴ The problem is that the data are for U.S. Census “block groups,” and boundaries of blocks and block groups are set so that they have about the same amount of population. Thus, urban block groups are small, and undeveloped block groups at the urban fringe are large. Showing the absolute number of new school-aged children would over emphasize increases at the urban fringe.

Exhibit 5. Projected Growth in Number of K-12 School-Aged Children, 2015-2035, per Square Mile, Beaverton School District



Source: ECONorthwest

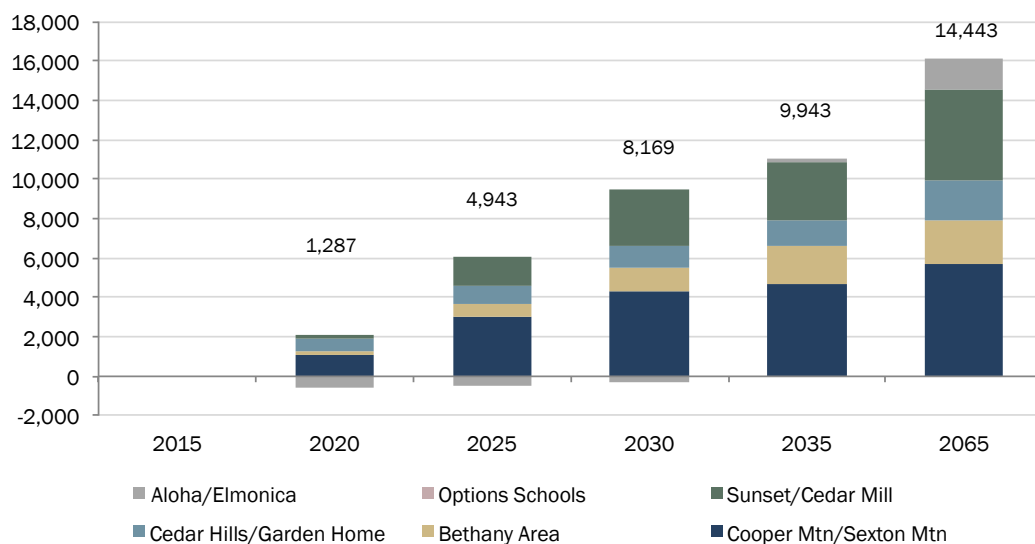
Exhibit 6. Projected Growth in Number of K-12 School-Aged Children, 2015-2065, per Square Mile, Beaverton School District



Source: ECONorthwest

Exhibit 7 shows the cumulative change in enrollment by subarea from 2015 - 2065. The Cooper Mountain/Sexton Mountain subarea accounts for the largest change in the District's school-aged population. The Bethany and Cedar Hills/Garden Home follow. The Aloha/Elmonica subarea initially loses school-aged children as its populations age before being replaced by new families.

Exhibit 7. Change in Population, by Subarea, 2015-2065



Source: ECONorthwest

In the Bethany subarea, increases are concentrated in the North Bethany area at the northern tip of the District (currently designated as Urban Reserve). Washington County staff expect this area to be brought into the Urban Growth Boundary and zoned for significantly higher-density residential development than currently exists. Washington County expects 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 subarea. The County expects that this development will be largely complete by 2035.

The County expects the remainder of the Sunset/Cedar Mill subarea along with all of the Cedar Hills/Garden Home subarea to see infill development in older neighborhoods.

The Cooper Mountain/Sexton Mountain subarea contains two areas expected to see significant development in the next ten years. The County expects the very southern tip of the subarea, River Terrace, will build about 2,500 new housing units. It expects the area immediately north of that, South Cooper Mountain, to build another 3,000 units, mostly within the next ten years.

Most of the Aloha/Elmonica subarea consists of older neighborhoods with scattered infill potential. The one exception is the Amberglen area, which the County expects to develop intensely with up to 6,000 new units of mostly multi-

family housing. On the map of student growth from 2015–2065 (Exhibit 6), Amberglen is the dark area in the northwest of the Aloha/Elmonica subarea. Amberglen currently is mostly in industrial and office uses.

To get from school-aged populations to enrollment by existing facility, the Study assumed that current (post-opening of Mountainside High School) attendance-area boundaries would remain the same and that the share of school-aged children who attend District schools would remain the same as in 2015. That assumption does not mean that the consultants believe that the attendance-area boundaries for existing schools will or should remain the same, or that no new schools will be built. The numbers in Exhibit 1 are an attempt to describe what would happen to enrollment at existing schools if nothing other than populations changed. These results are intended to help identify places where the District should consider making changes to attendance-area boundaries, build new schools, or close old schools.

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

- The 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, its forecasts are entirely consistent the ones in the WCTFS.
- Metro develops the region's official forecasts 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.

4 Scenario Evaluation

There are four scenarios that paint a picture of what the District might look like in 50 years. Four forces of change shape each scenario: student enrollment, District funding, competition for students, and education and facility model flexibility. Based on assumptions in each force, each scenario explains how the District could continue to deliver high-quality facilities to its students.

The scenarios facilitate an exploration of challenges and opportunities the District might face over the next 50 years, and their implications for the District's shorter-term facility-planning process.

This chapter presents the scenarios and their challenges and opportunities. It has four sections:

- **Principles.** What are the purpose statements that guide the District's policy decisions and, in turn, the development of scenarios?
- **Overview of the Scenarios Used in This Study.** What are the four scenarios for the future of the District?
- **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 (types and locations) and costs?
- **Summary Comparison of Opportunities and Challenges.** How do the scenarios compare to one another on key dimensions.

This chapter defines scenarios and evaluates their impacts on the type, location, and costs of facilities. It does this by creating a snapshot of facilities 50 years in the future. Chapter 5 takes a practical step back toward the present: it discusses possible implications of the scenario evaluation for decisions the District will make about facility investments over the next five to 10 years.

4.1 Principles

The District has four “Pillars of Learning,” which are principles that guide its strategic plan and policy decisions.

This Study assumes that the District will only adopt education and facility policies that are consistent with these principles. These principles are not evaluation measures by which the Study measured the performance of scenarios. Rather, the Study constructed each scenario in a way judged to be consistent with the principles. All the scenarios generally meet the principles, but they do so with different combinations of learning models and facilities.

Our Pillars of Learning

WE Expect Excellence

- **WE** teach students knowledge and skills for our evolving world.
- **WE** seek, support, and recognize our worldclass employees.



WE Innovate

- **WE** engage students with a variety of relevant and challenging learning experiences.
- **WE** create learning environments that promote student achievement.



WE Embrace Equity

- **WE** build honest, safe, and inclusive relationships with our diverse students and their families.
- **WE** provide needed support so that every student succeeds.



WE Collaborate

- **WE** work and learn in teams to understand student needs and improve learning outcomes.
- **WE** partner with the community to educate and serve our students.



Source: Beaverton School District, 2016, *WE*.

4.2 Overview of the Scenarios 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 only 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 Study uses four scenarios to explore the long-run future of educational needs and facility delivery in the District. Each is a snapshot of what the District could look like in 50 years. 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 for detail on the forecasts.
- **District funding:** How much funding will the District have from both its operating levy and capital bonds?
- **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?

Exhibit 8 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 yellow 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 8. 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 Model and Facility Policy	Expected	High	High	High

Source: ECONorthwest
See text for explanation

Expected means “a continuation of what is happening now and recent trends.” For example, the District has been “expected” education model would not mean that the District does not currently have or is not moving toward more flexible education models. It would mean, however, that a scenario does not assume radical changes in current practices or current trends toward change. *Low* or *high* are relative to *expected*.

Scenario 1, Business as Usual, is defined by “expected” future conditions for three of the four conditions. It assumes that funding per student will probably increase. The reason is that this scenario assumes a continuation of existing education models (e.g., teacher/student ratios, single sessions, three-month summer break) and facility models (a suburban school model: mainly single story with large parking lots and play fields). As Washington County grows, the

cost of land will likely increase faster than inflation. Thus, the District will need to spend relatively more to deliver education in suburban schools.

Unlike the other three scenarios, Scenario 1 Business as Usual leaves funding unconstrained. The analysis determines what it will cost to continue to build using the current model. Other scenarios use forecasts of total capital funds as a loose constraint on the facility models.⁵

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). Scenarios 2, 3, and 4 will each vary a different second characteristic (enrollment, funding, or competition) to isolate the impacts of a change in that characteristic.

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

4.3 Specification and Evaluation of the Scenarios

NOTE TO BOARD In this draft, the scenario definitions provide the overarching description and some information about the education models.

ECONorthwest will provide the facility model responses to each scenario at the Board meeting. The Study team will complete the opportunities and challenges once it finalizes the facility models.

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, education model and facility policy innovation. These choices increase inflation-adjusted funding 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.

⁵ This Study used historical capital and operational spending per student to estimate future spending per student. ECONorthwest is working through the final methodology for this calculation and will include a detailed explanation in the final report/appendices.

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 an 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.

Facility Model

Opportunities and Challenges

Scenario 2: High Growth

This scenario considers how the District would respond 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),⁶ and (2) the addition of early-childhood education. Under this scenario, funding per student and the amount of external competition remain as expected. This scenario does allow the District to choose facility models that diverge from those of today.

Education Model

The addition of **publicly-provided, early childhood learning** is the dominant 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.

⁶ As opposed to re-running the population forecast model, ECONorthwest will assume a proportionate population increase in each attendance area.

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-3rd 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.

Facility Model

Opportunities and Challenges

Scenario 3: Increased Competition

This scenario explores how the District might respond to increased competition for students. Increased competition might come from more micro-schools, 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 it could lose up to 30% of its current share. The scenario assumes that the District would maintain its share of students, which would put pressure on funding and facility models. It assumes that the District would have to be highly innovative to do so. 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. Under this model, students progress based on content master rather than age cohort. A competency-based structure enables **personalized learning** to provide flexibility and supports to ensure mastery of the highest standards possible. With clear and calibrated understanding of proficiency, learning can be tailored to each student's strengths, needs, and interests and enable student voice and choice in what, how, when, and where they learn.

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, micro-schools, or specialized programs within a neighborhood school. These specialized programs can take several different forms:

- **Place-based education**
- **Project-based learning**
- **Maker education.**⁷

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

Facility Model

Opportunities and Challenges

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 would 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.

Education Model

The District could 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.

⁷ Appendix [\[link\]](#) provides a full description of these specialized programs.

4.4 Summary Comparison of Opportunities and Challenges

This section will summarize the opportunities and challenges likely to face the District. It should tee up Implications (chapter 5 of the report). It is like the case that this section will get drafted in advance of the production of chapter 5, but will require a substantive re-write following the completion of chapter 5 so that the two line up seamlessly.

5 Implications for Facility Planning

This chapter will describe the implications of the scenario evaluation on the District's shorter-term facility plan process.