Appendix 5: Forecast-based multi-tenant (business park)/large lot analysis

Introduction

Large lot business parks with multiple tenants can play an important role in the region's economy. In general, business parks of all sizes serve a land demand segment that caters to start-up firms that do not have the financial wherewithal or desire to purchase or lease standalone buildings. Business parks also provide flexibility for small or large companies that have less tolerance for risk by allowing them to expand and contract by leasing more or fewer adjacent units within the same building or complex.

Business parks may also provide some benefits from the standpoint of land use efficiency. Some multi-tenant facilities may provide employment space more efficiently than individually owned and occupied buildings because tenants can share facilities that are used on an irregular basis (Yap and Circ). For example, small companies that need warehouse space can collocate in a multi-tenant building and share loading docks, or office type employers that deal with occasional outside clients can share parking for their customers. In addition, there are a few examples in Canada and elsewhere in the world of a movement towards "Eco-Industrial Parks" that go beyond just "green" building and landscaping (Braziller). These new industrial parks strive to create synergies among their tenants so that, for example, the by-products of one company (materials or energy) might become inputs for another (Innovista, TaigaNova). This new type of business park could play a role as the region moves toward new environmental goals such as reducing greenhouse gas emissions.

However, it should be noted that these benefits are not necessarily limited to very large business parks (greater than 25 acres) and can often be achieved through smaller or higher density multi-tenant developments as well. Firms can lease employment space in a wide range of multi-tenant facilities, from small office buildings to sprawling industrial parks, depending on their needs and preferences. The demand for land for smaller business parks (less than 25 acres) is addressed through the broader employment UGR analysis.

This study forecasts future preferences for employment space in large business parks based on the assumption that preferences for this building format will be the same in the future as they are now. For this analysis, firms that are currently located in large business parks are compared to total employment throughout the region to obtain the proportion of current employment in large business parks. This analysis assumes that this same proportion of projected employment growth from 2010 to 2030 will prefer to locate in large business parks. These preferences may, however, change over time.

The starting point for this study is the "Top 25 business parks" list produced by the Portland Business Journal (PBJ) in December 2008. This list provides the names and locations of the 26 largest business

parks in the region, ranked by building square footage. After excluding business parks in Vancouver, WA, and those owned by the Port of Portland, there are 21 large business parks left for analysis. In addition to these, two more business parks close to or over 25 acres were found while researching the site plans for the parks on the PBJ list so these have been included as well.

Mapping methods

These existing business parks were mapped by selecting the best matching taxlots using the following data:

(1) Taxlots – boundaries and ownership information
(2) Business park site maps and descriptions obtained from websites of owners, leasing agents and other sources

Employers located in these business parks were identified from geocoded 2006 ES202 data by first selecting points that fell inside any of the taxlots mapped as business parks in the previous step. Next, any employers that geocoded to the street near the business park that had an address that was similar to the business park taxlots or other employers located in the business park were also selected.

Large lot business parks: summary statistics

Using the business park taxlot and employer data compiled in the mapping stage, some summary statistics have been calculated in order to characterize large business parks and the employers that tend to occupy them.

Table 1 includes the list of the business parks that were examined and some figures that describe their land and buildings. Total acreage was derived from current taxlot data and building square footage measurements are reproduced from the Portland Business Journal and business park websites. The adjusted floor area ratio (FAR) values are based only on developed parcels, so any taxlots that appeared completely vacant in aerial photographs were excluded from these calculations. Table 2 presents employment statistics by business park.

Table 1: Land and building area statistics by business park

Business Park	Area		
	Total Acres	Building Square Feet	Adjusted FAR
AmberGlen Business Center	72.5	572,685	0.21
AmberGlen East and West	44.4	536,000	0.31
Beaverton Creek Business Park	55.9	512,852	0.26
Columbia Commerce Park	31.4	562,888	0.41
Columbia Pacific Airport Way Industrial Park	46.6	768,279	0.38
Cornell Oaks Corporate Center	106.8	684,000	0.18
Creekside Corporate Park	50.4	615,113	0.28
Kruse Woods Corporate Center	76.4	1,652,105	0.56
Lincoln Center	22.4	728,770	0.75
Nimbus Corporate Center	47.5	688,632	0.33
Northwest Corporate Park	30.0	678,028	0.52
Oregon Business Park 1**	36.4	782,294*	0.49
Oregon Business Park 2**	5.3	71,511*	0.31
Oregon Business Park 3	35.2	501,029	0.33
PacTrust Business Center	40.2	570,539	0.33
Pacific Business Park (South)	25.57	340,864*	0.31
Pacific Corporate Center	55.8	601,542	0.25
Parkside Business Center	51.9	687,829	0.30
Piedmont	24.4	#	#
Southshore Corporate Park	311.7	1,630,000	0.22
Tualatin Business Center I & II	33.40	385,305*	0.26
Wilsonville Business Center	30.1	710,000	0.54
Woodside Corporate Park	37.4	579,845	0.36
Total	1271.5	14,860,110	0.33
# Building square footage data unavailable	* Building square footage data from PacTrust		
**Oregon Business Parks 1 & 2 are reported together in the PBJ list because they are adjacent			
Source: Building square footage data from Portland Business Journal unless otherwise noted			

Table 2 – Employment statistics by business park

Business Park	Employment (ES202 2006)			
	Employer Count	Average employees per firm	Total Employment	Sq Ft per Employee
AmberGlen Business Center	33	41.4	1,366	419
AmberGlen East and West	24	33.9	813	659
Beaverton Creek Business Park	32	51.1	1,634	314
Columbia Commerce Park	22	18.1	398	1,414
Columbia Pacific Airport Way Industrial Park	45	10.5	471	1,631
Cornell Oaks Corporate Center	77	42.2	3,250	210
Creekside Corporate Park	59	33.1	1,952	315
Kruse Woods Corporate Center	252	14.5	3,662	451
Lincoln Center	204	12.9	2,627	277
Nimbus Corporate Center	51	23.5	1,197	575
Northwest Corporate Park	38	13.7	521	1,301
Oregon Business Park 1	49	23.2	1,138	687
Oregon Business Park 2	22	5.9	130	550
Oregon Business Park 3	36	20.7	744	673
PacTrust Business Center	50	29.0	1,448	394
Pacific Business Park (South)	30	15.23	457	746
Pacific Corporate Center	78	18.6	1,451	415
Parkside Business Center	164	9.7	1,588	433
Piedmont	7	133.3	933	#
Southshore Corporate Park	32	39.7	1,270	1,283
Tualatin Business Center I & II	19	40.42	768	502
Wilsonville Business Center	39	13.5	525	1,352
Woodside Corporate Park	39	17.6	687	844
Total	1,353	20.55	29,030	

Table 3 reorganizes the data to look at 2006 business park employment by sector. These employers represent a small fraction, about 3.6% in 2006, of total employment in the three county region. However, the fraction of employment in large business parks varies by sector. The business parks in this study are home to more than 10% of employment in the Information, Finance and Wholesale sectors, but less than 1% of employment in Health and Social services and several other sectors.

Table 3 – ES202 2006 employment by sector (large business parks and 3-county area)

Sector	Business park employment (jobs)	Total sector employment (3 county)	Proportion of jobs in large business parks
11, 12 (Ag, Mining)	5	9,811	0.1%
23 (Construction)	1,477	46,701	3.2%
334 (Mfg - High Tech)	3,144	33,539	9.4%
31, 32, 33, except 334 (Mfg - Non High Tech)	1,682	69,056	2.4%
42 (Wholesale)	4,996	49,178	10.2%
44, 45 (Retail)	1,041	84,111	1.2%
22, 48, 49 (TWU)	583	40,422	1.4%
51 (Information)	2,650	20,019	13.2%
52 (Finance)	4,050	37,524	10.8%
53 (Real Estate)	576	15,818	3.6%
54 (Professional Services)	3,185	43,273	7.4%
55 (Management)	840	20,745	4.0%
56 (Admin & Waste)	2,945	52,938	5.6%
61 (Education)	15	61,468	0.0%
62 (Health & Social Services)	468	84,801	0.6%
71 (Arts, Entertainment & Recreation)	110	12,042	0.9%
72 (Accommodation & Food Service)	516	63,756	0.8%
81 (Other Services)	579	31,551	1.8%
92 (Government)	151	31,398	0.5%
None	17	238	7.1%
Total	29,030	808,389	3.6%

The employment shown in Table 3 was aggregated into six building types using the same assumptions as the large lot analysis (Appendix 4 to the urban growth report (UGR)), which are included in Table 9 in this report.

Table 4 indicates that nearly half of the employment in large business parks was in sectors associated with the office building type.

Table 4 – Distribution of employment by building type in 2006 (large business parks and 3 county)

Building Type	Business Park Employment	Proportion of Business Park Employment by Building Type	Total Employment (3 county)	Proportion of Total Employment by Building Type
Warehouse/dist	5,579	19.2%	89,600	11.1%
Gen industrial	3,159	10.9%	115,757	14.3%
Tech/flex	3,144	10.8%	33,539	4.1%
Office	14,246	49.1%	190,317	23.5%
Retail	2,246	7.7%	191,460	23.7%
Institution	634	2.2%	177,667	22.0%

Distribution of existing (2006) business parks by firm size

In order to understand how smaller firms aggregate in business parks, the patterns of current (2006) employment in existing business parks were examined.

The firms located in these business parks are mostly small, in the range of 0 to 50 employees. As shown in Figure 1, almost 60% of employees located in large business parks work for firms with no more than 100 employees. Relatively small firm sizes provide some explanation of why these firms may prefer multi-tenant space. However, there is a wide range of firm sizes within each business park, with more than half of business parks in this study also home to at least one firm with more than 200 employees in 2006.

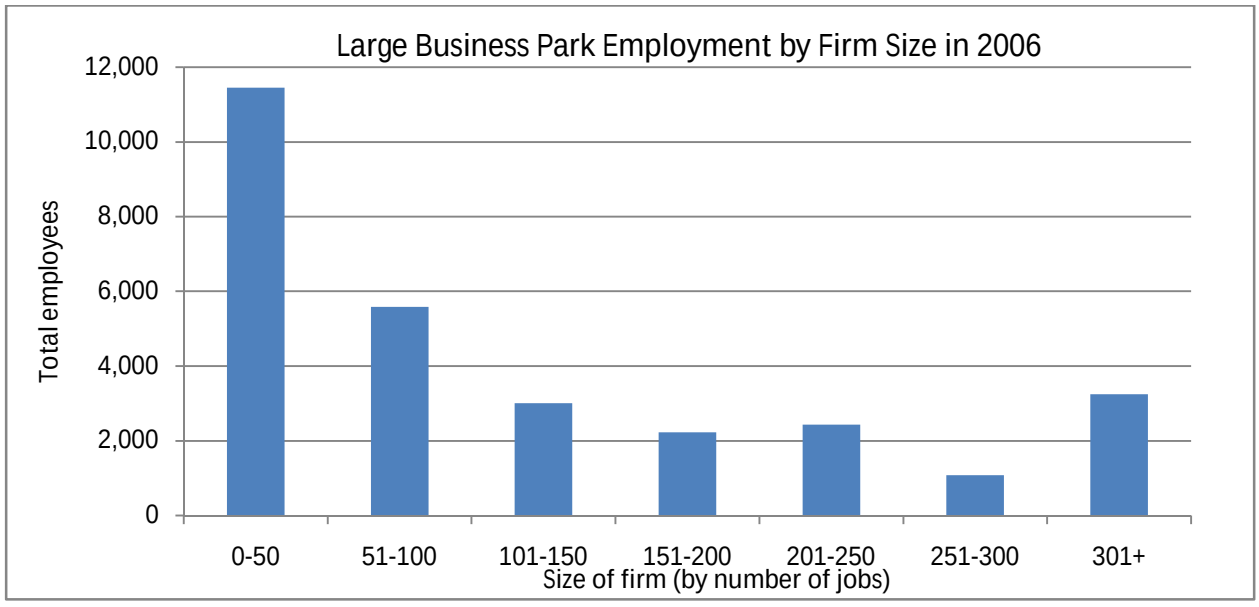

Figure 1 – Distribution of large business park employment by firm size in 2006

The distribution of business parks by employment is shown in Table 5. These data show, for example, that seven of the large business parks in this analysis housed between 500 and 1,000 employees.

Table 5 – Distribution of large business parks by employment (2006)

Business Park Size (employees)	Number of Business Parks	Proportion of Business Parks
< 500	4	17.4%
500 - 1000	7	30.4%
1000-2000	9	39.1%
2000-3000	1	4.3%
3000 +	2	8.7%
Total	23	100.0%

The 2006 distribution of business park employment by firm size and building type is shown in Table 6. For the purpose of forecasting potential business park preferences in the future, the proportions in Table 5 were used to convert the 2006 distribution of business park employment by firm size to an employment distribution by business park size (see Table 7). The overall total business park employment and employment by building type numbers have been maintained, however the firm sizes have been rearranged into business park-sized entities that would likely prefer larger parcels.

Table 6 – Distribution of business park employment by firm size (2006)

Firm size by jobs	W/D	Gen Ind	Tech/ Flex	Office	Retail	Inst	Total
less than 10	732	243	47	1,195	288	82	2,637
10 to 49	1,827	1,356	329	4,161	759	226	8,715
50 to 99	1,134	701	216	2,679	407	160	5,390
100 to 149	347	204	239	1,832	233	0	2,855
150 to 199	315	0	648	985	332	0	2,280
200 to 499	1,224	655	1,665	3,394	215	0	7,153
500 to 999	0	0	0	0	0	0	0
1,000 to 1,999	0	0	0	0	0	0	0
2,000 to 2,999	0	0	0	0	0	0	0
3,000 or more	0	0	0	0	0	0	0
Total	5,579	3,159	3,144	14,246	2,234	468	29,030
Columns will not add to Total since a small number of government and other jobs are not shown.							

Table 7 – Distribution of business park employment by business park size (2006)

Business park size by jobs	W/D	Gen Ind	Tech/ Flex	Office	Retail	Inst	Total
less than 10	0	0	0	0	0	0	0
10 to 49	0	0	0	0	0	0	0
50 to 99	0	0	0	0	0	0	0
100 to 149	0	0	0	0	0	0	0
150 to 199	0	0	0	0	0	0	0
200 to 499	970	549	547	2,478	389	81	5049
500 to 999	1,698	961	957	4,336	680	142	8,835
1,000 to 1,999	2,183	1,236	1,230	5,575	874	183	11,360
2,000 to 2,999	243	137	137	619	97	20	1,262
3,000 or more	485	275	273	1,239	194	41	2,524
Total	5,579	3,159	3,144	14,246	2,234	468	29,030
Columns will not add to Total since a small number of government and other jobs are not shown.							

Forecasted preference for large business parks

The next step is to forecast future employment in large business parks. The forecast assumes that fixed proportions of employment, by sector, will locate in large business parks in the future. The proportions observed for 2006, shown in Table 3, were used to scale the full employment forecast from 2010 to 2030 to large business park employment. Whether or not those preferences are "needs" remains for policy discussion. It also remains for debate whether these preferences will change over time.

The methodology used to forecast potential preferences for large business parks generally follows the steps of the large lot analysis for large individual employers (see Appendix 4). However, a few changes are made to account for the smaller employers involved in this analysis as well as the mixture of building types in a single business park.

Projected employment was aggregated from sector to building type, based on the relationships shown in Table 9 and then the forecasts were adjusted for infill and redevelopment using the refill rates also shown in Table 9. The Outer Ring market area average refill rates were chosen from the broader UGR analysis for this purpose, as most new business parks are likely to locate in the Outer Ring subareas. The use of a refill rate is a different approach than the large lot analysis, which did not assume any refill rate because the types of employers considered in the large lot analysis are assumed to have an inherent preference for large, vacant lots. Refill capacity is, however, assumed for this business park analysis because many of these types of employers do not necessarily need to locate on a large lot. Many are expected to locate on infill or redevelopment sites.

Projected changes in large business park employment from 2010 to 2030 under two different growth scenarios are shown in Table 8.

Table 8 – Projected employment changes in large business parks from 2010 to 2030, adjusted for refill

Growth Scenario	Change in Business Park Employment by Building Type, 2010 to 2030						Total Change
	W/D	Gen Ind	Tech/Flex	Office	Retail	Inst	
High	2,250	1,220	970	8,510	990	460	14,300
Low	2,060	-100	330	4,600	660	380	7,840

A second departure from the individual employer large lot analysis comes in the FAR assumptions that are used. Large business parks tend to have a mix of building types within the same property. Rather than use individual building type FAR assumptions to convert the employment forecast into land area, the weighted average FAR for the existing business parks examined in this study has been used across all building types. As previously shown in Table 1, this value is 0.33, so 0.33 has been used as the FAR for all building types. This may seem too high or too low for a particular building type, but it represents the mixture of building types typically found in large business parks.

The square foot per employee assumptions remain differentiated by building type, shown in Table 9. These SFE assumptions are the same as those used for the Outer Ring subareas in the broader employment UGR, again because most new business parks are expected to locate in the Outer Ring subareas.

Table 9 – Building type and density assumptions

Building Type	NAICS codes	Outer Ring SFE	Business Park FAR	Outer Ring Refill Rate
Warehouse/Distribution	22, 42, 48, 49	1,850	0.33	18%
General Industrial	23, 31, 32, 33 (except 334)	600	0.33	14%
Flex	334	990	0.33	16%
Office	51, 52, 53, 54, 55, 56	375	0.33	30%
Retail	44, 45, 71 ,72, 81	550	0.33	25%
Institution	61, 62, 92	650	0.33	36%

With these changes, the projected employment growth in large business parks was then run through the same set of calculations as the individual employer large lot analysis to determine the possible future preference for large business park land. The business park employment distribution (Table 7) was used for the current (and projected) employment distribution in place of the individual firm size distribution in order to forecast the land demand of aggregated business park-sized groups of employers. For a step-

by-step description, please see the large lot analysis. The resulting correlation of the forecast with historic preferences for large business parks is shown in Table 10. More details about the buildable land inventory and large lot inventory can be found in the UGR and in Appendix 4.

Table 10 – Correlation of forecast with historic preference for large business park lots (2010 to 2030, high and low growth)

High Growth							
Lot size (acres)	WD	GI	TF	Office	Retail	Institution	Total Lots
25 to 50	1	0	0	2	0	0	3
50 to 100	1	0	0	0	0	0	1
100 plus	1	0	0	0	0	0	1
Total Large Lots	3	0	0	2	0	0	5
Low Growth							
Lot size (acres)	WD	GI	TF	Office	Retail	Institution	Total Lots
25 to 50	1	0	0	1	0	0	2
50 to 100	1	0	0	0	0	0	1
100 plus	1	0	0	0	0	0	1
Total Large Lots	3	0	0	1	0	0	4

Assuming a continuation of historic preferences for large business parks, this analysis shows a forecasted preference for four to five large business parks (taxlots of at least 25 acres), depending on the amount of growth that is realized. Information about the region's large lot supply is included in the urban growth report.

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