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DATE: June 25, 2020
TO: Clark County Buildable Lands Project Advisory Committee
CC: Jose Alvarez, Clark County
FROM: Bob Parker, Becky Hewitt, and Margaret Raimann, ECONorthwest
SUBJECT: Employment Density Assumptions in the Vacant Buildable Lands Model

Introduction

Clark County contracted with ECONorthwest and AHBL to assist in identifying and addressing needed updates to the County's Buildable Lands Methodology and prepare the 2021 Buildable Lands Report in collaboration with the Clark County Buildable Lands Team, a Buildable Lands Project Advisory Committee and other key stakeholders. The goal of the process is to ensure that the County's methodology is consistent with state law (including recent legislative changes); reasonably accurate in estimating land capacity for each Urban Growth Area (UGA) and rural area; and supported by the available evidence and a broad base of stakeholders.

Issue Overview and Background

Current County Practice

Once the vacant buildable commercial and industrial lands have been identified, Clark County applies employment density assumptions (expressed as employees per acre or EPA) to the net developable acres to predict how much future employment that land can accommodate. The most recent methodology has one density assumption for commercial land (20 employees per acre) and another one for industrial land (9 employees per acre). The assumptions are the same for all UGAs. The densities have been set based on observed development using spatial data on employment from the Washington Employment Security Department (ESD) that allowed matching of specific employers to tax lots. The 2015 Buildable Lands Report (BLR) used employment data from 2014 to estimate employment density. The observed densities were lower than the 2007 BLR, and the County continued to use the assumptions from the 2007 report. However, ESD no longer provides access to parcel-specific employment data, leaving Clark County (and all the other Buildable Lands Program counties) without a good data source to validate projections or adjust over time.

Employment density of new development is also reported in the BLR. The most recent analysis uses data from 2006-2014 and relies on data from ESD as well as building permit data to calculate the employment density of new commercial and industrial development for each UGA.

State Guidance

The employment density survey provides data that support assumptions used to determine land needed for employment uses. The statutory guidance from the program is codified in RCW 36.70A.215. Specifically, the following two subsections address density of employment:

- Based on the actual density of development, review commercial, industrial, and housing needs by type and density range to determine the amount of land needed for these uses for the remaining portion of the current 20-year planning period (RCW 36.70A.215(3)(e));
- Determine if there is sufficient employment capacity for the remainder of the planning period based upon planned and achieved densities (RCW 36.70A.215(3)(e));

Section 3 provides further guidance on how the data are used:

(a) Determine whether there is sufficient suitable land to accommodate the countywide population projection established for the county pursuant to RCW 43.62.035 and the subsequent population allocations within the county and between the county and its cities and the requirements of RCW 36.70A.110;

(b) Determine the actual density of housing that has been constructed and the actual amount of land developed for commercial and industrial uses within the urban growth area since the adoption of a comprehensive plan under this chapter or since the last periodic evaluation as required by subsection (1) of this section; and

(c) Based on the actual density of development as determined under (b) of this subsection, review commercial, industrial, and housing needs by type and density range to determine the amount of land needed for commercial, industrial, and housing for the remaining portion of the twenty-year planning period used in the most recently adopted comprehensive plan.

The employment density survey provides data that support assumptions used to determine land needed for employment uses. Statutory guidance requires that the county determine land need and employment capacity based on the actual/achieved density of development and the actual amount of land developed for commercial and industrial uses within the UGA since the last periodic evaluation or last update of a comprehensive plan.[1]

The 2018 *Buildable Lands Guidelines* provide concise direction on the process and distill the requirements into two questions:

- How much land was actually developed for commercial and industrial uses within the UGA since the last comprehensive plan was adopted or the last evaluation completed?
- Based on this and other relevant information, how much land would be needed for commercial and industrial development during the remainder of the 20-year comprehensive planning period?

Thus, while the guidelines provide direction on how to address commercial and industrial development, they are not proscriptive and provide considerable local discretion with respect to methods and assumptions. Because the focus of this research is on employment density, we do not address other aspects of the methods related to commercial and industrial land other than

[1] RCW 3670A.215(3)

to remark that the methods used by Clark County in the 2015 BLR are common in these types of studies.

How Addressed in Other Buildable Lands Counties

Pierce County

Pierce County uses gross employees per acre based on 2010 survey data from the Traffic Division of Pierce County Public Works and Utilities Department.

Snohomish County

The Snohomish County methodology uses observed floor area ratio (FAR) and assumptions about square footage of building space per employee by employment category to translate into estimates of employees per buildable acre.

Thurston County

Thurston County uses a single average of employees per 1,000 square feet of commercial building space and an average FAR for commercial and industrial buildings. The methodology notes higher employment densities in some locations than others.

Summary of Analysis and Findings

Methodology and Limitations

Clark County currently uses an employees per acre (EPA) approach to employment density. As previously stated, the State no longer provides access to the detailed employment data previously used to calculate employment densities. Exhibit 1 shows the basic methods available to calculate employment land demand, including the EPA approach, followed by a discussion of the limitations of each method.

Exhibit 1. Basic methods for estimating employment land demand

Method	Description
Population/developed land ratio	Uses the number of developed commercial and industrial acres per 1,000 persons and extrapolates it to the planning horizon using the local population forecast.
Employment/developed land ratio	Uses the number of developed commercial and industrial acres per 1,000 employees and extrapolates it to the planning horizon using the local population forecast. Requires both a current employment estimate and an employment forecast.
Employee per acre (EPA) ratio	Assumes a specific employment density, expressed in employees per acre. At the simplest level, the method uses an aggregate EPA ratio for all new employment. Requires both a current employment estimate and an employment forecast.
Floor area ratio (FAR) / Employees per sq. ft. (ESF)	Uses zoning to determine floor area ratios and allowable lot coverage. Lot coverage * FAR provides an estimate of built space in square feet. Built space * ESF provides an estimate of land capacity for employment.
Expert consultation	Relies on the expertise of local developers, business leaders and others to estimate land needs.

Limitations

- **Population and Developed Land Ratio.** This method has two key limitations: (1) use of population forecasts to derive estimates of employment land; and (2) the quality of parcel data. The method is simple: divide developed acres by population to get a ratio of persons per acre (usually expressed as acres per 1,000 persons). A key issue is population is not a good proxy for employment and does not recognize variability of the amount of employment lands in a region. For example, a city that is an industrial center might have half its land in industrial uses; another may be a bedroom community with no industrial land. We do not recommend considering this approach for the BLR.
- **Employment and Developed Land Ratio**. This is the same as the previous method, with the difference that it uses employment instead of population. The limitations of this method are the same for assessment data. A second limitation is the issue of how to address residential and other lands that might have employment but are not zoned for employment. Due to these limitations we do not recommend using this method for the BLR.
- **Employee Per Acre Methods**. The advantage of EPA methods is that they distill the estimate into a very simple formula: net acres * EPA = capacity for new employees. EPA assumptions can be developed for broad employment types—the 2015 BLR used commercial (20 EPA) and industrial (9 EPA). These assumptions are in line with what we see in other studies, as shown in Exhibit 2.. For example, Oregon's *Industrial and Other Employment Lands Analysis: Basic Guidebook* advocates EPAs of 7-12 for heavy industrial uses; 10-15 for light industrial uses; and 12-20 for commercial uses.[2] The limitations of

[2] Oregon Department of Land Conservation and Development. *Industrial and Other Employment Lands Analysis: Basic Guidebook*. 2005.

this method are generally related to the source of the EPA assumptions as well as how the assumptions are applied. In our view, this is the best and most transparent method for developing assumptions, if the data are available.

The biggest limitation of this approach is related to variability in employment densities. Considerable variation exists within zoning districts and within individual industries. A recent study of select Oregon cities, however, found little variation across the five cities included in the analysis. The median EPA for the study cities was about 9.[3]

- **FAR/SFE (Square Foot per Employee) Methods**. Like other methods, this method is limited by the quality of data. One of the biggest problems with this method is that it is difficult to generalize FARs across broad employment types. By definition, FARs are zoning specific. Moreover, variability exists in the amount of built space required by different industries. The amount of effort required to develop accurate estimates for the entire county is significant given the countywide scope of the BLR. Moreover, this method requires data and assumptions about square foot per employee (SFE) and FAR which can ultimately be translated to EPA. We do not recommend using this approach for the BLR.

Results

While the Employment Security Department no longer releases the detailed employment data to the County, the Project Team contacted the ESD to summarize employment for built land in the commercial and industrial VBLM models and by UGA. This analysis would provide a trend of employment densities at generalized geographies in the County, and would help check against previous assumptions used in the 2015 BLR methodology. As of June 2020, the Project Team is still working with ESD and will provide an update in September if we receive the results of the analysis.

ECONorthwest has worked with many jurisdictions in Oregon on employment density analyses, as the detailed employment data is available at the local level. Recent analyses in these jurisdictions have shown employment densities are consistent with Oregon's *Industrial and Other Employment Lands Analysis* guidebook. We used Quarterly Census of Employment and Wages data provided by the Oregon Employment Department to calculate the employment densities for commercial and industrial land use types in Tualatin, McMinnville, and Redmond (OR). The results of these analyses, as well as EOA assumptions used in Washington Counties are shown in Exhibit 2. Exhibit 3 in Appendix A presents a list of Washington locations and assumptions used in previous reports.

[3] Rohan, Catherine. *Industrial Zoning & Employment Density: A Missed Connection?*. June 2020.

Exhibit 2. Summary of employees per acre assumptions in Washington and Oregon

Jurisdiction	Commercial EPA	Industrial EPA
Clark Co., WA (2015)	20	9
Island Co., WA (2016)	17	8
Thurston Co., WA (2014)	3.3	1.5
Tualatin, OR (2017)	27	15
McMinnville, OR (2017)	23	10
Redmond, OR (2018)	11-18	8

Preliminary Project Team Recommendation

Based on review of assumptions used in jurisdictions in Washington and Oregon, the Project Team recommends that Clark County continue to use the employment density assumptions used in the 2015 BLR. These assumptions—20 EPA for commercial land and 9 EPA for industrial land—align with guidance and empirical analysis completed in other locations with a land base similar to Clark County. The Project Team will provide an update at the September Buildable Lands Project Advisory Committee meeting on whether the ESD provided additional analysis using local employment data.

Appendix A

Exhibit 3. Summary of Methods, Assumptions, and Findings from Washington State Studies

Location	Methodology	Employment Density Assumptions (EPA or SFE)	
		Commercial	Industrial
Jurisdictions using Employees per Acre (EPA) method			
Island	• Suppressed data substituted with older available data. • For jobs missing in QCEW data, methodology from PSRC used to estimate total employment from covered employment. • City of Freeland excluded from calculation of employment density average due to lack of amenities (sewer). • Due to County's low industrial employment, rounded average from neighboring counties (Skagit, Clark, Pierce) used for industrial assumptions.	17.0	8.0
Pierce		19.37	8.25
Thurston		3.3	1.5
Puget Sound Regional Council	• Relevant mixed-use zones and land classification included into analysis if related to industrial land. E.g. "Business Park"; "Employment Center" • Parcels considered industrial land if significant industrial development present or permitted to occur. • Four categories of industrial lands: Core industrial; Industrial commercial; Military industrial; Aviation operations areas • Special consideration given to tribal land; natural resource lands; limited areas of more intense rural development; planned developments		0.25 - 14.7*
City of Lakewood	• Developed a consolidated employment capacity model • Error in Pierce Co. BLR–one residential zone moved to commercial	12 - 25	15 - 25
Jurisdictions using Square Foot per Employee (SFE) method			
King (BLR)	• Half of jurisdictions brought forward 2007 BLR density and capacity calculations; remainder cities required new capacity analysis • Location-specific densities reported in final analysis.	250 - 850 SFE*	250 - 851 SFE*

Location	Methodology	Employment Density Assumptions (EPA or SFE)	
		Commercial	Industrial
King (Emp. Capacity Analysis)	• Employment density assumptions from 2007 BLR. • Does not consider future fiscal impacts of redevelopment within Duwamish Industrial Manufacturing Center.	550 SFE	800 SFE
Kitsap	• Methods for Land Capacity Analysis adjusted following Remand Order: 1) Using trend-based density factors for each residential zone 2) Increase public facility deduction to 20% 3) Remove discount for environmental purposes in Urban Restricted Zone 4) Platted lots adjustment	969 SFE	500 SFE
Snohomish	• Existing structures (as of April 2011) counted as population or employment base; proposed, built, or occupied structures after April 2011 counted as future capacity.	200 - 700 SFE	300 - 20,000 SFE

Notes: *Location specific numbers reported; ranges provided here.