COMPREHENSIVE PLAN

Appendix 1

LAND CAPACITY ANALYSIS METHODOLOGY

October 11, 2017

1

TABLE of CONTENTS

TABLES

1.0 Introduction

San Juan County's 2036 Comprehensive Plan update process includes a Land Capacity Analysis (LCA). The Land Capacity Analysis methodology is described in this document.

The Growth Management Act (GMA) allows counties to exercise discretion in their Comprehensive Plans and to make choices on how they plan to accommodate growth over the twenty-year planning horizon.

Conducting a Land Capacity Analysis is an important Step in determining how and what growth can be accommodated through the year 2036. The Washington State Department of Commerce (Commerce), indicates that the Land Capacity Analysis methodology is used to determine:

- The amount of vacant, partially-used, under-utilized lands, and redevelopment potential of built properties needed to accommodate growth, and
- If the existing or potential Urban Growth Areas (UGA's) can accommodate twenty years of urban growth.

The Land Capacity Analysis will help determine if the County's land supply aligns with the 2036 population growth projection of 19,423. The primary purpose of the Land Capacity Analysis is to determine the capacity of Urban Growth Areas for balancing urban development with adequate and cost-efficient urban services. However, because the majority of development in San Juan County occurs outside of the Urban Growth Areas, the Land Capacity Analysis will help the County evaluate the development potential of rural and natural resource lands.

The Land Capacity Analysis is also used to determine whether the County will have sufficient developable land to meet the Growth Management Act housing goal. This goal encourages the availability of affordable housing to all economic segments of the population, promotes a variety of residential densities and housing types and encourages preservation of existing housing stock (RCW 36.70A.020(4).

This report defines terms, provides a high level overview of the Land Capacity Analysis methodology and details the Steps and assumptions of the Land capacity Analysis. It identifies deliverables of the various Steps of the analysis and documentation of the necessary calculations through the use of GIS maps, metadata, and Excel tables.

2.0 TERMS.

The following terms are used in this methodology:

Vacant means property with minimal or no building improvements.

Re-developable means a parcel that has a land use designation that allows uses that would be more intensive than an existing use (e.g. a single family home on a parcel with a commercial land use designation).

Partially-used means residential property occupied by a use allowed by its land use designation which contains enough land to be further subdivided or developed (e.g. a single-family home on a very large lot).

Fully developed means property that is assumed to have no further development capacity.

Floor Area Ratio (FAR) means the total building square footage divided by total lot square footage.

3.0 Methodology Overview

The bullets below provide a high level overview of the Land capacity Analysis methodology:

A. Prepare the Land Capacity Analysis County Land Base and Develop a Gross Developable Land Inventory (GDLI) and GIS Map Layers

Assessing land supply begins with the identification of all parcels within the County that are fully developed, vacant, partially-used, re-developable, or public, utility & conservation. The **Gross Developable Land Inventory** includes parcels which are vacant, partially used or re-developable and are potential candidates to accommodate future growth. This parcel based inventory is based upon the Assessor's land use codes and data from March 3, 2017, the most current information.

All parcels are categorized. Two map layers (GIS shapefiles) are produced:

- The first layer categorizes all parcels as fully developed, public/conservation, vacant, partially-used, or re-developable. This layer is the **Land Capacity Analysis Land Base**.
- The second layer identifies all parcels categorized as vacant, partially used or re-developable and are assumed to have further development capacity.

The second map layer of potentially developable land is the **Gross Developable Land Inventory**.

B. Prepare an Inventory of Net Developable Land for Residential and Commercial, Industrial and Mixed-use Lands

The net developable land inventory is determined by deducting areas with reduced development potential such as critical areas and their buffers from the Gross Developable Land Inventory.

Gross Developable Land Inventory
- Critical areas, buffers and other undevelopable areas
= Net Developable Land

Deliverables: Two map layers (GIS shapefiles):

- The first layer depicts the net developable residential land.
- The second layer depicts the net developable Commercial, Industrial and Mixed-Use land.

These layers show the land expected to be available to accommodate future growth before other deductions are made. This information is provided by island, UGA's, and land use designations.

C. Calculate Existing Floor Area Ratios, Summarize Development Trends, Assign Assumed Densities and FAR, and Calculate Pending Development Capacity.

This section provides analysis of past development trends in order to provide a basis for estimating future development capacity; to determine if development is occurring consistent with Comprehensive Plan densities; and to calculate pending development. The information gathered in this Step will be used in the capacity calculations. This Step will:

- Analyze recent development history, achieved densities and assign assumed densities;
- Provide data necessary to convert available land into capacity in terms of dwelling and square feet of building on each parcel; and
- Calculate pending development capacity.

D. Calculate and Map Gross Housing and Development Capacity

The Net Developable Land Inventory (in acres) is converted into capacity for housing units for residential land and building square feet for commercial, industrial, and mixed-use land. This work is conducted in GIS and Excel. This results in tables and GIS map layers showing capacity by parcel. The purpose of this exercise is to graphically display capacity at the parcel level.

The capacity calculated in this Step will not be the final capacity because it is not converted to population and does not include deductions for public uses, market factors, and seasonal/recreational home factors.

Deliverables:

- Net Developable Land Inventory maps for residential land – categorized into housing capacity ranges (dwelling units), and
- Net Developable Land Inventory maps for commercial, industrial and mixed use lands – categorized into building capacity ranges (square feet).
- Excel tables of the Preliminary Housing and Development Capacity calculations summarized by island, land use designation, and urban growth areas.

E. Calculate Final Housing and Development Capacity

The summary tables of the preliminary housing and development capacity calculations created in the previous Step are the basis of the **Final Capacity Calculations**. Public use, market and seasonal/recreational home factors are deducted from the preliminary housing and development capacity. After these deductions, the following are calculated:

- **Total Occupied Housing Units by Land Use Designation**
- **Total Population Capacity**
- **Employment Capacity** (square feet of building)

4.0 Land Capacity Analysis (LCA) Methodology

Prepare the Land Capacity Analysis County Land Base and Gross Developable Land Inventory

Assessing land supply begins with the categorizing of all parcels within the County as fully developed, vacant, partially used, and re-developable, or public, utility, and conservation as identified in Table 1. This results in the **Land Capacity Analysis Parcel Base** GIS layer. The subset of this layer consisting of all vacant, partially-used and re-developable parcels is the **Gross Developable Land Inventory**. The Gross Developable Land Inventory is calculated by deducting all parcels categorized as fully developed from the Land Capacity Analysis Parcel Base.

LCA Parcel Base
- Fully developed parcels
- Public, utility and conservation parcels
= Gross Developable Land Inventory

The San Juan County Assessor's county-wide parcel data in shapefile format and the associated attribute data including improvement value and land value from March 3, 2017 (the latest data update) is used.

Parcels with structures existing on March 3, 2017 are considered developed. Structures proposed, built, or occupied after that date are counted in future capacity calculations.

GIS shapefiles for each island, Lopez Village and Eastsound UGA's, the Town of Friday Harbor, and all of the County land use designations are used.

Steps

A.1. Create a GIS layer that consists of all county parcels and includes fields for area, assessor land use code, assessed value of improvements, land use designation, Comprehensive Plan density and Land Capacity Analysis category.

A.2. Consistent with the assumptions in *Table 1. Gross Developable Land Inventory: Thresholds and Assumptions* and using the Assessor's land use codes and Comprehensive Plan land use designations categorize each parcel as:

- Fully developed residential;
- Fully developed industrial, commercial or institutional;
- Fully developed mixed-use;
- Public and conservation lands;
- Vacant and subdividable residential;
- Vacant non-subdividable residential;
- Partially-used residential;
- Vacant industrial or commercial;
- Vacant mixed-use;

- Re-developable industrial or commercial; or
- Re-developable mixed-use.

A.3 All parcels categorized as fully developed or public/conservation lands are deducted from the LCA Land Base. The result of this initial cut is a collection of all the parcels in the County that are vacant, partially-used or re-developable. This is the **Gross Developable Land Inventory**. The Gross Developable Land Inventory is the base from which additional acreage is deducted to account for various physical and regulatory constraints on future development.

Gross Developable Land Inventory = GIS layer of all parcels that are not fully developed.

This map layer depicts categories of the County's parcels and includes fields for land use and density designation, the Assessor' land use codes, improvement value, and land area.

Table 1. LCA Categories: Thresholds and Assumptions

	LCA CATEGORY	DEFINITION	THRESHOLDS /ASSUMPTIONS
A.	**Fully Developed Residential** (No further development potential)	**Land Use Designations** Agricultural Resource (AG) Forest Resource (FOR) Conservancy (C), Rural Residential (RR), Rural Farm Forest (RFF) Village Residential (VR), Hamlet Residential, (HR), Lopez Village Residential (LVR) Eastsound Residential (ER) Eastsound Rural Residential (ERR) Eastsound Rural (ER*) Village Residential/Institutional (VR/I) Olga Hamlet Residential (OHR) Deer Harbor Hamlet Residential (DHHR) Orcas Village Residential (OVR)	Parcels in these land use designations are considered fully developed if the following criteria apply: a. The assessed improvement value is ≥ $10,000; and b. The ratio of allowed density to parcel size is > 0.5; or c. Site developed with multi-family use (Assessor code 1200-1300) in any designation and the building to land value (BV/L ratio) is >1.0
B.	**Fully Developed Industrial, Commercial** (No further development potential)	**Assessor's land use codes** 1400-1488 Accommodations 1600 Hotels/motels 1700 Institutional lodging 2100 Food and kindred products 2200 Textile Mill Products 2400-2403: Lumber/wood products 2500: Furniture/fixtures 2600: Paper and Allied products 2700: Printing and publishing 2800: Chemicals 2900: Petroleum refining / related 3100: Rubber misc. plastic products 3200: Stone, clay and glass 3300: Primary metal industries 3400: Fabricated metal products 3500: Prof. & Scientific Instruments	Parcels in these Assessor's codes are fully developed if the following criteria apply: a. The site is developed with existing industrial, commercial or non-residential use per the Assessor's codes; and b. The ratio of building value to land value (BV/L ratio) is >1.0; or c. Existing development, such as gas stations, quarries or uses preclude significant additional development on the site, regardless of BV/L ratio.

	LCA CATEGORY	DEFINITION	THRESHOLDS /ASSUMPTIONS
		3900: Misc. Manufacturing 4100: Railroad and Transit 4200: Motor vehicle transportation 4300: Aircraft transportation 4400: Marine transportation 4600: Automobile parking 4700 Communications 4900: Other transportation 5000: Non-residential condos 5100: Wholesale trade 5200: Building & hardware & farm 5300-5320: General merchandise 5400-5403: Retail food 5500-5503: Retail-auto, marine, aircraft 5600: Apparel 5700-5708: Retail furniture and home furnishings 5800: Retail- Eating and drinking 5900: Other retail 6100: Finance, insurance & real estate 6200-6220: Personal services 6300: Business services 6400-6402: Repair services 6500-6503: Professional services 6600 Contract construct. services 6900-6902 Miscellaneous services 7100: Cultural activities 7200-7202: Public assembly 7300: Amusements 7400-7420: Recreational activities 7500: Resorts and group camps 7900: Other recreational 8100-8328: Agriculture 8400: Fishing and related services 8500: Mining activities 8600: Marijuana grow operation 8900: Other resource production	

	LCA CATEGORY	DEFINITION	THRESHOLDS /ASSUMPTIONS
C.	**Public, Utility & Conservation** (No further development potential)	**Assessors Land Use Codes:** 7600: Parks 4800-4820: Utilities 6800-6820: Educational services 6700-6793: Governmental services 9240: Open space with conservation easement 9243: Open Space with conservation easement and dock 9520: Current Use Timber land with a conservation easement 4820: Utility with conservation easement 6820: Educational services with conservation easement 7420: Recreational activities with conservation easement 8120: Agriculture with Conservation Easement 4500: Highway right-of-way 7400-7420: Recreational activities 8800-8820: Designated forest land	Parcels are considered fully developed public, utility and conservation lands if the following criteria apply: a. Properties with land uses listed by the Assessor's codes as Public, Utility and Conservation; or b. The parcel is on the GIS layers of public lands and County Parks and Open Space
D.	**Vacant and Sub-dividable Residential**	**Land Use Designations** Agricultural Resource (AG) Forest Resource (FOR) Conservancy (C) Rural Residential (RR) Rural Farm Forest (RFF) Village Residential (VR) Hamlet Residential, (HR) Lopez Village Residential (LVR) Eastsound Residential (ER) Eastsound Rural Residential (ERR) Eastsound Rural (ER*) Village Residential/Institutional (VR/I) Olga Hamlet Residential (OHR) Deer Harbor Hamlet Residential Orcas Village Residential (OVR) *With several densities	Parcels in these land use designations will be considered vacant and sub-dividable if they meet the following criteria: a. The assessed improvement value is < $10,000; and b. The ratio of allowed density to parcel size is ≤ 0.5.

	LCA CATEGORY	DEFINITION	THRESHOLDS /ASSUMPTIONS
E.	**Vacant Non-Subdividable Residential**	**Land Use Designations:** Agricultural Resource (AG) Forest Resource (FOR) Conservancy (C) Rural Residential (RR), Rural Farm Forest (RFF) Village Residential (VR) Hamlet Residential, (HR) Lopez Village Residential (LVR) Eastsound Residential (ER) Eastsound Rural Residential (ERR) Eastsound Rural (ER*) Village Res./Institutional (VR/I) Olga Hamlet Residential (OHR), Deer Harbor Hamlet Residential (DHHR) Orcas Village Residential (OVR) *With several densities	Parcels in these land use designations will be considered vacant but not sub-dividable if they meet the following criteria: a. The assessed improvement value is < $10,000; and b. The ratio of allowed density to parcel size is > 0.5.
F.	**Partially-Used Residential**	**Land Use Designations** Agricultural Resource (AG) Forest Resource (FOR) Conservancy (C) Rural Residential (RR) Rural Farm Forest (RFF) Village Residential (VR) Hamlet Residential, (HR) Lopez Village Residential (LVR) Eastsound Residential (ER) Eastsound Rural Residential (ERR) Eastsound Rural(ER*) Village Residential/Institutional (VR/I) Olga Hamlet Residential (OHR) Deer Harbor Hamlet Residential (DHHR) Orcas Village Residential (OVR) *With several densities	Parcels in these land use designations are considered partially-used if they meet the following criteria: a. The assessed improvement value ≥ $10,000; and b. The ratio of allowed density to parcel size is ≤ 0.5.

	LCA CATEGORY	DEFINITION	THRESHOLDS /ASSUMPTIONS
G.	**Vacant Industrial and Commercial**	**Land Use Designations:** Rural Industrial (RI) Island Center(IC) Rural Commercial (RC) Orcas Village Transportation (OVT) Orcas Village Commercial (OVC) Rural General Use (RGU), Village Commercial (VC) Village Industrial (VI) Hamlet Commercial (Hamlet Industrial) Service Light Industrial (SLI) Service Park (SP) Country Corner Commercial (CCC) Eastsound Marina (EM) Eastsound Airport (EA) Olga Hamlet Commercial (OHC), Olga Hamlet Community Cntr. (OHCC) Deer Harbor Commercial (DHC) Deer Harbor Industrial (DHI)	Parcels in these land use designations are considered vacant if the: Assessed improvement value is < $10,000.
H.	**Vacant Mixed-Use**	Eastsound Village Commercial (EVC) Lopez Village Commercial (LVC)	Parcels in these land use designations are considered vacant if the assessed improvement value is < $10,000.
I.	**Re-Developable Industrial and Commercial** An assumption is that existing use may be demolished and new project developed over the planning period.	**Industrial, Commercial, Institutional** Rural Industrial (RI) Island Center(IC) Rural Commercial (RC) Orcas Village Transportation (OVT) Orcas Village Commercial (OVC) Rural General Use (RGU) Village Commercial (VC) Village Industrial (VI) Hamlet Commercial (Hamlet Industrial) Lopez Village Institutional (LVI) Service Light Industrial (SLI) Service Park (SP) Country Corner Commercial (CCC) Eastsound Marina (EM) Eastsound Airport (EA) Olga Hamlet Commercial (OHC) Olga Hamlet Community Center (OHCC) Deer Harbor Commercial (DHC) Deer Harbor Industrial (DHI)	Parcels in these land use designations are considered re-developable if they meet the following criteria: a. The ratio of building value to land value is ≤ 1.0; or b. They are occupied by a single family residence (Assessor's codes 1100-1199).
J.	**Re-Developable Mixed-Use**	Eastsound Village Commercial (EVC) Lopez Village Commercial (LVC)	Parcels in these land use designations are considered re-developable if one of the following conditions are met: a. The ratio of building value to land value is ≤1. or b. The parcel is occupied by a single family residence. (Assessor's codes 1100-1199).

B. Prepare an Inventory of Net Developable Land

The **Net Developable Land Inventories** are obtained by deducting critical areas, buffers, and other areas with reduced development potential from the **Gross Developable Land Inventory**.

Gross Developable Land Inventory
- Critical Areas and areas with reduced development potential (Residential)
= **Residential Net Developable Land Inventory**

Gross Developable Land Inventory
- Critical areas, buffers and areas w/reduced development potential (Commercial, Industrial)
= **Commercial, Industrial and Mixed-Use Land Inventory**

There are two layers because different deductions from the **Gross Developable Land Inventory** will be taken to create each layer based on the following assumptions:

Critical area buffers will not affect future capacity on residential parcels and are not deducted because the San Juan County development regulations allow for reasonable use exceptions and flexible development of residential properties with critical areas on them.

Critical area buffers are not be developable on commercial, industrial and mixed-use parcels because development regulations for these uses are more restrictive. These uses are also more intensive than residential uses.

Steps

B.1. Create the **Critical Area Deduction** GIS layer (shapefile) consisting of all critical area deductions described as follows:

Critical Area Deductions

Wetlands: The County's possible wetland inventory.

Streams: The County's base stream dataset with stream centerlines and an assumed 35 feet of non-buildable area on either side of the centerline, corresponding with Tree Protection Zone 1 (TPZ 1) per SJCC Table 18.35.130-2.

Steep Slopes: Areas with slopes greater than 50 percent which are considered Category 1 geo-hazards. Development in these areas is limited per SJCC 18.35.065.

Flood Plain: Land located within 100-year floodplains as shown on the Federal Emergency Management Agency (FEMA), April 2017, Flood Insurance Rate Maps (FIRMS.

Other Undevelopable Areas: Mitigation and old dump sites that are not available or suited for development.

B.2. Create the **Total Net Developable Land Inventory** by deducting critical areas from the GDLI. In GIS, overlay the Critical Area Deduction layer on the Gross Developable Land Inventory and clip the Gross Developable Land Inventory. The result will be the Gross Developable Land Inventory with critical areas removed. This layer is the **Total Net Developable Land Inventory.**

B.3. Create the **Residential Net Developable Land Inventory** by selecting residential vacant, partially used and re-developable parcels from the Total Net Developable Land Inventory. The layer resulting from this selection is the **Residential Net Developable Land Inventory**.

B.4. Create the **Critical Area Buffer Deduction** GIS layer (shapefile). Create a GIS layer of critical area buffers as follows:

a. A 150 foot wetland buffer because most of the County's wetlands are Class III or Class IV and industrial and commercial uses are designated high intensity uses (SJCC 18.35.095 and Tables 18.35.100-2 and 18.35.100-2), and

b. The following Tree Protection Zone buffers on parcels with a shoreline FWHCA (SJCC Tables 18.35.100-2 18.35.130-2):

   i. 110 feet from the centerline for Type F (Type 2 or 3) streams and ponds designated as FWHCAs (assuming an 8 foot wide stream);
   ii. 110 feet from the Ordinary High Water Mark (OHWM) for marine shorelines containing FWHCAs and ponds, excluding parcels subject to the Eastsound Waterfront Access Plan or parcels within approved master planned resorts;
   iii. 50 feet from the bank full width for Type Np (Type 4) streams;
   iv. 30 feet from the bank full width for Type Ns (Type 5) streams; and
   v. 30 feet from the bank full width for un-typed streams.

B.5. Create the **Commercial, Industrial and Mixed-Use Net Developable Land Inventory** as follows:

a. Select vacant, partially used and Re-developable Commercial, Industrial and Mixed-Use parcels from the Total Net Developable Land Inventory created in B.2.

b. Overlay the Critical Area Buffer Deduction layer over this selection and clip to remove the critical area buffers. The resulting layer will be the **Commercial, Industrial and Mixed Use Net Developable Land Inventory.**

C. Calculate Existing Floor Area Ratios, Summarize Development Trends, Assign Assumed Densities and Floor Area Ratio and Calculate Pending Development Capacity

This section provides analysis of past development trends in order to provide a basis for estimating future development capacity; to determine if development is occurring consistent with Comprehensive Plan densities; and to calculate pending development.

To calculate future capacity on vacant, partially-used and re-developable parcels, the Land Capacity Analysis must use assumptions about how much development is expected on each parcel in the future. Analysis of existing built conditions, achieved densities, and development trends provides the data necessary to forecast future development.

This analysis will also account for pending development which is a more accurate predictor of future densities. Later, achieved densities and building intensities will be used to calculate the future capacity of available land.

- Analyze recent development history and achieved densities and assign assumed densities,
- Convert information into dwelling units per acre and building intensity Floor Area Ratio, and
- Calculate pending development capacity

C.1 Calculate Existing Building Floor Area Ratios by Land Use Designation

One method to calculate future capacity on Commercial, Industrial and Mixed Use parcels is to assume future Floor Area Ratios will be similar to Floor Area Ratio as past development. This information will be used in Step C.3 to determine future assumed Floor Area Ratio.

For commercial, industrial and mixed-use parcels, Floor Area Ratio is good measure of how much building capacity exists on a parcel. Floor Area Ratio is a good measure because it accounts for parking, sewage disposal and other site improvements that affect capacity but vary widely by use and from site to site. The capacity of a commercial, industrial or mixed-use parcel is the assumed future Floor Area Ratio multiplied by the area of the parcel.

The following are the Steps to calculate the average existing Floor Area Ratio by land use designation:

a. Select all parcels from the Land Capacity Analysis Land Base layer that are fully developed and are Commercial, Industrial or Mixed-use land as defined by Table 1. Add a field for Floor Area Ratio for each parcel.

b. Using Assessor building improvement information for the parcels selected in Step A, calculate the ratio of total building square feet to lot area for each parcel. This results in a floor area ratio for each parcel.

FAR = Total building area (square feet)
Parcel area (square feet)

c. Average the floor area ratio for each land use designation and export to an Excel table.

C.2 Summarize Recent Development Trends

The results of Step C.1 above will provide an average Floor Area Ratio for all Commercial, Industrial and Mixed-Use parcels as of March 3, 2017. This average will include buildings constructed under many different land use and building regulations, and therefore may not be accurate for forecasting into the future if regulations have changed and significantly altered the amount of development that is allowed. In order to check the reliability of the averages developed in C.1, the Land Capacity Analysis must also evaluate development that occurred within the recent past to see if there are other development trends to consider.

Ten years of County development history (April 1, 2005 – April 1, 2015) is evaluated to determine the actual densities achieved in all land use designations and Urban Growth Areas (UGA's). Department of Community Development staff performs this analysis using permit files.

Table 2. Basic Achieved Density Calculations by Development Type

Development Type	Achieved Density Calculation
Single Family Residential Plats	Number of Lots / Plat Area
Multi-family Building Permits and Plats	Number of Units / Site Area
Mixed-Use Building Permits Residential Portion	Number of Units / Residential Portion of Site
Mixed-Use Building Permits Commercial Portion	Commercial Floor Area / Commercial Portion of Site
Commercial and Industrial Building Permits	Total Floor Area (main building)/ Site Area

Create an Excel table and compile data from permit files as follows:

Table 3. Achieved Density by Land use Designation

A. Parcel	B. Land Use Designation	C. Permit #	D. Plat area or lot site area (SF)	E. Pending lots (Number of lots approved)	F. Pending housing units (Number approved)	G. Pending building square feet (SF approved)	H. Achieved FAR	I. Achieved Density (DU/acre)
							= G/D	= F/ (D/43,560)

Source: DCD permit data April 1, 2005- 2015

C.3 Assign Assumed Density and Floor Area Ratios (FAR)

Each land use designation will be assigned an assumed density for the purposes of calculating capacity. For residential capacity, the Comprehensive Plan land use designations and densities are the future assumed densities. For commercial and industrial building intensity, existing average Floor Area Ratio by land use designation will be used. For mixed-use intensity, an assumed density and Floor Area Ratio will be used based on achieved densities.

Different assumptions may be used if there is a clear and compelling rationale for deviating from these designations. The following factors would be considered in deviating from the assumed densities: recent achieved densities; land use goals and policies; local circumstances such as development plans and pending development; and any other local market or policy conditions that are likely to impact future development densities.

C.4. Calculate Pending Development Capacity

This Step accounts for pending development which is a more accurate predictor of future density than assumed densities. It involves compiling parcels with approved multi-family permits, commercial and industrial binding site plans, and preliminary and final plats that were not constructed by March 3, 2017 (last date of Assessor's update). This includes Master Planned Projects that are not completely built out but that have received preliminary approval for a number of dwelling units or commercial and industrial square footage. These developments will be considered pending capacity and will be added to the final land capacity for each parcel during the final capacity calculations.

For this analysis, the development records for all multi-family, commercial, industrial, binding site plans, and preliminary and final plats approved since January 1, 2010 that were not finalized prior to March 3, 2017 are compiled including:

- Residential preliminary and final approved plats and short plats;
- Multi-family building permits;
- Assessor's county-wide parcel data in shapefile format; and
- Commercial and industrial building permit activity and binding site plans.

Create an Excel table and compile data as follows:

Table 4. Pending Development Capacity.

A. Parcel	B. Land Use Designation	C. Permit #	D. Plat area or lot site area (SF)	E. Pending lots (Number of lots approved)	F. Pending housing units (Number approved)	G. Pending building square feet (SF approved)	H. Achieved FAR	I. Achieved Density (DU/acre)
							= G/D	= F/(D/43,560)

Source: DCD permit data April 1, 2005-2015 and GIS shapefiles

Deliverables:

Excel tables that summarize the following by land use designation and island:

- Achieved densities;
- Achieved floor area ratios;
- Existing floor area ratios;
- Recommended assumed densities to be used in Step D; and
- Pending development capacity to be used in Step D.

D. Calculate and Map Gross Housing and Development Capacity

The purpose of this Step is to graphically display capacity at the parcel level. This work is conducted in GIS and produces maps showing capacity by parcel.

The Net Developable Land Inventory (in acres) is converted into capacity for housing units on residential land and building square feet on commercial, industrial and mixed-use land.

The capacity calculated in this Step will not be the final capacity because it will not be converted to population and will not include deductions for public uses, market factors, and seasonal/recreational home factors. Those deductions will be taken to obtain final capacity in Step E.

The following conversion factors as modified by Step C.3 are used in this Step:

a. Density allowed by Comprehensive Plan land use designation for residential, and

b. Average existing floor area ratio for fully developed commercial and industrial by land use designations.

Determine Gross Housing Unit Capacity

Gross Housing Unit Capacity is derived from the Residential Net Developable Land Inventory developed in Step B.3. The output will be total dwelling units of capacity available on each parcel**.** These calculations use:

- The Residential Net Developable Land Inventory;
- Assumed densities for residential land use designations; and
- Pending development capacity**.**

D.1 Using GIS, multiply the net developable acres of residential developable land on each parcel by the assumed density (DUs/acre) for each land use designation. The output will be the Total Dwelling Unit Capacity available on each parcel before accounting for existing development on partially-used and re-developable parcels.

D.2 Subtract existing dwelling units on partially-used and re-developable parcels by land use from the capacity calculated in the previous Step so that existing units are not counted as part of partially-used or parcel capacity

D.3 Earlier in the process, parcels with pending developments were set aside. These parcels included preliminary or final plats, permits, and binding site plans for developments that have received preliminary approval but have not been constructed by March 3, 2017. Master Planned Projects that have not been completely built out but have received approval for a certain number of dwelling units are also included. The estimated capacity in these developments is more accurate than calculated theoretical capacity. Add these pending housing units to the parcels on which they occur.

D.4 Using GIS and the Residential Net Developable Land Inventory, calculate capacity for each parcel using the following fields and export to Excel table:

Table 5. Gross Housing Capacity by Land Use Designations.

A. **Parcel Number**	**B.** **Area**	**C.** **Land Use Designation**	**D.** **LCA Category** (Vacant, Re-developable, Partially used etc…)	**E.** **Comprehensive Plan Density (assumed density)**	**F.** **Existing Housing Units**	**G.** **Pending Housing Units**	**H.** **Housing Capacity (Housing Units)**
							= (B*E) - F **OR** **= G-F (if pending >0)**

Determine Commercial and Industrial **Land Capacity**

Capacity to accommodate future commercial or industrial growth is derived from the net developable area in commercial and industrial land use designations. This work requires the following data:

- The Commercial and Industrial Net Developable Land Inventory created in Step B.5;
- Assumed Floor Area Ratio values for commercial and industrial designations created in Step C.3;
- Assessor's data for re-developable parcels; and
- Pending commercial and industrial development from Step C.4.

D.5 Multiply net acres of commercial and industrial land in each land use designation by the assumed Floor Area Ratio for each land use designation. The output will be the **Total Square Footage Capacity** available in each land use designation before accounting for existing development on re-developable parcels.

D.6 Summarize total existing commercial and industrial building square footage on parcels by land use designation. Subtract this square footage from the totals from the previous Step so that existing buildings are not counted as part of re-developable parcel capacity.

D.7 Earlier in the process, parcels with pending developments were set aside. These parcels included commercial and industrial permits or binding site plans for developments that have received preliminary approval but had not been constructed by March 3, 2017. Master Planned Projects that have not been completely built out but have received

approval for a certain amount of commercial/industrial square footage are also included. The estimated capacity in these developments is more accurate than calculated theoretical capacity. Replace theoretical capacity on each parcel with actual capacity from Step C.4. The output will be total commercial and industrial square footage capacity available in each land use designation.

Deliverables:

- Map layers (GIS Shapefiles) of the Net Developable Land Inventory parcel map of commercial, industrial, and mixed-use lands including the following fields in the attribute table:

Table 6. Gross Commercial and Industrial Land Capacity.

A. Parcel Number	B. Area	C. Comp Plan Land Use Designation	D. LCA Category (Vacant, re-developable etc.)	E. Assumed Floor Area Ratio	F. Existing Total Floor Area	G. Pending Floor Area	H. Building Capacity (Square Feet)
							= (B*E) - F OR G+F (If pending>0)

- Net Developable Land Inventory parcel map of mixed use lands including the following fields in the attribute table:

Table 7. Gross Mixed-Use Capacity.

A. Parcel No.	B. Area	C. Land use designation	D. Category (Vacant, redevelop-able etc.)	E. Assumed Floor Area Ratio	F. Comprehen sive Plan Density or Achieved Densities	G. Existing total floor area	H. Existing Housing Units	I. Pending Floor Area	J. Pending housing units	K. Building capacity (Square Feet)	L. Housing Capacity (Housing Units)
										= (B*E) - G OR G+I (if pending>0)	= (B*F) –H OR J-H (if pending >0)

<u>Excel Tables for County-Wide Capacity and Capacity for Each Island Depicting</u>:

1. Totals of residential acreage and capacity (housing units) by land use designation;

2. Totals of residential acreage and capacity by category (vacant, partially used etc.) and by land use designation;

3. Totals of commercial and industrial acreage and capacity (building square feet) by land use designation;

4. Totals of commercial and industrial acreage and capacity by category (vacant, partially used etc.) and by land use designation;

5. Totals of mixed-use acreage and capacity (building square feet) by land use designation and category (vacant, partially used etc.); and

6. Totals of mixed-use acreage and capacity (housing units) by land use designation and category (vacant, partially used etc.).

Maps

1. Residential Net Developable Land Inventory with parcels categorized in housing capacity ranges;

2. Commercial and Industrial Net Developable Land Inventory parcel maps with parcels categorized in building capacity ranges;

3. Mixed Use Net Developable Land Inventory maps of mixed use lands with parcels categorized in building capacity ranges;

4. Mixed Use Net Developable Land Inventory maps with parcels categorized in housing capacity ranges.

E. Calculate Final Capacity

Conduct the **Final Capacity** calculations using the Excel tables created in Step D, **Gross Capacity**. Add a new column to the tables to include the Final Capacity numbers. The Final Capacity column reflects the gross capacity from Step D minus the capacity deductions described below:

Deduct Capacity to Account for Public Use, Market, Seasonal/Recreational Home Factors

Public Use Factor

The Public Use Factor is a deduction to account for the lands that may be used for public purposes, such as road right-of-ways, utility corridors, public pathways and other lands set aside for public uses. A public use factor of five percent (5%) will be deducted.

Market Factor

The market factor is a deduction to account for lands that will not be available for development during the planning period. It is expected that over the 20-year planning period some lands will be kept off the market due to speculative holding, land banking, and personal use. A market factor of twenty-five percent (25%) of the Developed Land Inventory will be deducted to account for the land that is not available for development during the planning period.

Seasonal/Recreational Home Factor

The 2010 US Census indicated that 35 percent (35%) of the houses in the County were categorized as seasonal/recreational, or occasional use properties. Recent comparisons of the

population increases and finalized residential building permits indicate that between 2010 and 2016 approximately one and one half (1.5) housing units were built for each new resident. An additional deduction of twenty-five percent (25%) of the gross housing capacity will be deducted to account for the recreational home market.

E.1 To each Excel tables developed in Section F, add columns for "Public Use Deduction", "Market Factor", "Seasonal/Recreational Home Factors", "Capacity Deduction", "Occupied Housing Units", "Total Population Capacity" and "Final Building Capacity".

E.2 Add the following factors to the tables in Step D as applicable:

- A 5 percent (5%) public use factor for all designations;
- For vacant residential designations: a 25 percent (25%) market factor, plus an additional 25 (25%) percent seasonal, recreational or occasional use home factor;
- For partially-used residential parcels: a 25 percent (25%) market factor and an additional 25 (25%) percent seasonal, recreational or occasional use home factor;
- For vacant commercial or industrial land use designations: a 25 percent (25%) market factor; and
- For a re-developable commercial or industrial parcels: a 25 percent (25%) market factor.

E.3 A market factor will be applied to Master Planned Resorts as a proportionate share based on the ratio of developed to undeveloped areas within the Master Planned Resort. See Section C.

E.4 In the "Capacity Deduction" column calculate the total amount of capacity to be subtracted based on Steps G.2 and G.3.

E.5 Calculate the Total Occupied Housing Units by Land Use Designation. To convert dwelling units into occupied housing units use the following data on occupancy rates and average household sizes:

- Apply occupancy rate assumptions for the County by using best available data from Washington Office of Financial Management (OFM) and/or the US Census. Seasonal housing is considered vacant according to Census definitions. These housing units are not included in the occupied housing unit category and are not folded into Census calculations of average household size.
- Multiply the total housing units of capacity in each land use designation by the occupancy rate assumption. The output will be total occupied dwelling units in each land use designation. Add this result in a column to the table modified as part of Step 1 called "Occupied Housing Units".

E.6 Calculate the **Total Population Capacity**. In the "Total Population Capacity" Column, subtract "Capacity Reduction" from the "Housing Capacity" column and multiply the result by the average household size for the County which is 2.04 to calculate "Total Population Capacity".

E.7. Calculate **Employment Capacity**. In the "Total Building Capacity" column, subtract "Capacity Reduction" from the "Building Capacity" column to calculate "Total Building Capacity."

Deliverables:

Excel Tables for County-Wide Final Capacity and Final Capacity for Each Island Depicting:

1. Totals of residential acreage and final capacity (housing units and population) by land use designation;

2. Totals of residential acreage and final capacity by category (vacant, partially used etc.) and by land use designation;

3. Totals of commercial and industrial acreage and final capacity (building square feet) by land use designation;

4. Totals of commercial and industrial acreage and final capacity by category (vacant, partially used etc.) and by land use designation;

5. Totals of mixed-use acreage and final capacity (building square feet) by land use designation and category (vacant, partially used etc.); and

6. Totals of mixed-use acreage and final capacity (housing units) by land use designation and category (vacant, partially used etc.).