CHAPTER FOUR:
FACILITY REQUIREMENTS

NEWPORT MUNICIPAL AIRPORT

AIRPORT MASTER PLAN UPDATE

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WHPacific

Introduction

As discussed in Chapter 2, airfield facilities are those that are related to the arrival, departure, and ground movement of aircraft. In this chapter existing airport facilities at the Newport Municipal Airport (Airport) are evaluated to identify their functionality, condition, compliance with design standards, and capacity to accommodate demand projected in Chapter Three, *Aeronautical Activity Forecasts*. The analysis objective is to identify facilities needed to meet existing and future aviation demand as well as evaluate the adequacy of existing facilities in meeting those needs. Where differences between existing and needed facilities are noted, the *Facility Requirements* review identifies when those additional facilities may be needed. Once those needs have been established, alternatives for providing future facilities will be developed with input from the Planning Advisory Committee (PAC), Oregon Department of Aviation (ODA), and Federal Aviation Administration (FAA). The *Alternatives Analysis* will be documented in Chapter Five of this plan.

Facility needs demonstrated in this chapter will not be limited to facilities and services possibly funded or provided by the City, State, or FAA. The planning process will also anticipate facilities and services that could be provided by private entities. Actual facilities development will be demand-driven as projected use may accelerate beyond or lag behind forecasts at various times during the 20-year planning term. All requirements identified in this chapter will comply with existing FAA standards and recommendations. Any existing deviations from current design requirements will be documented and analyzed.

Mirroring the flow of the *Inventory* chapter, the following analysis focuses on four main categories of airport requirements: Airfield, Landside, Support Facilities, and Land Use Planning and Zoning. Within each of those categories are subsections that address specific items pertinent to the Airport. To begin with, industry-standard airport planning and development criteria are presented that will be applied to the analysis of existing airport facilities.

Airport Planning and Development Criteria

Development and use of industry standard planning criteria ensures that recommended improvements and proposed developments align with a comprehensive view of air safety. The goals and objectives of the national, state, regional, and local air transportation systems, in addition to appropriate aviation industry segments and the airport sponsor's vision, combine to guide the development of relevant measures. Sources for airport planning criteria include:

- FAA – Design guidelines found in Advisory Circular (AC) 150/5300-13A, *Airport Design*, provide the planning criteria with respect to current and future critical or design aircraft for the runways, taxiways, and apron areas. Nearly all applicable criteria shown in this analysis are established by the FAA with additional general input from the sources cited below.
- Oregon Aviation Plan (OAP) – The OAP provides a distribution of airports by classification. Developed by the Oregon Department of Aviation (ODA), the report also provides a set of performance objectives based on these classifications. Included in the OAP is a list of

recommendations and direction on how to meet the state's long-term commercial and general aviation (GA) needs.

- Transportation Security Administration (TSA) – Guidelines provided by the TSA are tailored to an airport's size and risk level. Although TSA does not regulate GA airports, such as the Newport Municipal Airport, it does provide guidance for security at GA airports.
- Business Aviation Industry – The National Business Aviation Association (NBAA) represents the industry and provides recommendations for airport facilities and services to accommodate business aviation needs.
- Community members, Airport Users, Planning Advisory Committee (PAC) – Stakeholders, via surveys and meeting participation, provide input specific to the Airport. The local airport community is an important source since its operational issues, community relationships, and future vision for the airport help shape the list of future facility needs. Users of the Airport are the most accurate source to understand safety and operations concerns that affect the flying public. This specifically includes the report from the City of Newport Regional Airport Review Task Force which provided recommendations for various airport issues, some of which can be addressed in this master plan.

Federal Airport Design Criteria

The FAA specifies design standards by Airport Reference Code (ARC), Runway Design Code (RDC), and instrument approach visibility minimums. As discussed in the previous chapter, the ARC is a coding system used to relate airport design criteria to the operational (Aircraft Approach Category – AAC) and the physical characteristics (Airplane Design Group – ADG) of the airplanes intended to operate at an airport. Individual runways are designated by RDC, using the same coding system described for the ARC, to allow for greater planning flexibility for airports with more than one runway. The ARC is the most demanding RDC at a given airport.

In Chapter 3 it was determined the RDC for Runway 16-34 is currently B-II, which represents an aircraft grouping similar to the Cessna Citation. It is forecasted that the Runway 16-34 RDC will change to C-I during the 20-year planning period covered in this master plan. An RDC of C-I represents a grouping of aircraft similar to the Gates Learjet 35. Since each RDC has its own ARC, the analysis in this chapter will consider both ARC designations and their impacts to the Airport's facility needs.

In addition to the Airport Reference Code and Runway Design Code, airport design criteria factors in the type of all-weather landing aids that are in place or planned to be in place for each runway. In general terms, the shorter the distance pilots need to see ahead while approaching the airport, the higher are the standards for object separation and obstacle clearance. The separation and obstacle clearance values are reported as "visibility minimums" in fractions of miles or as "Runway Visual Range (RVR)" in hundreds of feet. For determining airport design criteria, instrument approach visibility minimums are divided into three categories:

- Visual and not lower than one-mile
- Not lower than ¾-mile
- Lower than ¾-mile

Newport Municipal Airport currently has one precision instrument approach to Runway 16, and a nonprecision approach to all other runways. The Runway 16 instrument landing system (ILS) has visibility minimums that are lower than one mile but not lower than ¾ mile.

Airfield Requirements

Each airfield facility was reviewed applying the criteria identified in the previously. Analyses were conducted to identify requirements for the airfield facilities listed below and detailed in subsequent sections.

- Airfield Capacity
- Airfield Design Standards
    - Runway Orientation, Length, Width, and Pavement Strength
    - Taxiways
    - Airport Visual Aids
    - Airport Lighting
    - Radio Navigational Aids & Instrument Approach Procedures
    - Other Airfield Recommendations

Airfield Capacity

An airfield capacity analysis measures the extents of the airfield configuration by determining its Annual Service Volume (ASV). This measure is an estimate of an Airport's maximum annual capacity based on factors such as aircraft mix and weather conditions, among others. FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*, provides guidance on determining an airport's ASV. The annual capacity of two intersecting runways, such as at the Airport, is approximately 215,000 operations (takeoffs, landings, and training operations). The forecast projects annual operations of 31,350 by 2035, which is well below the maximum capacity of the existing airfield system.

In addition to ASV, *Airport Capacity and Delay* also provides guidance on determining peak hour capacity. For the Airport, the peak hourly capacity during visual flight rules (VFR) conditions is 77 operations, which is well above the anticipated peak hour activity of 23 by 2035. Therefore, the Airport is expected to have sufficient hourly capacity throughout the 20-year planning period. **Based on this analysis, projects that are specifically intended to increase airfield capacity are not needed.**

Airfield Design Standards

FAA AC 150/5300-13A (Change 1), *Airport Design,* sets forth the FAA's recommended standards for airport design, which are primarily safety-driven. Design standards are based on an Airport's design aircraft and specific to that airport. As discussed above, the current design aircraft for Runway 16-34 fits within the Aircraft Approach Category and Airplane Design Group of classification B-II. The future design aircraft will fall into the design category of Airport Reference Code C-I.

For Runway 16-34, the RDC would have a Runway Visual Range of 4,000 feet to reflect the Instrument Landing System approach with visibility minimums greater than ¾ statute mile. The crosswind Runway 2-20 currently has an instrument approach with visibility minimums greater than 1 statute mile, which, for the purposes of this analysis, is classified with the same requirements as a runway without instrument landing aids. **Table 4A** provides a summary of the classifications used to identify the standards that apply to an airport.

Table 4A. Runway Design Code Classifications

Aircraft Approach Category (AAC)		
AAC	**Approach Speed (knots)**	
A	less than 91	
B	91 to 120	
C	121 to 140	
D	140 to 165	
E	greater than 166	
Airplane Design Group (ADG)		
ADG	**Tail Height (ft)**	**Wingspan (ft)**
I	<20	<49
II	20 - <30	49 - <79
III	30 - <45	79 - <118
IV	45 - <60	118 - <171
V	60 - <66	171 - <214
VI	66 - <80	214 - <262
Approach Visibility Minimums		
RVR (ft)	**Flight Visibility Category (statute mile)**	
4000	lower than 1 mile but not lower than ¾ mile	
2400	lower than ¾ mile but not lower than ½ mile	
1600	lower than ½ mile but not lower than ¼ mile	
1200	lower than ¼ mile	

Source: FAA AC 150/5300-13A (Change 1)

The following airport design elements are associated with all airfields subject to FAA criteria like Newport Municipal Airport. **Exhibit 4A** gives a visual representation of several design elements described below. The size or separation from objects required for each design element varies according to the Runway Design Code. **Exhibit 4B** depicts the Part 77 imaginary surfaces defined here. **Table 4B** compares these requirements for a B-II and A C-I classifications.

Runway Safety Area (RSA): The RSA is a defined surface surrounding the runway that is specifically prepared and suitable for reducing the risk of damage to airplanes in the event of an airplane undershoot, overshoot, or an excursion from the runway. Exhibit 4A shows the RSA at the Airport.

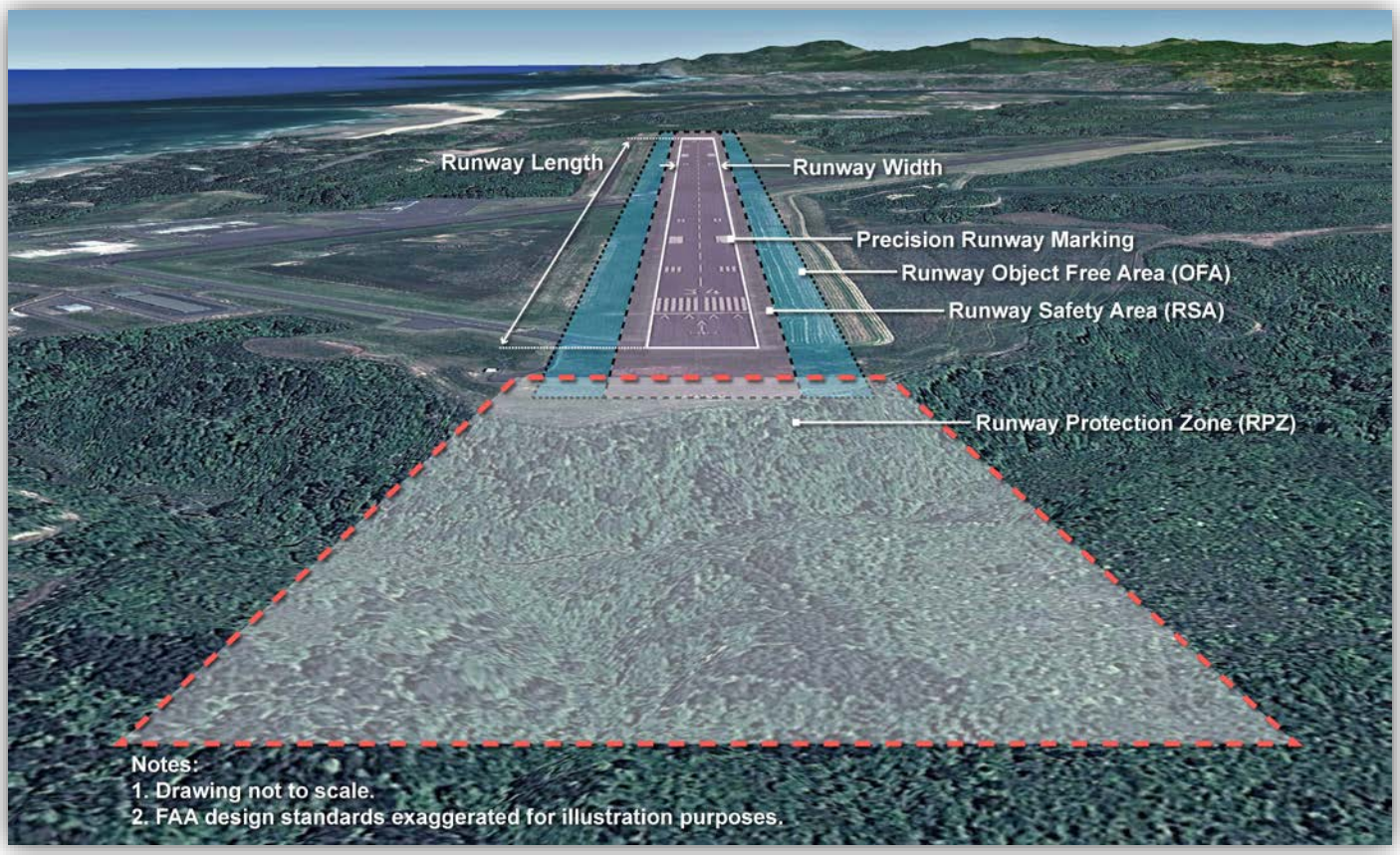
Object Free Area (OFA): The OFA is an area on the ground centered on the runway or taxiway centerline that is provided to enhance the safety of aircraft operations by ensuring a clear space around design aircraft wing span. No above ground objects are allowed except for those needed for

air navigation or aircraft ground maneuvering purposes (all such equipment is constructed on frangible bases for safety purposes). Exhibit 4A shows the OFA at the Airport.

Obstacle Free Zone (OFZ): The OFZ is a volume of airspace below 150 feet of the established airport elevation that is required to be clear of objects, except for frangible items required for the navigation of aircraft. It is centered along the runway and extended runway centerline and protects the transition of aircraft to and from the runway.

Runway Protection Zone (RPZ): The RPZ is an area off each runway end whose purpose is to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The dimensions of an RPZ are a function of the Runway Design Code. The FAA recommends that RPZs be clear of all residences and places of public assembly (churches, schools, hospitals, etc.), roads, and that airports own the land within the RPZs. Exhibit 4A shows the RPZ at the Airport.

Exhibit 4A. Selected Airfield Design Standards



Source: WHPacific, Inc.

Surface Gradient. The maximum allowable longitudinal grade on existing runways varies, depending on its AAC. For Aircraft Approach Category "B" runways the maximum grade is 2.0%, whereas for AAC "C" runways the maximum grade is 1.5% with the first and last quarter of the runway length being no more than 0.8%.

Building Restriction Lines (BRL). A BRL is a line marking the area on the airport where buildings of a certain height are restricted from being built to ensure that aircraft using runways and taxiways can operate safely and without restriction. The BRL should be set beyond the RPZs, OFZs, OFAs, runway visibility zone, and NAVAID critical areas because buildings are not allowed these areas. The location of the BRL is dependent upon the allowable structure height. A building height of 35 feet will be used in this master plan update.

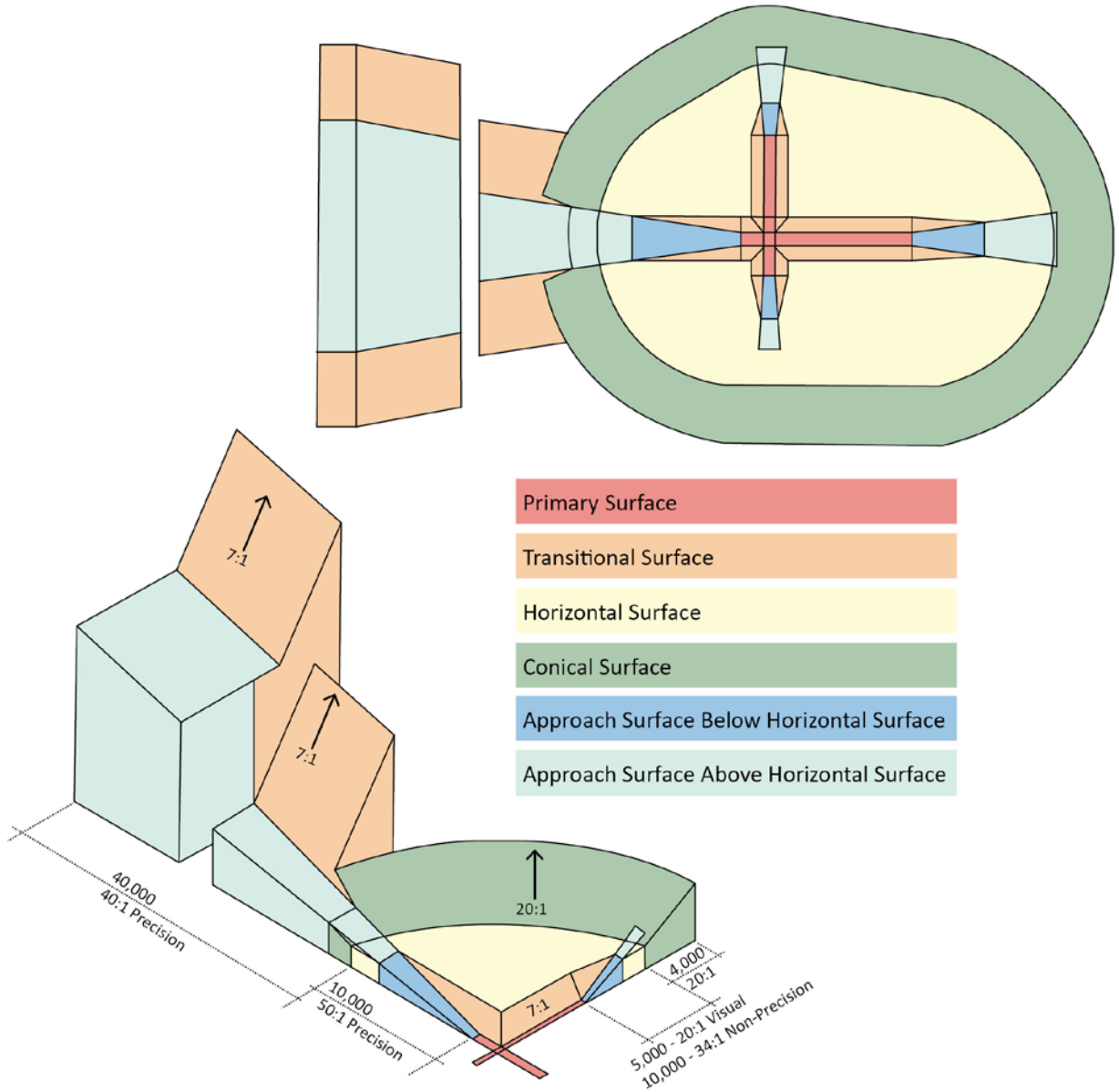
Runway Visibility Zone. The runway visibility zone is a trapezoid shaped area which is centered on the crossing point of intersecting runways and extends down each of the runways a specified distance. The purpose of the runway visibility zone is to remove any terrain, vegetation, or structures to ensure clear visibility between crossing runways in order to avoid a collision. Pilots can see aircraft that might be landing or taking off on the adjacent runway.

Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace. While not an FAA design standard, Title 14, Code of Federal Regulation (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77)*, defines and established the standard for determining obstructions that affect airspace in the vicinity of an airport. Part 77 is published separately and is primarily concerned with the identification of objects on and near airports that could be hazards to air navigation. Airports and/or their sponsors are responsible for identifying Part 77 imaginary surfaces and protecting them through land ownership or other means of land use controls (such as zoning, easements, etc.).

Prior to any construction on the airport and in the area immediately around an airport, the responsible party must file a Form 7460 with the FAA, which describes the project and its proximity to the airport. The FAA will then conduct an airspace evaluation to determine the possible impact on airspace for the airport. The FAA will evaluate the impact of the construction on a set of imaginary surfaces called the Part 77 Surfaces. However, there is no specific authorization in any statute that permits the FAA to limit structure heights or determine which structures should be lighted or marked that control _ with the local building department. The FAA, through grant assurances, requires the local government to exercise this authority.

The imaginary surfaces are geometric shapes that surround the runways of an airport and vary in size and slope depending on the category of the runway. The five imaginary surfaces are the Primary, Approach, Horizontal, Conical, and Transitional. Any object that penetrates these surfaces is considered an obstruction and may affect navigable airspace. Unless these obstructions undergo additional aeronautical study to conclude they are not a hazard, obstructions are presumed to be a hazard. Hazards to air navigation may include terrain, trees, permanent or temporary construction equipment, or permanent or temporary manmade structures. **Exhibit 4B** highlights these fives surfaces, with text following for a more detailed definition.

Exhibit 4B. FAR Part 77 Imaginary Surfaces



Source: WHPacific, Inc.

Primary Surface. The primary surface is longitudinally centered on a runway that extends 200 feet beyond each end of the runway. The width of a primary surface ranges depending on the existing or planned approach and runway type.

Horizontal Surface. The horizontal surface is a horizontal plan located 150 feet above the established airport elevation, covering an area from the transitional surface to the conical surface. The perimeter is constructed by swinging arcs from the center end of the primary surface and connecting the adjacent arcs by lines tangent to those areas. For all approaches to runways

supporting large aircraft (those with maximum takeoff weights of 12,500 pounds or more), the radius of each arc used to construct the horizontal surface is 10,000 feet.

Conical Surface. The conical surface extends upward and outward from the periphery of the horizontal surface at a slope of one foot for every 20 feet (20:1) for a horizontal distance of 4,000 feet.

Transitional Surface. Transitional surfaces extend outward and upward at right angles to the runway centerline, with the runway centerline extended at a slope of seven feet horizontally for each foot vertically (7:1) from the sides of the primary and approach surfaces. The transitional surfaces extend to where they intercept the horizontal surface at a height of 150 feet above the runway elevation.

Approach Surface. Longitudinally centered on the extended runway centerline, the approach surface extends outward and upward from the end of the primary surface. An approach surface is applied to each end of each runway based on the type of approach. FAA surfaces are 20:1 for visual approaches, 34:1 for non-precision approaches, and 50:1[1] for precision approaches.

The FAR Part 77 surfaces will be illustrated as part of the Airport Layout Plan drawing set. Existing Part 77 surfaces will be evaluated during the development of the ALP and any penetrations will be noted and recommended for removal or marking, as appropriate.

Runway and Taxiway Design Standards

The FAA provides recommended dimensions for runway width, taxiway width, taxiway safety areas, and others based upon the design aircraft. The following tables compare the Airport's existing dimensions to the recommended design standards for each runway. The criteria shown in Tables 4B and 4C are graphically depicted on the Airport Layout Plan (ALP) and associated drawings. An updated ALP is an element of this study and included in the final narrative. The official ALP is kept on file with the City of Newport and is subject to minor revision more frequently than master plans.

Table 4B shows design standards for Runway 16-34. In addition to showing existing dimensions, both RDC B-II and C-I are included, per recommendation from Chapter 3, *Forecasts*. Runway 16-34 currently meets all criteria for B-II. Runway 16-34 would not meet criteria for RDC C-I in the following standards: runway centerline to parallel taxiway centerline, runway safety area width and length, runway object free area length, blast pad width, and runway hold line. The Runway 34 RPZ does not meet either standards, as the existing dimensions meet visual and not lower than 1 statute mile visibility minimums.

[1]Precision instrument approach slope in 50:1 for the inner 10,000 feet and 40:1 for an additional 40,000 feet.

Table 4B. Runway 16-34 FAA Airfield Design Standards (RDCs B-II and C-I)

Design Standard	Existing Dimension	Approach Visibility Minimums Not Lower than ¾ mile	
		B-II	C-I
Runway Width	100’	75’	100’
Runway Centerline to Parallel Taxiway Centerline	290’	240’	300’ *
RSA Width	300’	150’	500’ *
Length beyond runway end	300’	300’	1,000’ *
ROFA Width	800’	500’	800’
Length beyond runway end	300’	300’	1,000’ *
Precision OFZ Width	N/A	N/A	N/A
Length	N/A	N/A	N/A
RPZ Inner Width x Outer Width x Length	Rwy 16 - 1,000’ x 1,510’ x 1,700’ Rwy 34 - 500’ x 700’ x 1,000’ *	1,000’ x 1,510’ x 1,700’	1,000’ x 1,510’ x 1,700’
Runway Blast Pads Width	Rwy 16 - N/A Rwy 34 - 100’	95’	120’ *
Length	Rwy 16 - N/A * Rwy 34 - 300’	150’	100’
Runway Shoulder Width	10’	10’	10’
Runway Centerline to Aircraft Parking	600’	250’	400’
Runway Holdline	240’	200’	250’ *
Taxiway Safety Area Width	79’	79’	79’
Taxiway Object Free Area Width	131’	131’	131’

**Does not meet design standard.*

Source: FAA AC 150/5300-13A (Change 1), Table 3-5, Runway Design Standards Matrix

Table 4C lists the existing dimensions for Runway 2-20 in relation to design standards. The runway currently meets all standards for "visual and not lower than 1 statute mile visibility minimums". If an instrument approach with visibility minimums "not lower than ¾ statute mile" were ever implemented, the RPZs would need upgraded to a larger area.

Table 4C. Runway 2-20 FAA Airfield Design Standards (RDC B-II)

Design Standard	Existing Dimension	Approach Visibility Minimums	
		Visual and Not Lower than 1 mile	**Not Lower than ¾ mile**
Runway Width	75'	75'	75'
Runway Centerline to Parallel Taxiway Centerline	N/A	240'	240'
RSA Width	150'	150'	150'
Length beyond runway end	300'	300'	300'
ROFA Width	500'	500'	500'
Length beyond runway end	300'	300'	300'
Precision OFZ Width	N/A	N/A	N/A
Length	N/A	N/A	N/A
RPZ Inner Width x Outer Width x Length	500' x 700' x 1,000'	500' x 700' x 1,000'	1,000' x 1,510' x 1,700' *
Runway Blast Pads Width	95'	95'	95'
Length	150'	150'	150'
Runway Shoulder Width	10'	10'	10'
Runway Centerline to Aircraft Parking	N/A	250'	250'
Runway Holdline	200'	200'	200'
Taxiway Safety Area Width	79'	79'	79'
Taxiway Object Free Area Width	131'	131'	131'

**Does not meet design standard.*

Source: FAA AC 150/5300-13A (Change 1), Table 3-5, Runway Design Standards Matrix

Number and Orientation of Runways

The number of runways needed for an airport depends upon the level of aviation demand (number of aircraft taking off and landing) and wind coverage (how well the runways line up with the prevailing winds). The airfield capacity analysis concluded in an earlier section of this chapter concludes that the primary runway, Runway 16-34, provides adequate capacity given the forecast number of take offs and landings throughout the planning period. However, the investment in Runway 2-20 is fully justified in order to provide adequate crosswind coverage for the aircraft operating at Newport Municipal Airport.

For the operational safety and efficiency of an airport, it is desirable for the primary runway to be oriented as closely as possible to the direction of the prevailing wind. This improves safety by reducing the amount of crosswind (wind blowing against the side of an aircraft) a pilot experiences during take-off and landing. Wind coverage is calculated as the percent of the time crosswind components are below an acceptable velocity. The desirable minimum wind coverage for an airport is 95%, based on maximum crosswind speeds that are defined for different sizes of aircraft (lower for smaller aircraft). This would mean that 95% of the time the wind aligns favorably with one or more of the runways and pilots would experience unfavorable crosswinds only 5% of the time. Ten years of wind data at the Airport were examined. The results of this analysis are shown in **Table 4D**.

For Runway Design Code B-II, the acceptable crosswind component is 13 knots. Neither Runway 16-34 nor Runway 2-20 by itself is able to reach 95% coverage. Combined, both runways exceed the desired wind coverage for all crosswind speeds, which supports the need for two runways to achieve the desired wind coverage. Once the RDC for Runway 16-34 is changed to C-I, the acceptable crosswind increases to 16 knots. In that situation, Runway 2-20, the crosswind runway, remains fully justified for FAA funding based on current classification and should be maintained as a vital component of the airfield for all users.

Table 4D. All Weather Wind Analysis

Crosswind Component	Runway 16-34	Runway 2-20	Both Runways
10.5 knots	90.27%	87.49%	95.86%
13 knots	93.87%	93.56%	97.99%
16 knots	97.23%	98.10%	99.20%
20 knots	89.92%	99.57%	99.79%

Source: NOAA, January 1, 2004 through December 31, 2013

Runway Length

The runway length required for an aircraft is different for landing than it is for takeoff. The requisite distances depend on several factors such as airport elevation, temperature, runway gradient, airplane operating weights, runway surface condition (*i.e.*, wet or dry), and others. FAA Advisory Circular (AC) 150/5325-4B, *Runway Length Requirements for Airport Design* provides guidance on recommended runway length at an Airport. AC 150/5325-4B, uses site-specific data which reflects runway length recommendation by grouping general aviation aircraft into several categories, reflecting percentage of fleet within each category.

Although airport elevation, air temperature, runway gradient and surface conditions all factor into runway length, the most significant factor is aircraft load as runway length increases as weight increases. Advisory Circular 150/5325-4B classifies aircraft based on weight. For "small" airplanes (those with maximum takeoff weights of 12,500 pounds or less), the classifications are further divided into two additional categories: 1) small airplanes with fewer than 10 passenger seats, and 2) small airplanes with 10 or more passenger seats. Recommended runway lengths for airplanes between 12,500 and 60,000 pounds maximum takeoff weight are also listed. **Table 4E** summarizes the FAA's generalized runway length recommendations for the Airport.

The FAA methodology for determining runway length requirements yields multiple values depending on the operational requirements of an airport. In this instance, the Airport's role as a potential recovery station must be weighed in shaping the final recommendation. Because the airfield is situated well outside of the tsunami inundation zone, the Airport is considered likely to provide a critical role in the recovery effort following a Cascadia earthquake event. Additional investment in the survivability of the facility is likely to occur due to recommendations provided by the Regional Airport Review Task Force. Location is another significant factor in this calculation. Being fairly isolated from other airports capable of accommodating occasional use by large aircraft, the longest length that can be feasibly provided is vital. Both constraints will be included in the resulting determination.

Table 4E provides values for a number of scenarios applying to the recommended length for Runway 16-34, the primary runway. In this case the critical aircraft, both existing and future, weigh over 12,500 but less than 60,000 pounds. Those values are shown in the bottom four rows. Of those scenarios, the percentage of large airplanes refers to specific makes and models that as a group will require a certain runway length. The useful load refers to the amount of fuel and payload that the group of airplanes would be typically able to carry on its mission.

Table 4E. Runway Length Requirements

Airport and Runway Data	
Airport elevation	160 feet
Mean daily maximum temperature of the hottest month	62° F
Maximum difference in runway centerline elevation	Runway 16-34 7.8'
Wet and slippery runways	
Runway Length Recommended for Airport Design	
	Runway 16-34
Small airplanes with less than 10 passenger seats	
To accommodate 75% of these small airplanes	-
To accommodate 95% of these small airplanes	3,795
To accommodate 100% of these small airplanes	3,220
Small airplanes with 10 or more passenger seats	4,255
Large airplanes of 60,000 pounds or less	
75% of these large airplanes at 60% useful load	5,232
75% of these large airplanes at 90% useful load	6,382
100% of these large airplanes at 60% useful load	5,290
100% of these large airplanes at 90% useful load	7,590

Source: FAA Advisory Circular AC 150/5325-4B, Runway Length Requirements for Airport Design.

While fairly isolated from other coastal airports with similar capabilities, aircraft operating from Newport do not need to fly long distances, especially in a disaster recovery scenario. However, larger and heavier aircraft will likely be needed to provide critical supplies and equipment during the recovery effort. With that in mind, the recommended runway length is the longer of either the existing length or 100 percent of the large airplanes at 60 percent useful load. Runway 16-34 is currently 5,398 feet long, which is

approximately 108 feet longer than the FAA recommendation. **Therefore, as alternatives methods are identified for meeting the standards of RDC C-I, it is vital to require that the available runway lengths in the alternatives be between 5,290 and the existing 5,398 feet.**

Runway Width

The current width for Runway 16-34 is 100 feet, which exceeds the current B-II standard of 75 feet but meets the forecasted C-I standard. The primary runway was rebuilt in 2014. Results of the runway study conducted as part of this plan recommend the width remain at 100 feet for the duration of this planning period. This will take advantage of the useful life of the rebuild and anticipate the possible change in critical aircraft to a C-I category, which would require a 100 foot wide runway. Runway 2-20 is currently 75 feet wide and the standard is 75 feet. **No changes to runway width are required during the planning period for either runway.**

Runway and Taxiway Pavement Strength

The current pavement strength for Runway 16-34 is rated at 75,000 pounds for Single Wheel Gear (SWG) aircraft and 120,000 pounds for Dual Wheel Gear (DWG). The pavement rating for Runway 2-20 is 33,000 pounds SWG and 50,000 pounds DWG. **The pavement strength for both runways is adequate to accommodate the forecasted aircraft fleet mix.**

Five taxiways, A, B, C, D and E provide access to and from the runway system. Strength ratings for the taxiways are not known; however, Taxiway B was rebuilt during the 16-34 rehabilitation project and designed for heavy aircraft as it is the only taxiway used for heavy aircraft departures on Runway 16 (aircraft back-taxi on the runway rather than use Taxiway A and use Taxiway B as a turnaround).

It is recommended maintenance of these pavements should be considered in the capital improvement plan and continued maintenance to sustain pavement strength should be provided throughout the planning period.

Taxiways

Taxiways are constructed to facilitate the safe aircraft movements to and from the runway system. While some taxiways are necessary to provide access between the aprons and the runways, others are necessary to provide safe and efficient use of the airfield as activity increases at an airport. Taxiway design is based on a newly established Taxiway Design Group (TDG), which is based on the overall Main Gear Width (MGW) and the Cockpit to Main Gear (CMG) distance. There are five taxiways at the Airport as detailed in Chapter 2.

Taxiway A, which serves Runway 16, has a taxiway centerline to runway centerline separation of 290 feet. This centerline separation falls 10 feet short of the required 300 foot RDC B-II standard or the future RDC C-I standard. The Airport currently has a modification to standard for Taxiway A due to the steep drop-off on the west side of the taxiway that would require filling a ravine in order to build-out necessary land for shifting the taxiway.

It is recommended that Taxiway A be relocated 10 feet away from Runway 16-34 to meet the RDC B-II and C-I standard.

Airport Visual Aids

Airports commonly include a variety of visual aids, such as pavement marking and signage, to assist pilots using the airport.

Pavement Markings. Runway markings are designed according to the type of instrument approach available on the runway. FAA Advisory Circular 150/5340-1J, *Standards for Airport Markings*, provides the guidance for airport markings. Precision markings are currently in place on Runway 16-34 and are in good condition. Non-precision markings are currently in place on runway 2-20 and are in good condition.

There are hold marking on all taxiways adjoining the runways. The purpose of hold markings is to ensure that aircraft waiting for arriving or departing aircraft do not encroach into the runway safety area (RSA). In addition to hold markings, all taxiways are clearly marked with centerlines. Existing hold and taxiway marking at the Airport are satisfactory. **It is recommended that the existing taxiway markings be maintained throughout the planning period.**

Airfield Signage. The airfield is well marked with guidance and location signs that meet FAA standards. Airfield signage is adequate for the planning period. **It is recommended that the existing system of airfield guidance signage be maintained throughout the planning period.**

Airport Lighting

Beacon. A rotating beacon is on the west side of Runway 16. It is in good operating condition and is adequate for the planning period. **It is recommended that rotating beacon be maintained throughout the planning period.**

Visual Approach Aids. Both ends of Runway 16-34 have a four-light Precision Approach Path Indicator (PAPI). The PAPI for Runway 34 is out of service until trees blocking the extended approach path are removed. The PAPI width has already been adjusted with baffles to avoid extraneous trees on the west and a com tower on the east however trees in the center still block the approach path. The horizontal angle for the PAPI is now 8^{o} East and 10^{o} West. **It is recommended the trees be removed and the PAPI returned to operation.**

Precision Instrument Approach Lights. Runway 16 has a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). These lights are associated with the instrument landing system for that runway. The lighting system is a required part of the instrument landing system and is adequate for the planning period. Portions of the lighting system supports are on private property and the appropriate easements should be secured. **It is recommended the precision instrument approach lighting system be maintained throughout the planning period.**

Runway Lighting. Runway 16-34 is equipped with High Intensity Runway Edge Lighting (HIRL) and Runway 2-20 is equipped with medium intensity runway edge lighting (MIRL). Both can be pilot controlled via radio. Runway 34 has Runway End Identifier Lights (REIL). REILs are flashing white lights that identify the end of the runway. **It is recommended that the runway lighting systems be maintained throughout the planning period and that REILs be added to Runways 2 and 20.**

Radio Navigational Aids and Instrument Approach Procedures

Electronic and visual approach aids provide guidance to arriving aircraft and enhance the safety and capacity of the airfield. Such equipment is vital to the success of the airport and provide additional safety to users of the air transportation system. Instrument approaches are categorized as either precision or non-precision. Precision instrument approach aids provide an exact alignment and descent path for an aircraft on final approach to a runway while non-precision instrument approach aids provide only runway alignment information. Most existing precision instrument approaches in the United States are instrument landing systems (ILS) utilizing glide slope and localizer electric equipment installed adjacent to the runway.

With the advent of GPS, stand-alone instrument-assisted approaches will eventually be established that provide vertical guidance down to visibility minimums currently associated with Category I precision instrument landing systems. As a result, airport design standards that formerly were associated with a type of instrument procedure (precision/non-precision) are now revised to relate instead to the designated or planned approach visibility minimums. The FAA is continuing to expand development and use of GPS for use in aircraft navigation and instrument approach procedures via Area Navigation (RNAV) and the Wide Area Augmentation System (WAAS). WAAS utilizes a network of ground-based antennas to send correcting signals to the GPS satellite constellation, allowing for ILS-like accuracy.

Instrument procedures published for the airport include an ILS approach to Runway 16, and an NDB-B approach at all runway ends. **It is recommended that the City investigate the feasibility of installing an Automatic Dependent Surveillance – Broadcast (ADS–B) transmitter for integration with the US Next Generation Air Transportation System (NextGen).**

Alternatives should address the potential for additional and/or improved instrument approaches to keep up with quickly advancing technologies.

Other Airfield Recommendations

Traffic Pattern. Runways 2 and 34 follow a standard left-handed pattern. Runway 20 and 16 operate on nonstandard right-handed patterns to avoid overflight of the area southeast of the Airport. The existing traffic pattern is adequate. **It is recommended the current traffic pattern remain in place due to houses southeast of runways 20 and 16.**

Wind Indicators / Segmented Circle. A segmented circle and lighted windsock are located mid-field. There is a supplemental windsock at Runway 34. The location of this windsock is to be verified due to conformance questions. **It is recommended this system should be maintained, with supplemental wind indicators placed near the runway ends.**

Weather Reporting. Real-time weather reporting at the Airport is supplied via Automated Weather Observing System (AWOS). The AWOS will not be in service after 2016 due to problems acquiring parts. **It is recommended that the Airport replace the AWOS with a modern equivalent, such as an AWOS III-P/T**.

Landside Requirements

Landside facilities support airside operations, such as the facilities necessary for handling aircraft and passengers while on the ground. The landside facilities consist of hangars, apron, aircraft tiedown space, access roads, GA terminal facility, and other support facilities. The capabilities and capacities of the various landside components are examined in relation to the projected demand to help identify future landside facility needs.

Hangars

The utilization of hangars varies as a function of local climate, security, and owner preferences. The trend in GA aircraft is toward higher performance, higher value aircraft. This type of aircraft is typically stored inside a hangar as opposed to outside on a tiedown. In planning for hangar development, the number and type of aircraft to be based at the Airport is analyzed. Hangar development is typically based on actual demand and not solely on forecasts.

At the Airport, all of the 28 based aircraft are currently stored in hangars. It is assumed that this trend will continue and all future aircraft will also be stored in hangars. Hangar facilities at an airport typically consist of some combination of T-hangars and box hangars. T-hangars typically store one aircraft in one unit, while box hangars can store more than one aircraft in one large enclosed structure. In order to determine the number of T-hangars versus box hangars, the following assumptions were made:

- All multi-engine aircraft, turbojets, and helicopters will be stored in box hangars.
- Half of all future single engine aircraft will be stored in T-hangars and the other half in box hangars.
- For planning purposes, 1,200 square feet per aircraft is used for T-hangar development and 3,000 square feet will be used for box hangar development.

Applying these assumptions, one T-hangar row with a capacity for six airplanes (approximately 7,200 square feet) will be needed and eight additional conventional hangars (24,000 square feet) will be needed by 2035. **Table 4F** summarizes the hangar development needs for each milestone year.

Table 4F. Landside Facility Needs

	2016-2020	2020-2025	2025-2035	Planning Period Total
Additional Aircraft to be stored in hangars				
Single Engine (Piston and Turbine)	2	2	2	6
Multi-engine (Piston)	0	0	0	0
Turboprop and Turbojet	1	1	3	5
Helicopters	1	0	2	3
Total				*14*
Hangar Positions				
T-hangar	2	1	3	6
Conventional	2	2	4	8
Total				*14*
Hangar Area Requirements (square ft)				
T-hangar Area	2,400	1,200	3,600	7,200
Conventional Hangar Area	6,000	6,000	12,000	24,000
Total Additional Area Needed	*8,400*	*7,200*	*15,600*	*31,200*
Tiedown Positions				
Based Aircraft Tiedowns	3	4	4	-
Transient Aircraft Tiedowns	22	25	31	-
Total Square Yards	12,080	13,940	16,940	-
Cargo Apron (square yards)	0	4,160	0	4,160
Cargo Facility (square ft)	0	3,750	0	3,750

Source: WHPacific, 2016
Note: Square footages for hangars are building area only and do not include areas needed for taxilanes between hangars.

For long-term planning purposes, possible hangar development area needs beyond the 20-year planning window, per Table 4F, should be considered in the development alternatives. **It is recommended that one additional T-hangar with six units and eight additional box hangars be built over the planning period.**

Aprons and Aircraft Parking

Currently, there are 13 tiedown positions at the Airport. Due to the desire for aircraft owners to store their aircraft in hangars, it has been assumed that all future based aircraft will be stored in hangars. For planning purposes, it is assumed that at any given time, up to 10% of locally based aircraft may require temporary space on the parking apron due to some aircraft requiring both hangar storage and parking apron space.

The FAA has developed an approach for determining the number of tiedowns needed for itinerant aircraft operating at an airport. The following methodology was taken from *Airport Design*, Appendix 5, Change 10, and is based on peak operations calculations:

- Peak Day Operations (from the Forecast Chapter), multiplied by ratio of itinerant operations
- Divide by 2 (50% of operations are departures)
- Multiply by 50% (assumes 50% of the transient airplanes will be on the apron during the peak day)

Using this methodology, the Airport will need to have transient tiedown space for 31 aircraft by 2035, as shown is Table 4F. Combining based and transient tiedown needs, a total of 35 tiedown positions will be needed throughout the planning period. The FAA recommends using a ratio of 360 square yards per based aircraft tiedown, and 500 square yards per transient aircraft tiedown. By 2035, the total area needed for both based aircraft and transient aircraft tiedowns is 16,940 square yards. The current apron will not be adequate over the planning period. Some of the apron is also within the Runway Protection Zone and Part 77 Approach surface for Runway 20. **It is recommended to expand or redesign the current apron to meet the demand for tiedown spaces outside of the Runway 20 RPZ and Approach area by 2035.**

The Oregon Airport Plan (OAP) recommends Category III airports have designated cargo aprons. The Airport meets the recommended cargo apron area, approximately 8,320 square yards. **However, based on the air cargo forecast, it is recommended the Airport expand the current cargo apron over the planning period to accommodate a third cargo aircraft and construct a modestly-sized cargo facility.**

Airport Access and Parking

Airport access is adequate at this time. However, any development alternatives should consider impacts to surface transportation. **It is recommended that the Airport maintain current access throughout the planning period.**

Vehicle parking is located near the fixed base operator (FBO). Any future expansion should consider the need for more vehicle parking. **It is recommended that the Airport maintain current vehicle parking throughout the planning period.**

Aviation Businesses and Services (Fixed Base Operator)

Airport services are currently offered by the City. User surveys and PAC members have indicated the need for additional services, such as flight training, aircraft charter service, and a full service FBO. There was also desire for recreational activities such as skydiving, private airplane rides, and the occasional air show.

Should an additional FBO be developed, there would be a need for a site that could provide for approximately 20 more vehicular parking spaces, hangar development, and aircraft ramp area. Total land requirements for a second FBO facility would be approximately one acre. Chapter 5, *Alternatives* will explore possible locations for these additions. **It is recommended that a location for a potential second FBO facility be located for possible future development during the planning period.**

General Aviation Terminal Facility

The City-owned and operated FBO is located within the GA Terminal. The terminal offers pilot amenities, meeting areas, and weather monitoring. The terminal is in good condition and will meet the Airport's needs over the planning period. Historically, the terminal facility has met the needs of Part 139 service with small charter flights and the historical nine-seat air service. **It is recommended the terminal be maintained throughout the duration of the planning period.**

US Coast Guard Air Station Expansion

The US Coast Guard Air Station currently occupies approximately 4 acres on the Airport. At the present time, the US Coast Guard has no plans to expand the Air Station in Newport. However, the US Coast Guard is a critical asset to the City of Newport and keeping land available for their future growth at the Airport should be considered. **It is recommended that an additional 1 acre be set aside adjacent to their existing facilities for potential future expansion.**

National Guard

The National Guard currently has facilities in The City of Newport. It has been discussed that the National Guard relocate these facilities to Airport property. **It is recommended that the ideal property at the Airport be identified for this possibility.**

Support Facility Requirements

Facilities that are not classified as airfield or landside are known as Support Facilities, and include emergency services, airport maintenance, airport fencing, utilities, storm drainage, and aviation fueling facilities.

Emergency Services and Security

There is currently a ARFF designed fire station located at the Airport. The station houses the airport's crash truck and a municipal pumper truck. Firefighting services are the responsibility of the City of Newport Fire and Rescue District. Based on FAA regulations and the airports Part 139 certification, the Airport is required to provide ARFF services. The current emergency services are adequate for the planning period. **It is recommended the Airport keep and maintain the current ARFF facilities and vehicles throughout the duration of the planning period.**

Airport Security. With the exception of three general aviation airports located within the Flight Restriction Zone around Washington DC, the Transportation Security Administration (TSA) does not regulate GA airports.

The Airport Characteristics Measurement Tool (ACMT), published in the TSA Information Publication (IP) A-001, is considered the standard security assessment tool available for GA airports. TSA states that the document aims to provide effective and reasonable security enhancements at GA facilities across the Nation to the extent the procedures and recommendations are consistent with the Airport's circumstances. The ACMT uses points to assess security risks for different airport characteristics. **Table 4G** summarizes the results of the assessment.

The ACMT separates GA airports into four categories: 0 to 14 points, 15 to 24 points, 25 to 44 points, and greater than 45 points. Based on the assessment presented in Table 4G, the Airport currently falls into the 0 to 14 points category and will remain in this category based on future conditions.

Table 4G. GA Airport Security Assessment – City of Newport Municipal Airport

Security Characteristics	Existing Conditions	Future Conditions[2]
26 – 100 based aircraft	2	2
Based aircraft over 12,500 pounds	-	3
Runway 5,000 feet or greater	5	5
Asphalt runway	1	1
Part 135 operations	3	3
Flight training	3	3
Total	14	17

Source: Security Guidelines for General Aviation Airports ((IP) A-001), May 2004

For the existing condition, the Airport currently meets most TSA recommendations, such as perimeter fencing, signage, and documented security procedures. There is no policy in place, however, for positive passenger identification or community watch. When an aircraft over 12,500 maximum takeoff weight (MTOW) relocates to the Airport, another set of TSA recommendations will be introduced that includes LEO (Law Enforcement Officer) support, implementation of a security committee, and transient pilot sign-in / out procedures.

It is recommended the airport should consider integrating and enforcing community watch and passenger identification.

Airport Maintenance

Airport maintenance equipment is currently stored in various locations around the airport. The current Quonset hut on the northwest side of the airfield has exceeded its useful life. Consideration should be given to replacing it with a new more functional facility with a restroom and proper tool and equipment storage. **It is recommended that the Airport maintenance Quonset hut be replaced at some time during the planning period.**

[2] Based on user/tenant statements.

Airport Fencing

The Airport does have full perimeter fencing. Airport fencing is adequate for the planning period. **It is recommended that the Airport maintain the fencing throughout the planning period.**

Utilities

Several utilities do not fully extend to the developed areas of the airport. Extension of those utilities will be essential to future expansion. As development alternatives are prepared in the next chapter, existing utility infrastructure adequacies and future development needs will be examined.

Water

Bringing water to the FBO building would require covering a distance of approximately 2,900 feet. A specific route for water lines and water line locations will be further discussed in the Alternatives chapter. **It is recommended that water lines be installed, upgraded and expanded in order to serve future development.**

Sewer

Bringing sewer to the FBO building would require covering a distance of approximately 3,700 feet. A specific route for sewer lines and sewer line locations will be further discussed in the Alternatives chapter. **It is recommended that sewer lines be installed, upgraded and expanded in order to serve future development.**

Power

It is recommended that underground power lines be installed, upgraded and expanded in order to serve future development.

Communication

It is recommended that communication lines be installed, upgraded and expanded in order to serve future development.

Storm Drainage

The need for additional facilities have been identified, which will increase the Airport's existing impervious surfaces. These additional surfaces must be evaluated to ensure that the requirements of the 1200-Z[3] stormwater discharge permit are met. Because a specific layout for future development has not been defined yet, the exact amount of increased impervious surface is to be determined. The alternatives analysis will provide additional details regarding the stormwater impacts of each alternative. The analysis

[3] The federal Clean Water Act mandates jurisdictional control of the quality of stormwater runoff. This mandated program is found in the Code of Federal Regulation part 122.26. The Airport may fall under the scope of these regulations and may need to apply for a National Pollution Discharge Elimination Permit (NPDES) for the discharge of rain water to the surface water system. In Oregon, this is typically referred to as a 1200-Z General Permit.

will also include Department of Environmental Quality (DEQ) requirements, water treatment, and detention.

Aviation Fueling Facilities

AvGas and Jet A fuel is available for sale at the Airport. The current location and condition of the tanks is not suitable for the duration of the planning period. The location does not allow for easy truck access or self-serve fueling. The current tanks will end their useful life within the planning period. **It is recommended that when their useful life ends, tanks be replaced and moved to an area of easier access, such as near the FBO building or a new maintenance building if the Quonset hut facility is relocated.**

Land Use Planning and Zoning Recommendations

Responsible land use planning around airports is essential to establish and maintain adjacent compatible uses in the vicinity of the airport. FAA explicitly requires airport sponsors to protect the airport from encroachment by incompatible uses such as dwellings, schools, hospitals, churches, and tall structures that could be hazards to air navigation. Typical methods that are employed by airport sponsors to control land uses beyond its boundaries include implementing compatible use zoning/overlay zones and comprehensive planning. Once the preferred development plan is established by this master plan, more detailed recommendations for land use will be included. These recommendations will address adjustments to existing land use controls in order to be consistent with the airport master plan and any associated adjustments to the airport's boundaries for development and airspace protection.

Zoning Code

Current zoning of the Airport is not in compliance with Oregon Revised Statutes (ORS) 836.600 through 836.630, *Local Government Airport Regulation*. The Airport is currently zoned Public. It is recommended the Airport boundary be zoned as a Public-Use Airport, which would authorize customary and usual aviation-related activities outright. It does appear, however, that aeronautical uses are currently permitted outright (subject to a building permit) and the airport airspace is protected through height restriction overlay zone for the area around the airport as defined by FAA Part 77 Airspace, so achieving full compliance should be straightforward. The City of Newport Planning Department will be further consulted to determine current land use and zoning practices at and surrounding the Airport. At such time a more detailed recommendation will be given to the language of land use and zoning practices, along with mechanisms for enforcement.

Comprehensive Plan

Comprehensive plans establish the policies for land use and are reflective of the community's goals for orderly development of land. The plans for Newport Municipal Airport have a bearing on the City's comprehensive plan and they need to be brought into harmony. Upon completion of the updated airport master plan, it must be adopted by reference into the City's Comprehensive Plan. In addition, any land use boundaries that may be affected through adoption of the airport master plan would be adjusted accordingly. The City of Newport will be consulted to determine what that process will entail, to ensure this Plan's inclusion in the Comprehensive Plan. That process will be identified in this plan at that time.

Report from the City of Newport Regional Airport Review Task Force, February 17, 2016

On July 24, 2014, the Newport City Council approved the establishment of a Regional Airport Review Task Force. The purpose of the Task Force was to review the role that Newport Municipal Airport plays on the central coast. The report addressed numerous issues related to the airport:

A. Commercial airline service
B. Governance
C. Finance
D. Marketing
E. Land Use Issues
F. Emergency Services

Each section of the report included one or more recommendations to the City. Some of those recommendations were to be addressed in the airport master plan to the extent the project's scope could allow. For this section, the relevant recommendations from the land use section are identified here so that they can be considered during the development and analysis of alternative concepts and associated land use recommendations.

E.1 The Task Force recommends providing sanitary sewer to the airport and completing the water distribution system. Priority: High

E.2 The Task Force recommends that the airport master planning process identify specifically what land, facilities, and amenities could be made available to prospective tenants on and adjacent to the airport. Priority: High

E.3 The Task Force recommends the master plan process evaluate the current boundaries of the airport to determine whether there are any lands included in the airport boundaries that could be excluded from the airport property in order to make them available for future compatible economic development. Priority: High

E.4 The Task Force recommends identifying the existing permitted land uses around the airport as part of the airport master plan. Priority: High

E.5 The Task Force recommends identifying areas within the airport that would be available for long-term leases to allow the construction of commercial or industrial facilities for airport bases to support business at the airport as part of the master pan process. Priority: High