CHAPTER 3

Airport Facility Requirements

The evaluation of airport facility requirements is intended to determine the facility needs for the Tillamook Municipal Airport (TMK) for the current 20-year planning period based on updated aviation activity forecasts and conformance to established airport design criteria.

Introduction

The evaluation of airport facility goals and requirements combines the results of the inventory and forecasts, and application of established planning criteria to determine the future facility needs for the Airport during the 20-year planning period. All airfield facility requirements definitions are based on Federal Aviation Administration (FAA) airport design and airspace planning standards, and locally defined goals for the Airport. The facility requirements evaluation identifies the adequacy of existing facilities and identifies what new facilities may be needed based on forecast demand or conformance to FAA standards. Potential options for accommodating current and future facility needs will be evaluated in Chapter 4 – Airport Development Alternatives.

Airside facilities focus on the movement of aircraft associated with operations, which includes runways, taxiways, navigational aids and lighting systems. **Landside** facilities provide aircraft storage and support, which includes hangars, aircraft parking apron(s), terminal and fixed base operator (FBO) facilities. Support facility needs include aviation fuel storage and dispensing, security/perimeter fencing, surface access, automobile parking, and utilities.

Summary of Airport Activity

Recently, the Federal Aviation Administration (FAA) changed its forecasting guidance for airports with less than 90,000 annual operations through release of its August 2024 Memorandum – Forecast Review and Approval Instructions (8/12/2024).

The FAA guidance for "smaller general aviation (GA) airports with less than 90,000 annual operations" is that planning forecasts can be streamlined to focus on the existing and likely future critical aircraft for each runway. The guidance also indicates that the normal forecast consistency check with the FAA Terminal Area Forecast (TAF) is not required.

Where applicable, the FAA indicates that airport sponsors may attest that their current and anticipated aircraft operations will not exceed 90,000 in the foreseeable future (defined by FAA as "through the mid-term period).

Based on this guidance and a review of recent activity at Tillamook Municipal Airport (TMK), it is determined that annual aircraft operations at the Airport for the foreseeable future will be less than 90,000. As a result, it appears that the preparation of a full aviation activity forecast in the current Airport Master Plan is not required.

The following section in the noted FAA memorandum provides guidance relevant for TMK:

Section 5. Forecasts at Non-towered, Low-activity Airports (defined as having less than 90,000 annual operations) recommend streamlining the analysis to focus on the existing critical aircraft by runway, and the likely future critical aircraft by runway.

The memorandum further recommends the following:

> *"The airport sponsor may attest that 'Current operations at the airport are less than 90,000 operations annually, and not expected to exceed 90,000 operations in the foreseeable future. Therefore, preparation of a detailed forecast is not warranted.'"*

A review of recent historical aircraft operations counting data and the updated 2024 (baseline) aircraft operations estimate confirms that annual aircraft operations levels at TMK are less than 90,000 operations and are not expected to reach 90,000 operations by the mid-term period in the current 20-year planning period (2024-2044).

July 2025

Port of Tillamook Bay, Oregon

Tillamook Municipal Airport (TMK)

The sponsor provides the following statement attesting activity at TMK, consistent with FAA guidance:

"Current operations at the airport are less than 90,000 operations annually, and not expected to exceed 90,000 operations in the foreseeable future. Therefore, preparation of a detailed forecast is not warranted."

A summary of updated TMK activity projections is provided below, with the "foreseeable future" 10-year period defined by FAA shown in **bold**:

Activity	2024	2029	2034	2039	2044
Based Aircraft	**20**	**21**	**22**	23	24
Annual Aircraft Operations	**9,770**	**10,168**	**10,583**	11,014	11,464

As noted above, the evaluation of airport activity, provided in **Appendix E,** confirmed that annual aircraft operations at Tillamook Municipal Airport are currently well below the FAA-defined threshold of 90,000 used to determine forecast requirements for the airport master plan. The evaluation was also used to identify the current and future critical aircraft for each runway and the corresponding design standards. The evaluation of demand-driven elements will quantify facility needs such as runway length, hangar space, and aircraft parking requirements based on projected demand and the type of aircraft being accommodated. Items such as lighting, navigational aids, and approach capabilities are evaluated based on overall airport activity and facility classification.

OREGON STATE RESILIENCY PLAN

The State of Oregon has prepared the ORP to define appropriate planning measures and actions required to provide a degree of resiliency in the aftermath of a major Cascadia Subduction Zone (CSZ) earthquake and tsunami. In a moderate-to-major CSZ event, major roadways, ports, airports, and other key infrastructure in Oregon coastal and connected riverine areas are expected to experience significant damage, with varying degrees of functionality remaining.

The ORP identifies and categorizes airports that will provide emergency access to population centers, rural areas, and provide transportation of important resources. TMK is listed as a Tier 2 airport in the ORP with a critical role defined in a post event response. Tier 2 airports are recognized as key assets in supporting emergency response, disaster recovery, and long-term economic stability for the region. The ORP highlights the following factors about TMK's strategic importance:

- **Tier 2 Classification:** Tillamook Municipal Airport's designation as a Tier 2 airport includes it within a larger network of airports essential for providing access to rural areas and restoring major commercial operations following a disaster. This classification prioritizes Tillamook Municipal Airport for future investment and infrastructure improvements to strengthen its resilience.

- **Survivability in a Tsunami Event:** Tillamook Municipal Airport is one of only seven coastal airports determined to survive a tsunami event, making it a vital asset for post-disaster operations. In contrast, eight of the fifteen coastal airports analyzed are expected to be rendered inoperable due to inundation from ocean water and debris.

- **Strategic Location and Regional Access:** In the event of a tsunami, Tillamook Municipal Airport would be the only operational airport along the coast north of Highway 18. The nearest alternative operational airports are Hillsboro, and McMinnville which are located further inland, making Tillamook Municipal Airport a crucial hub for emergency response and recovery efforts in the northwest coastal region.

- **Restoration Timeline:** Tillamook Municipal Airport's ability to restore operational capacity quickly following a major earthquake or tsunami enhances its importance as a key transportation and logistics hub:
  - » Minimal Operational Status – Achievable within 0 to 24 hours to support emergency responders and critical supply delivery.
  - » Functional Status – Expected within 1 to 4 weeks to accommodate limited commercial and freight traffic.
  - » Operational Status – Anticipated within 6 to 12 months to restore up to 90% of capacity for regular transportation and commerce.

- **Comparative Advantage Over Highway 101:** Tillamook Municipal Airport's recovery timeline is significantly faster than that of Highway 101, which is projected to take 6 to 7 days to reach a minimal operational status, 3 to 6 months to become functional, and 1 to 3 years to return to full operational status. Tillamook Municipal Airport's quicker recovery underscores its importance as a transportation lifeline for the coastal region.

The ORP's findings reinforce TMK's role in Oregon's emergency response and disaster recovery framework. Investing in Tillamook Municipal Airport's resilience will improve the state's overall capacity to respond to and recover from major seismic and tsunami events, ensuring continued access to essential services and operations in the coastal region.

Demand/Capacity Analysis

The evaluation of runway capacity is used to identify existing or future operational constraints that may require specific facility improvements such as taxiways, aircraft hold areas, etc. As noted earlier, Runway 13/31 has a full-length parallel taxiway and five exit taxiways and a direct connection to Runway 1. This configuration provides a high level of functionality and operational capacity for general aviation (GA) runways. For capacity planning purposes, the FAA assumes that non-towered airports with multiple runways will have only one runway actively in use at any given time, which defaults to single runway capacity.

Annual service volume (ASV) is a broad measure of airport capacity and delay used for long-term planning as defined in *FAA Advisory Circular (AC) 150/5060-5, Airport Capacity and Delay*. Although the generic ASV calculation assumes optimal conditions (air traffic control, terminal radar, etc.) that do not exist at TMK, it provides a reasonable basis for approximating existing and future capacity for master planning purposes.

More common capacity issues are often experienced during brief busy periods, when runway occupancy time can create delays or when taxiways experience bottlenecks at the departure end of a runway. If these constraints are persistent enough, taxiway improvements and aircraft hold/run-up areas are generally effective in reducing minor congestion.

The FAA estimates the ASV for a single runway with no air carrier traffic is approximately 230,000 annual operations. Hourly capacity is estimated to be 98 operations during visual flight rules (VFR) conditions and 59 operations during instrument flight rules (IFR) conditions.

The existing and future demand-capacity ratios for Runway 13/31 (the Airport) are presented below:

- *Existing Capacity: 9,770 Annual Operations / 230,000 ASV = 4% (demand/capacity ratio)*
- *Future Capacity: 11,464 Annual Operations / 230,000 ASV = 5% (demand/capacity ratio)*

Based on these ratios, the annual airfield capacity at TMK will significantly exceed demand through the current 20-year planning period. Hourly capacity is also expected to be adequate to accommodate normal demand. The average delay per aircraft is expected to remain below one minute during the planning period.

It is also noted that the estimated 2024 aircraft operations accounted for approximately 11% of the FAA-defined 90,000 annual operations threshold used to determine forecast requirements in the master plan.

Critical Aircraft and Airport Design Standards Discussion

CRITICAL AIRCRAFT AND DESIGN CODES

Critical aircraft (also referred to as "design aircraft") are determined for each runway based on the current and projected level of flight activity defined in the airport master plan. The applicable design standards for each runway and their associated facilities correspond to applicable codes assigned to the aircraft, consistent with FAA criteria.

A critical aircraft represents the most demanding aircraft using a runway on a regular basis (defined by FAA as ≥ 500 annual operations). Each aircraft has an Aircraft Approach Category (AAC) and Airplane Design Group (ADG) defined by FAA based on their physical and performance characteristics. These two components are combined to create the Runway Design Code (RDC). This definition was formerly referred to as the Airport Reference Code (ARC), which was also applied independently to each runway. RDCs also include a visibility component, whereas ARCs previously added secondary visibility minimum definitions within the applicable runway design tables.

For the purposes of this evaluation, the RDCs now defined for each runway are compared to the ARCs listed on the 2012 ALP. The ARC/RDC designations do not necessarily mean that larger aircraft cannot operate on that runway, but they define the design guidance to be used for FAA-funded improvements. The more demanding ARC/RDC for individual runways is also typically applied to the overall airport and is referenced in state and federal airport listings.

The 2012 ALP lists current and future ARCs for both runways at TMK. For Runway 13/31, the existing and ultimate ARCs are listed as B-II. The existing and ultimate critical aircraft are both twin-engine turboprops (Beechcraft King Air 200 and King Air 350, respectively). For Runway 1/19, the existing ARC is B-I, with a Piper Navajo (multi-engine piston) identified as the critical aircraft. The ultimate ARC for Runway 1/19 is listed as B-II, with a Cessna 441 – Conquest II (twin-engine turboprop) critical aircraft.

Per FAA planning guidelines, the existing and future RDC designations for Runways 13/31 and 1/19 were updated to reflect current and forecast air traffic and common runway use. A summary of the RDCs for each runway is provided below.

RUNWAY DESIGN CODE (RDC)

The RDC defines the design standards used for runway construction. As noted above, the RDC is comprised of the two physical characteristics inputs from the critical aircraft, combined with approach visibility minimums for the runway:

- **Aircraft Approach Category (AAC)** – based on the approach speed of the aircraft (in landing configuration, roughly 1.3X certified aircraft stall speed).
- **Airplane Design Group (ADG)** – based on the wingspan and tail height of the aircraft.
- The lowest **Approach Visibility Minimums** – The lowest visibility minimums required for landing, established for the runway. Visual runways typically have a minimum visibility values consistent with minimum FAA VFR visibility minimums established for that class of airspace. Instrument runways support approach procedures permitted in visibility conditions as a low as ½-mile (1-statute mile is common for non-precision instrument approaches):
  - » Approach visibility minimums are determined by FAA for each runway based on the category of approach (visual, non-precision instrument, or precision instrument) and the most capable existing or future approach procedure. Lower visibility minimums generally correspond to instrument approaches that allow aircraft to descend to lower altitudes before requiring visual contact to be established with the runway environment prior to landing.
  - » RDC visibility minimums for each runway end are expressed in Runway Visual Range (RVR). Ground- based RVR transmitters project horizontal beams of light near the runway to measure forward visibility levels in feet. The RVR values correspond to visibility measurements commonly expressed in fractions of statute miles (e.g., 1-mile, 3/4-mile, etc.). The RVR for a runway reflects the most capable approach type or procedure for either runway end.

The evaluation of current and future air traffic activity was used to define the applicable AAC and ADG designations for each runway. For more information see *FAA AC 150/5000-17, Critical Aircraft and Regular Use Determination*, and applicable airport planning & design standards summarized in greater detail below.

A review of current and recent historical FAA TFMSC (instrument flight plan) data for TMK provides a reliable indication of critical aircraft usage for the primary runway (13/31). It is assumed that the majority of business class aircraft flight activity is accommodated on Runway 13/31, based on its instrument and operational capabilities. Runway 1/19 predominantly accommodates small single engine aircraft in visual flight conditions.

Runway 13/31

Based on documented TFMSC activity, TMK currently accommodates sufficient AAC B and ADG-I operations to establish RDC B-I (small aircraft) as the current RDC for Runway 13/31. An increase in ADG II aircraft is expected to support a future changes to RDC B-II within the current planning period.

RUNWAY DESIGN CODES (RDC)

Runway 13/31

- The **existing RDC is B-I-5000** (not lower than 1-mile), small aircraft
- The **future RDC is B-II-5000** (not lower than 1-mile)

Runway 1/19

- The **existing and future RDC is A-I-VIS** (visual), small aircraft

Existing Critical Aircraft

A multi-engine turboprop represents the most demanding aircraft type currently using Runway 13/31 on a regular basis. The Beechcraft 99 (AAC/ADG B-I), currently used in scheduled air cargo/express service, generates approximately 520 annual operations on Runway 13/31. The Beechcraft 99 has a maximum gross takeoff weight of 11,300 pounds, which is classified as a "small airplane" by FAA.

Future Critical Aircraft

Based on projected flight activity and fleet mix, a large multi-engine turboprop represents the most demanding future aircraft for Runway 13/31. This aircraft type (Beechcraft 1900 - AAC/ADG B-II) is currently operated at TMK in its air cargo/express service at levels below 500 annual operations. A simple change in the existing commercial aircraft fleet by a single operator at TMK could immediately exceed the volume of ADG II operations required to support a change in RDC. It is noted that the current air cargo operator (Ameriflight) fleet includes BE-1900 aircraft, as noted above. The BE-1900 has a maximum gross takeoff weight of 16,710 pounds and is classified by FAA as a "large airplane." This aircraft category corresponds to a Part 77 "other than utility" designation for the runway.

Runway 1/19

Runway 1/19 primarily accommodates small single engine aircraft and helicopters. The majority of single-engine piston aircraft are categorized as AAC/ADG A-I, small aircraft. Although the runway is physically capable of accommodating large aircraft (width and pavement strength), common wind conditions, instrumentation, runway end lighting, and runway length favor use of Runway 13/31 by large aircraft.

Existing and Future Critical Aircraft

A selected critical aircraft is a 4-passenger Cessna 182, a single engine piston aircraft, with a maximum gross takeoff weight of 3,100 pounds, which is classified as a "small airplane" by FAA. The A-I small aircraft RDC designation is consistent with aircraft that weigh less than 12,500 pounds, which corresponds to a Part 77 "utility" designation for the runway.

FAA DESIGN STANDARDS

FAA AC 150/5300-13B, Change 1, Airport Design, serves as the primary reference in establishing the geometry of airfield facilities. The existing condition dimensions and design standards for each runway are summarized in **Table 3-1 and 3-2**.

DESIGN STANDARDS

Specific design standards and conditions applicable to Tillamook Municipal Airport facilities are presented in the following sections of this chapter and the "FAA Design Standards" text boxes. For additional information reference appropriate sections in *AC 150/5300-13B, Change 1.*

Table 3-1: Runway 13/31 Design Standards Summary (Dimensions in Feet)

FAA Standard	Runway 13/31 Existing Conditions[1]	Runway 13/31 RDC B-I Small Aircraft Not Lower Than 1-Mile (Existing Standard)	Runway 13/31 RDC B-II Not Lower Than 1-Mile (Future Standard)[2]
Runway Length	5,001	See Runway Length Analysis Discussion	
Runway Width	75	60	75
Blast Pad Width/Length	N/A	Not Required for ADG II Runways	
Runway Shoulder Width	10	10	10
Runway Safety Area			
• Width	150	120	150
• Beyond RWY End	300	240	300
• Prior to Landing Threshold	300	240	300
Runway Obstacle Free Zone			
• Width	400	250	400
• Beyond RWY End	200	200	200
• Prior to Landing Threshold	200	200	200
Runway Object Free Area			
• Width	500	250	500
• Beyond RWY End	300	240	300
• Prior to Landing Threshold	300	240	300
Approach Runway Protection Zone[3]	500	500	500
• Inner Width	700	700	700
• Outer Width	<1,000[4]	1,000	1,000
• Length			
Departure Runway Protection Zone[3]	500	500	500
• Inner Width	700	700	700
• Outer Width	<1,000[4]	1,000	1,000
• Length			
Runway Centerline to:			
Parallel Taxiway/Taxilane CL	300[5]	150[6]	240
Aircraft Aircraft Hold Position	200	125	200
Aircraft Parking Area	475/625[8]	397[8]	397[8]
20' Building Restriction Line (BRL)	≥425[7]	425[9]	425[9]

Source: FAA AC 150/5300-13B, Change 1

Table 3-1 Notes:

1. As depicted on as-built ALP and documented on site; published dimensions cited in current FAA Chart Supplement and FAA Airport Record Form.
2. RDC B-II (future standard), representing the future critical aircraft for the runway.
3. Existing RPZ dimensions correspond to the existing/ultimate approach visibility minimums depicted on the 2012 ALP and reflected on current FAA instrument approach procedure (RNAV (GPS) RWY 13). RPZ dimensions were not differentiated as approach and departure RPZ by FAA when the last ALP was approved.
4. The outer end of the existing Runway 13 RPZ extends off airport property (west of Long Prairie Road).
5. Runway 13/31 centerline to Taxiway A centerline is 300 feet for parallel sections; the non-parallel sections of Taxiway A have increased centerline separations from runway.
6. Distance to nearest aircraft parking (adjacent to fuel pump/nearest main apron tiedown).
7. The existing 425-foot west BRL (for Runway 13/31) depicted on the 2012 ALP can accommodate up to 25-foot structures at the BRL without airspace surface penetration. Maximum allowable building heights are determined by zoning, but penetrations to airspace not permitted without FAA approval.
8. Greater of "other than utility" NPI runway transitional surface clearance for 21' aircraft tail height or TOFA clearance for Taxiway A. Smaller aircraft parking may be accommodated if clear of TOFA and do not penetrate transitional surface. Aircraft parking setbacks required for primary runway clearance may supersede (exceed) clearances required for secondary runway.
9. Other-Than-Utility NPI visual runway (Rwy 13/31) transitional surface clearance for 20' building, assuming TOFA clearance for adjacent taxiways.

Table 3-2: Runway 1/19 Design Standards Summary (Dimensions in Feet)

FAA Standard	Runway 1/19 Existing Conditions[1]	Runway 1/19 RDC A/B-I (Small) Not Lower Than 1-Mile Or Visual Existing/Future Standard[2]
Runway Length	2,911	See Runway Length Analysis Discussion
Runway Width	75	60
Blast Pad Width/Length	N/A	Not Required for ADG I runways
Runway Shoulder Width	10	10
Runway Safety Area		
• Width	120	120
• Beyond RWY End	240	240
• Prior to Landing Threshold	240	240
Runway Obstacle Free Zone		
• Width	400	250
• Beyond RWY End	200	200
• Prior to Landing Threshold	200	200
Runway Object Free Area		
• Width	400	250
• Beyond RWY End	240	240
• Prior to Landing Threshold	240	240
Approach Runway Protection Zone[3]		
• Inner Width	500	250
• Outer Width	700	450
• Length	1,000	1,000
Departure Runway Protection Zone[3]		
• Inner Width	500	250
• Outer Width	700	450
• Length	1,000	1,000
Runway Centerline to:		
Parallel Taxiway/Taxilane CL[4]	N/A	150
Aircraft Hold Position	125-160[5]	125
Aircraft Parking Area	950[6]	272[8]
20' Building Restriction Line (BRL)	≥425[8]	265[9]

Source: FAA AC 150/5300-13B, Change 1

Table 3-2 Notes:

1. As depicted on as-built ALP and documented on site; published dimensions cited in current FAA Chart Supplement and FAA Airport Record Form.
2. RDC A-I Small (future standard), representing the future critical aircraft for the runway.
3. Existing RPZ dimensions correspond to the existing/ultimate approach visibility minimums depicted on the 2012 ALP. RPZ dimensions were not differentiated as approach and departure RPZ by FAA when the last ALP was approved.
4. Runway 1/19 is not equipped with a parallel taxiway. Non-parallel sections of Taxiway A connect to both sides of the Runway 1 threshold, with variable separations from runway.
5. Aircraft hold lines for Runway 1/19 range from 125' to 160' from runway centerline.
6. Distance to nearest aircraft parking (nearest main apron tiedown).
7. The existing 425-foot west BRL (for Runway 1/19) depicted on the 2012 ALP can accommodate up to 25-foot structures at the BRL without airspace surface penetration. This distance assumes a 500' wide visual larger-than-utility primary surface. Maximum allowable building heights are determined by zoning, but penetrations to airspace are not permitted without FAA approval. Small sections of 425' east and west BRLs are located near and beyond the north and south ends of Runway 1/19.
8. Greater of utility visual runway transitional surface clearance for 21' aircraft tail height or TOFA clearance for Taxiway A; smaller aircraft parking may be accommodated if clear of TOFA and do not penetrate transitional surface. Aircraft parking setbacks required for primary runway clearance may supersede (exceed) clearances required for secondary runway.
9. Utility visual runway (Rwy 1/19) transitional surface clearance for 20' building, assuming TOFA clearance for adjacent taxiways.

TAXIWAY DESIGN GROUP

Taxiway Design Group (TDG), see **Figure 3-1**, is based on the dimensions of the aircraft landing gear, including distance from the cockpit to the main gear (CMG) and main gear width (MGW). These dimensions affect an aircraft's ability to safely maneuver on airport taxiways and dictate pavement fillet design on runway or taxiway connections. Individual taxiways and taxilanes can be constructed using different TDGs based on the expected use by aircraft type. See **Table 3-3** for applicable TDG dimensions.

The major taxiways (A, A1-A3) serving Runway 13/31 are 35 feet wide, designed to accommodate ADG II aircraft included in TDG-2A and -2B. The current critical aircraft (small METP) for Runway 13/31 is included in ADG I (TDG-1A). The future critical aircraft (large METP) is included in ADG II (TDG-2).

The taxiways associated with Runway 1/19 (Taxiway B1 and B2) are 25 feet wide, with sections of B2 widening to 35 feet near the connection with Runway 13/31. These taxiways are designed to accommodate ADG-I aircraft, which corresponds to TDG-1A and 1B. Portions of Taxiway B1 and Taxiway C regularly accommodate ADG I and II air cargo aircraft, including TDG-2 aircraft. For planning purposes, maintaining TDG-2 design standards is recommended for all taxiways currently 35 feet wide. These designations are consistent with the long-term development standards to be applied to each runway:

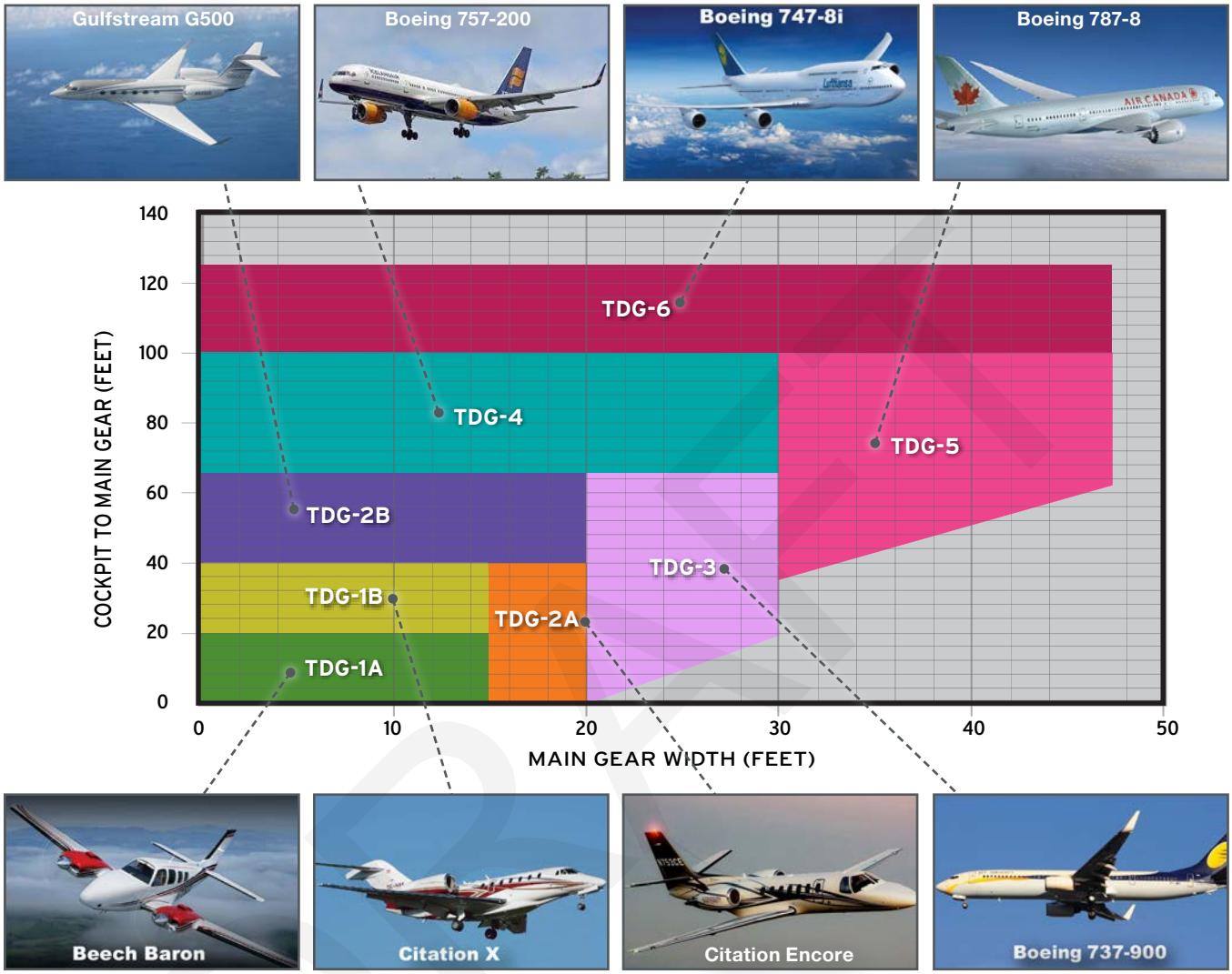
- **Taxiway A, A1-A3: TDG-1A/B and 2A/B (existing and future)**
- **Taxiway B1 and B2: TDG-1A (existing and future)**
- **Taxiway C: TDG-2A/B (existing and future)**

Table 3-3: Taxiway Design Standards (dimensions in feet)

	Current Conditions	Current Standard	Future Standard
Taxiway A, A1-A3		**ADG I / TDG 1A**	**ADG II / TDG 2A**
Taxiway Width	35	25	35
Taxiway Shoulder Width	10	10	15
TSA Width	79	49	79
TOFA Width	124	79	124
Taxiway B1-B2		**ADG I / TDG 1A**	**ADG I / TDG 1A**
Taxiway Width	35/25	25	25
Taxiway Shoulder Width	10	10	10
TSA Width	79	49	79
TOFA Width	124	79	124
Taxiway C		**ADG I / TDG 1A**	**ADG II / TDG 2A**
Taxiway Width	35/25	25	25
Taxiway Shoulder Width	10	10	10
TSA Width	79	49	79
TOFA Width	124	79	124

Source: Century West Engineering

Figure 3-1: Taxiway Design Group Components



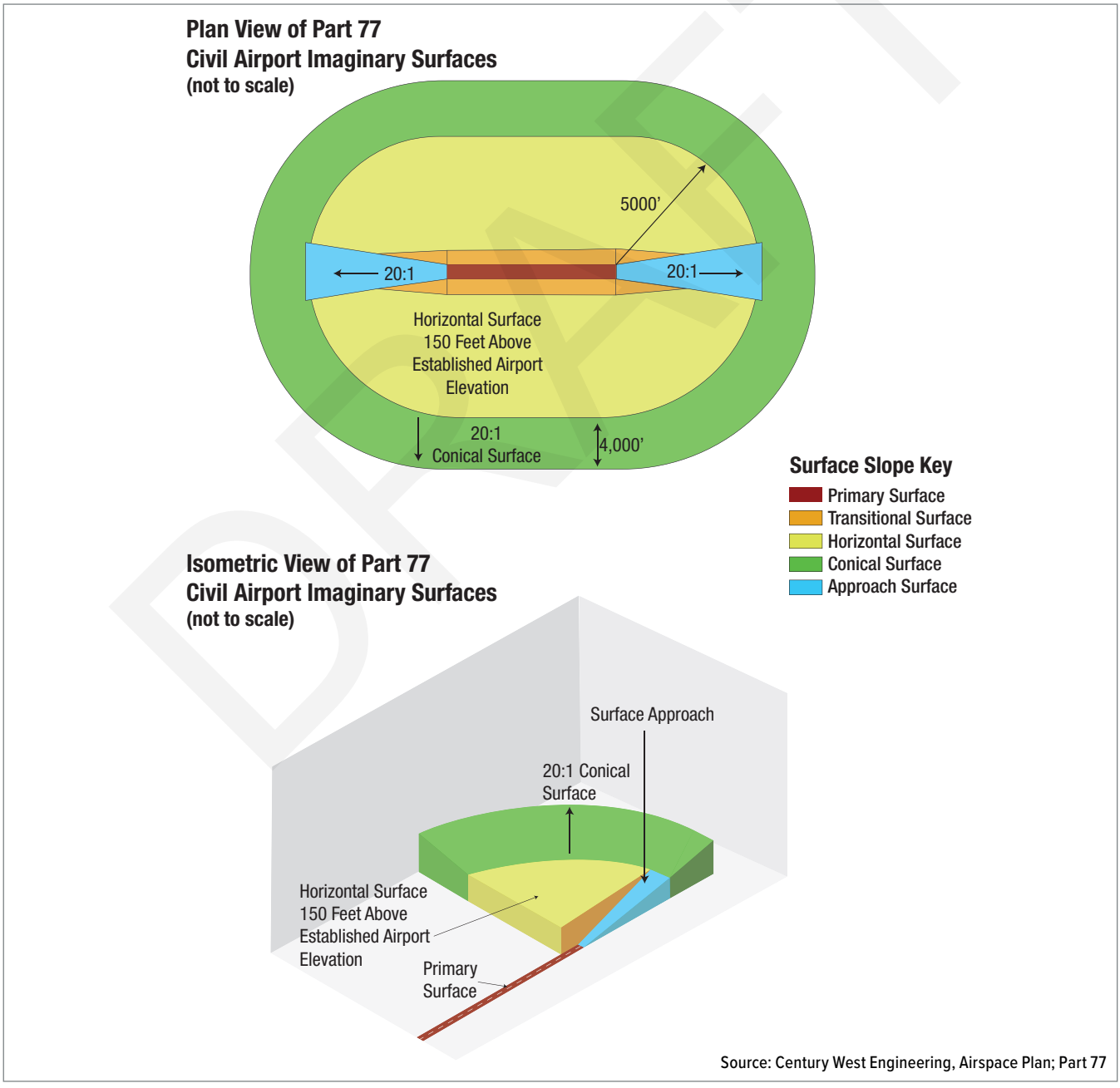
Source: Century West Engineering

Airside Facility Requirements

PART 77 AIRSPACE

U.S. airspace for airports is defined by Title 14, Code of Federal Regulations (CFR) Part 77 – Safe, Efficient Use, and Preservation of the Navigable Airspace. Part 77 establishes standards for determining obstructions to air navigation, navigational aids and facilities. Part 77 also defines imaginary surfaces (airspace surfaces) that are established to protect the areas immediately surrounding Civil and Department of Defense airports and heliports. These airspace surfaces should be free of obstructions (i.e., structures, parked aircraft, trees, etc.) to the maximum extent possible, to provide a safe aircraft operating environment. A generic Part 77 diagram illustrating the five civil airport airspace surfaces is provided in **Figure 3-2**.

Figure 3-2: Part 77 Airspace (Generic)



Source: Century West Engineering, Airspace Plan; Part 77

The definition of Part 77 surfaces at an airport reflects a variety of factors, but a primary defining factor is runway category (visual, non-precision instrument, or precision instrument). Runway 13/31 is designated as a non-precision instrument runway, with an RNAV GPS procedure to Runway 13. Runway 1/19 is a visual runway and it does not support instrument procedures. The future critical aircraft on Runway 13/31 is consistent with airspace planning standards for "large" aircraft (above 12,500 pounds). The standards defined for "small" aircraft (12,500 pounds and less) are appropriate for Runway 1/19 based on its use. The applicable Part 77 surfaces for TMK are summarized in **Table 3-4**.

Table 3-4: Part 77 Airspace Summary (TMK)

	Runway 13/31	Runway 1/19
Part 77 Runway Designation	Other than Utility Non-Precision Instrument (NPI)	Utility Visual (VIS)
Width of Primary Surface	500 feet	250 feet
Approach Surface Length	10,000 feet (Rwy 13 – NPI) 5,000 feet (Rwy 31 – Visual)	5,000 feet
Approach Surface Width (Outer End)	3,500 feet (Rwy 13 - NPI) 1,500 feet (Rwy 31 – Visual)	1,250 feet
Approach Surface Slope	34:1 (Rwy 13 – NPI) 20:1 (Rwy 31 – Visual)	20:1
Transitional Surface	7:1 Slope to 150 feet above runway	Same
Horizontal Surface Elevation	150 feet above airport elevation	Same
Horizontal Surface Radius	10,000 feet	5,000 feet[1]
Conical Surface	20:1 for 4,000 feet	Same

Source: Code of Federal Regulations (CFR), Title 14, Subpart E, Part 77
1. For airports with both utility and other than utility runways, the runway horizontal surface dimensions are combined, and the more demanding surface takes precedence.

PART 77 AIRSPACE SURFACES AND OBSTRUCTIONS

This section provides descriptions of Part 77 airspace surfaces and obstructions for Runway 13/31 and 1/19 depicted on the airspace related sheets in the 2012 ALP drawing set, based on the runway configuration in place at the time. This information is provided for reference only, and will be updated with new AGIS obstruction survey data later in the master plan. All obstructions identified in the AGIS survey will be documented in the updated ALP drawing set.

The 2012 Airspace Drawing (Sheet 5) identifies 8 areas of terrain penetration in the Airport's horizontal and conical surfaces (east, west, and south of the Airport). Sheets 6-9 of the 2012 ALP set identify a small number of obstructions (brush, trees, power pole, and fence sections) to the inner portions of the runway approach surfaces.

Approach Surface

Approach Surfaces extend outward and upward from each end of the primary surface, along the extended runway centerline. The dimensions and slope of the approach surfaces are determined by the type of aircraft intended to use the runway, and the most demanding approach type planned for the runway (See **Table 3-4**).

Runway 13/31

One obstruction (power pole) was identified for the Runway 13 approach surface, with the recommendation of installing obstruction lighting. Five brush/tree obstructions were identified to the Runway 31 approach surface. The recommendations included removal and aeronautical study.

Runway 1/19

Two obstructions (fence) were identified for the Runway 1 approach surface, with the recommendation to relocate. No obstructions to the Runway 19 approach surface were noted.

Primary Surface

The Primary Surface is a rectangular plane longitudinally centered on the runway (at centerline elevation) extending 200 feet beyond each runway end. The width of the primary surface depends on runway category, approach capability, and approach visibility minimums. The primary surface should be free of any penetration, except items with locations fixed-by-function (i.e., approach lighting, runway or taxiway edge lights, etc.). The outer ends of the primary surface connect to the inner portion of the runway approach surfaces.

No primary surface obstructions were identified for either Runway 13/31 or 1/19 on the 2012 ALP airspace drawings.

Transitional Surface

The transitional surface is located along the lateral edges of the primary surface for each runway and is represented by a plane rising perpendicularly to the runway centerline at a slope of 7 to 1. The transitional surfaces extend outward and upward to an elevation 150 feet above the airport elevation. The outer edges of the transitional surface connect with the horizontal surface. The transitional surface should be free of obstructions (i.e., parked aircraft, structures, trees, terrain, etc.).

No transitional surface obstructions were identified for either Runway 13/31 or 1/19 on the 2012 ALP airspace drawings.

Horizontal Surface

The Horizontal Surface is a flat plane located 150 feet above the airport elevation. The horizontal surface boundaries are defined by the radii constructed from each runway end (10,000 feet for Runway 13/31; 5,000 feet for Runway 1/19). The outer edges of the radii for each runway end are connected with tangent lines and when combined, define the horizontal surface.

Five horizontal surface obstructions (terrain) were identified east, south, and west of the Airport on the 2012 ALP airspace drawings. The surface penetrations ranged from 90 to 283 feet.

Conical Surface

The Conical Surface is an outer band of airspace that borders the horizontal surface. The conical surface begins at the outer edge of the horizontal surface and extends outward 4,000 feet and upward at a slope of 20:1. The top elevation of the conical surface is 350 feet above the airport elevation, which is defined as the high point on the airfield.

Six conical surface obstructions (terrain) were identified southeast to west of the Airport on the 2012 ALP airspace drawings. The surface penetrations ranged from 20 to 250 feet.

AGIS Update

AGIS obstruction survey data was acquired from a fall 2024 aerial mapping flight conducted as part of the master plan. The AGIS data will be incorporated into the updated Part 77 Airspace Plan, and related drawings. The AGIS survey will provide updated definitions and recommended dispositions for the Part 77 surface obstacles previously identified and new, or previously uncharted items. Updated tables will be provided for all identified obstructions, with location and elevation data, and the recommended disposition for each item. The updated ALP drawing set will serve as the primary reference for any future obstacle removal projects to be identified in the Airport Capital Improvement Plan (ACIP).

Airfield Pavement Strength and Condition

Airfield pavements are considered to be the single most important asset at an airport. Monitoring and planning for future improvements to the strength and condition of airfield pavements is critical to satisfying existing and future aeronautical demand.

AIRFIELD PAVEMENT STRENGTH

Pavement strength ratings for the runways at TMK are published for pilot use in the FAA Chart Supplement.

Runway 13/31

- 60,000 pounds (single wheel landing gear)
- 75,000 pounds (dual wheel landing gear)
- 125,000 pounds (double dual wheel landing gear in tandem)

Runway 1/19

- 40,000 pounds (single wheel landing gear)
- 46,000 pounds (dual wheel landing gear)
- 67,000 pounds (double dual wheel landing gear in tandem)

The pavement strength for both runways is adequate to accommodate the existing and future critical aircraft noted earlier. Available FAA instrument flight plan data for TMK identified 6 operations in 2024 by aircraft with maximum takeoff weights ranging from 92,500 to 155,000 pounds. Based on its design, it appears that Runway 13/31 is capable of accommodating limited activity from these larger aircraft without excessive wear, particularly when they operate at typical landing weights. However, regular use by heavier aircraft over an extended period would be expected to accelerate pavement wear and increase the frequency of runway rehabilitation projects.

The pavement sections for major taxiways and the primary aircraft parking aprons should correspond to the runways they serve. Small aircraft aprons and hangar taxilanes are typically designed to accommodate aircraft weighing 12,500 pounds or less. The main apron is constructed of Portland Concrete Cement (PCC) and asphalt concrete (AC) sections. The AC sections were added in a 2021 expansion project. Portland Concrete Cement is common for aircraft parking aprons or hardstands that accommodate heavier aircraft. Small aprons and hangar taxilanes at TMK are constructed of AC and are typically designed to accommodate aircraft weighing 12,500 pounds or less.

AIRFIELD PAVEMENT CONDITION

An updated airfield pavement inspection was performed at TMK in July 2023, under the Oregon Department of Aviation (ODAV) Pavement Evaluation Program (PEP). A airfield pavement conditions documented in the December 2023 PEP report are summarized below, with additional data presented in **Table 3-5**.

> *"The area-weighted average PCI for all airport pavements at Tillamook Municipal Airport is approximately 72, which corresponds to a PCI rating of Satisfactory. The section PCIs ranged from a low of 10 to a high of 100.*
>
> *The primary distresses observed during the inspection were weathering, longitudinal and transverse cracking, block cracking, raveling, and patching on AC-surfaced pavements, and linear cracking, corner and joint spalling, joint seal damage, shattered slabs, and patching on PCC pavements."*

The PEP report indicates that the overall (area weighted) condition of the runway, taxiway, and apron pavements at TMK are consistent with project history and recent site visit observations:

- Runway 13/31: Good
- Runway 1/19: Fair
- Taxiways: Satisfactory, Fair, Good (west section of B2: Poor)
- Main Apron: Satisfactory, Good (front section: Very Poor)
- Fueling Apron: Satisfactory, Serious
- North T-Hangar Apron: Serious, Failed

It is noted that the PEP airfield pavement inventory for TMK does not include Apron A2 or A3, and a portion of the circular apron that connects to Taxiway B2. The access taxilane and apron serving four conventional hangars near the northeast corner of the Airport are also not included in the PEP inventory. These pavement sections may be added to the TMK inventory in future PEP updates.

A summary of the recommended projects in the 2023 PEP Five-Year Global Maintenance and Rehabilitation Plan (2023-2028) is provided in **Table 3-5**.

Table 3-5: TMK 5-Year Pavement Management Plan (2023-2028)

Recommended Year	Pavement Section	Recommended Work
--	Main Apron (PCC & AC Sections)	Routine Maintenance
2024	Runway 1/19	Overlay
2025	Runway 13/31	Slurry Seal
2025	Taxiway A, A1, A3	Slurry Seal
2025	Taxiway B1	Slurry Seal
2025	Taxiway B2	Slurry Seal
2025	Taxiway C	Slurry Seal
2025	North T-Hangar Area Taxilanes	Slurry Seal
2026	North T-Hangar Area Frontage Aprons	Fog Seal (between west and middle hangar)
2026-27	Fuel Apron & FBO Apron	Fog Seal/Reconstruction
2026-27	Main Apron (Front Section)	Fog Seal/Reconstruction
2026-27	Taxiway A2	Reconstruction (west 2/3)/Slurry Seal (east 1/3)
2028	North T-Hangar Area Frontage Aprons	Reconstruction

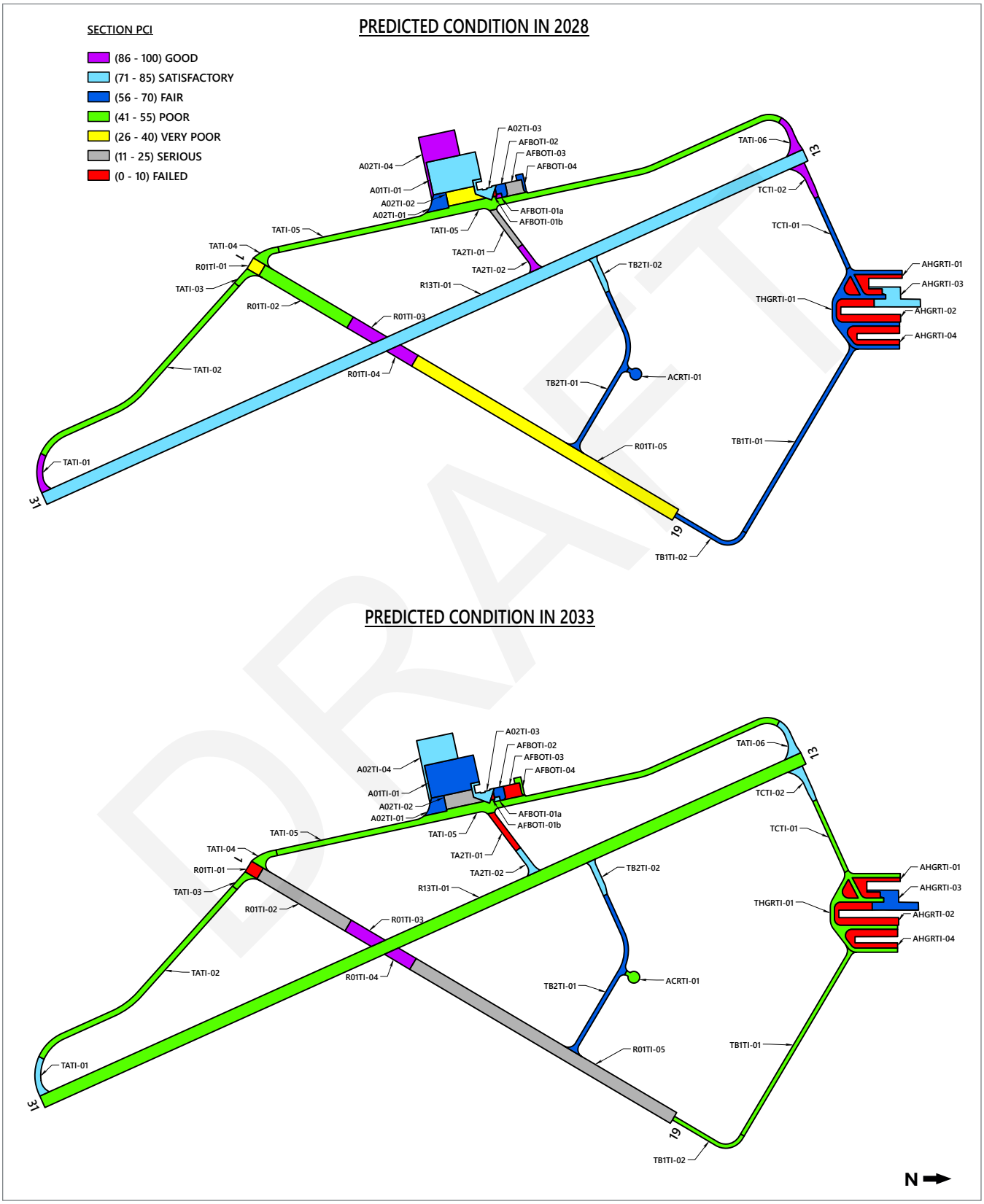
PCC = Portland Cement Concrete; AC = Asphaltic Concrete (Asphalt)

Summary – Pavement

It is expected that all runway, taxiway, apron and taxilane pavements on the airfield will require rehabilitation or reconstruction during the current 20-year planning period. A prioritized list of pavement rehabilitation or reconstruction projects will be provided in the updated capital improvement program. It is recommended that ongoing maintenance, including vegetation removal, crack filling, sealcoats, and joint repairs be conducted on a regular basis and consistent with the ODAV PEP to maximize the longevity of airfield pavements through the planning period.

The PEP predicted 2028 and 2033 PCI ratings (assuming no intervening maintenance or rehabilitation is performed) for TMK are presented graphically in **Figure 3-3**.

Figure 3-3: Predicted Pavement Conditions



Source: 2023 ODAV Pavement Evaluation Program Tillamook Airport

Airfield Facilities

RUNWAYS

The runways at TMK were analyzed relative to orientation, length and width, and conformance to FAA design standards. Runway 13/31 is designated as the "primary" runway. Runway 1/19 is currently designated as a "secondary" runway, based on the wind coverage of the primary runway (see following section).

Historically, the FAA crosswind runway designations were applied only when an airport's primary runway wind coverage is below 95%. As noted earlier, the wind coverage provided by Runway 13/31 exceeds 95% for large and small aircraft in all weather conditions. However, recent FAA guidance[1] defines "legacy crosswind runways" for existing runways under certain conditions, even if primary runway wind coverage exceeds 95%:

> *"Section 702(2)(G) amends 49 U.S.C. § 47102(3) by adding subsection (V) to establish rehabilitation and reconstruction eligibility for existing crosswind runways if it is on the most recently approved airport layout plan (ALP), regardless of wind coverage. Effectively, this is a new runway type, hereafter identified as a Legacy Crosswind Runway, to designate a runway previously funded to function as a Crosswind Runway that is newly eligible even when the primary runway alone has adequate wind coverage per AC 150/5300-13, Airport Design."*

Based on this change in policy on July 7, 2025, the Port of Tillamook Bay requested FAA consideration for designating Runway 1/19 as a legacy crosswind runway. The FAA Seattle Airports District Office (ADO) approved the request on July 30, 2025.

Runway Orientation and Crosswind Coverage

The preferred orientation of runways is a function of wind velocity, combined with the ability of aircraft to operate under given conditions. FAA has defined the maximum allowable direct crosswind (90-degrees) for small aircraft as 10.5 knots (13 mph) and 13 knots (15 mph) for larger general aviation aircraft. The FAA recommends that primary runways accommodate at least 95% of wind conditions. When this level of wind coverage is not provided, the FAA recommends consideration of a crosswind runway. **Table 3-6** summarizes wind coverages for each runway independently and combined, for the defined wind speeds and weather conditions described above.

Figure 3-4 depicts the all-weather wind rose for TMK that was built with 2013-2023 data collected on site by the Airport's Automated Weather Observation System (AWOS). The data indicates that wind coverage for Runway 13/31 exceeds 95% for 10.5, 13, and 16 knots in each of the three operational groupings (VFR, IFR, and All -Weather). The wind coverage for Runway 1/19 also exceeds 95% for both 10.5 and 13 knots. When combined, the two runways accommodate more than 98% of total wind conditions within the defined crosswind components.

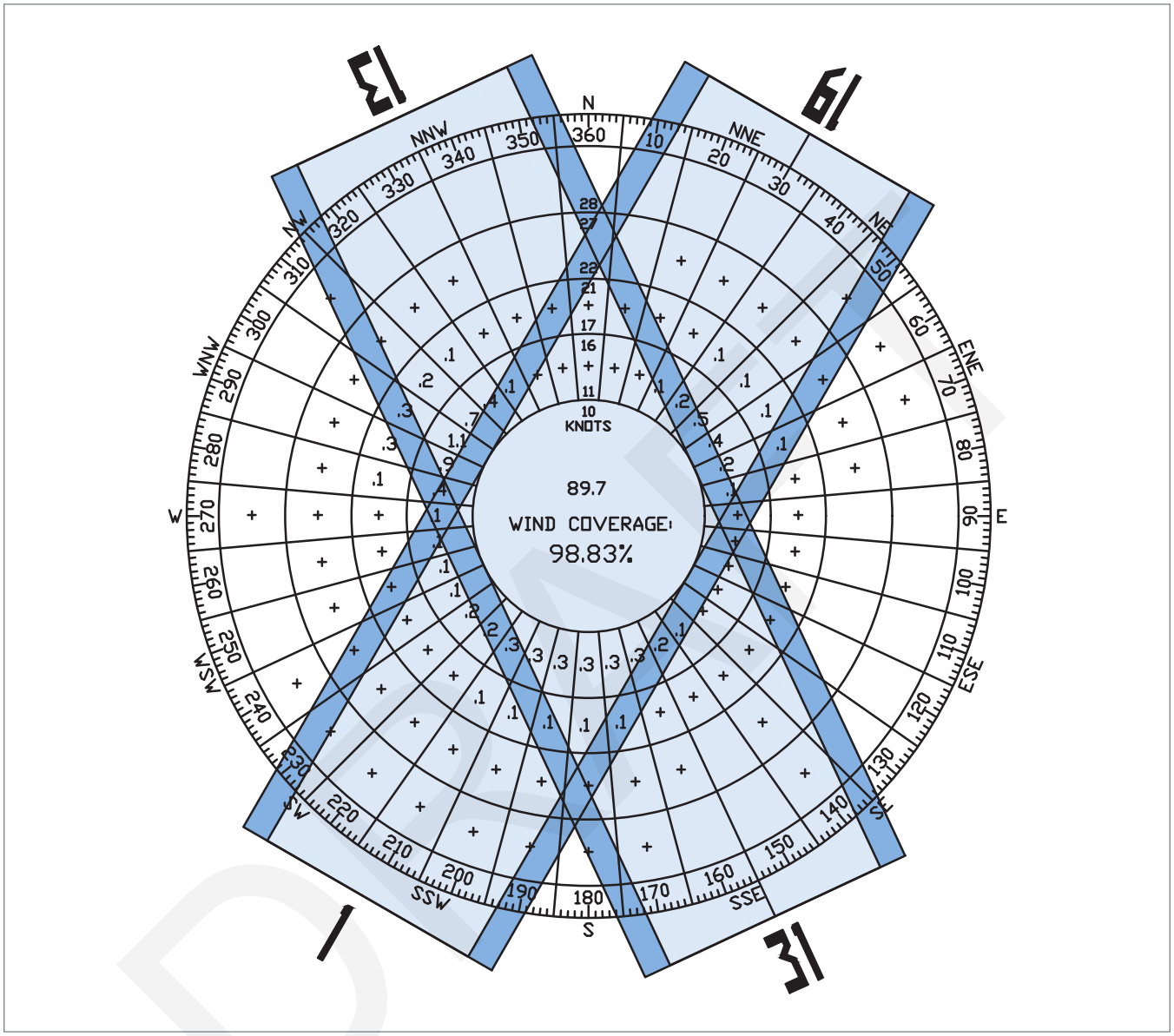
Table 3-6: TMK Runway Wind Coverage

Runway Alignment	Crosswind Comp. (Knots)	All-Weather Wind Coverage	VFR Wind Coverage	IFR Wind Coverage
Runway 13-31	10.5	95.50%	95.18%	97.47%
	13	97.62%	97.47%	98.63%
Runway 01-19	10.5	94.45%	93.74%	99.00%
	13	96.56%	96.10%	99.78%
Combined	10.5	98.47%	98.29%	99.66%
	13	99.55%	99.50%	99.92%

Source: FAA Airport Data and Information Portal

1 FAA Memorandum (4/4/2025) Reauthorization Program Guidance Letter (R-PGL) 25-01: Runway Projects

Figure 3-4: All Weather Wind Rose (TMK)



Source: FAA Airport Data and Information Portal

RUNWAY LENGTH

Runway length requirements are based primarily on airport elevation, mean maximum temperature of the hottest month, runway gradient, and the aircraft expected to use the runway. For general aviation airports, the FAA recommends using a "family of design aircraft" approach for defining runway length requirements. *FAA AC 150/5325-4B, Runway Length Requirements for Airport Design*, provides the length analysis requirements for different segments of large and small aircraft fleets.

2012 Airport Layout Plan Report

The runway length analysis evaluated the requirements at TMK for small aircraft (≤12,500 pounds) and a segment of large airplanes (12,501-60,000 pounds). The evaluation determined a length of at least 4,800 feet is needed to accommodate these aircraft, based on local site conditions and FAA runway length planning guidance. This length accommodated 100% of large airplane fleet at a 60% useful load (passengers, cargo, fuel), 100% of the small airplane fleet, and the unique subset of small aircraft with 10 or more passenger seats. A slightly shorter runway

length (4,600 feet) was required to accommodate 75% of the large airplane fleet at a 60% useful load. The existing length of Runway 13/31 (5,001 feet) meets the requirements for both groupings of large airplanes, and all small airplanes, indicating a high level of operational capability.

The evaluation did not recommend specific lengths for Runways 13/31 and 1/19, although the plan did note that the existing length of Runway 13/31 (5,001 feet) met the identified length required for the primary runway. No changes to the 5,001 feet length of Runway 13/31 were depicted on the 2012 ALP.

The existing length of Runway 1/19 (2,911 feet) corresponds approximately to the length required to accommodate 95% of the small airplane fleet. The model indicated that a runway length of 3,400' was required to accommodate 100% of the small airplane fleet (aircraft under 12,500 pounds).

The 2012 ALP depicts the future length for Runway 01/19 of 3,215 feet, which falls between the lengths required to accommodate 95% and 100% of the small airplane fleet. This future length reflects a runway reconfiguration intended to mitigate specific taxiway design elements while also avoiding more complicated taxiway solutions that would be required for a shorter runway length. As depicted, the existing aligned taxiway (B1) located beyond the north end of the runway (Runway 19 end) is eliminated and the pavement is converted to runway, with a 305-foot north extension. The elimination of the aligned taxiway is consistent with current FAA design guidance. The south end of Runway 1/19 is also reconfigured (relocated 145 feet north) in conjunction with planned changes to Taxiway A. This change will create matching 90-degree taxiway connections to the runway for the main access taxiway for Runway 13/31.

Updated Assessment of Runway Length Requirements

The updated evaluation of the length requirements for Runway 13/31 is unique. While the existing critical aircraft (multi-engine turboprop, less than 12,500 pounds) for the runway is captured in available FAA runway length curves for small aircraft (with 10+ seats), the future critical aircraft (large multi-engine turboprop) is not captured in the available FAA runway length curves. The FAA's large airplane curves are intended to reflect runway length requirements for jet aircraft weighing between 12,500 and 60,000 pounds.

This section documents the conventional runway lengths for small and large airplanes derived from available FAA runway length curves for small and large aircraft, which are applied to each runway. Additional information is also provided to approximate the actual runway lengths required for large multi-engine turboprop aircraft at TMK (future critical aircraft Runway 13/31).

TMK - Runway Length Recommendations

No reductions to the existing length of Runway 13/31 or Runway 1/19 are recommended during the current planning period.

*The current length of **Runway 13/31** (5,001 feet) meets or exceeds the runway length requirements identified in the FAA runway length curves described in this section. The existing runway length also exceeds most of the defined requirements for the multi-engine turboprops identified as the existing and future critical aircraft for Runway 13/31. As noted above, maintaining the current length of Runway 13/31 is recommended, which also maintains the future runway length depicted on the 2012 FAA-approved ALP.*

*The current length of **Runway 1/19** (2,911 feet) meets the runway length requirements identified in the FAA runway length curves for small aircraft, described above. It is noted that the 2012 ALP depicts future changes to the runway configuration and length, which are related to correcting specific FAA design criteria. The evaluation of the future runway configuration will be included in the airport development alternatives.*

The planning methodology used to define runway lengths capable of satisfying existing and future demand at TMK is established by the *FAA: AC 150/5325-4B, Runway Length Requirements for Airport Design*. This methodology is consistent with FAA planning criteria that correlates the needs of the existing and future critical aircraft to approval of the Airport Layout Plan drawing and project eligibility for FAA funding. The specific design criteria applied to a runway does not preclude use by larger aircraft. However, airport management approval is typically required for use by heavier aircraft based on the operational limits of the airfield, particularly pavement strength.

Using FAA planning methodologies, the evaluation of runway length requirements begins with the operational requirements of the critical aircraft, or family of aircraft, expected to use each runway. Several airfield-specific conditions that affect aircraft performance are then verified including airport elevation, runway gradient, and the assumed operating temperature (average daily maximum temperature of the hottest month of the year). These inputs are applied to runway length curves presented in AC 150/5325-4B for the applicable segment of the GA aircraft fleet.

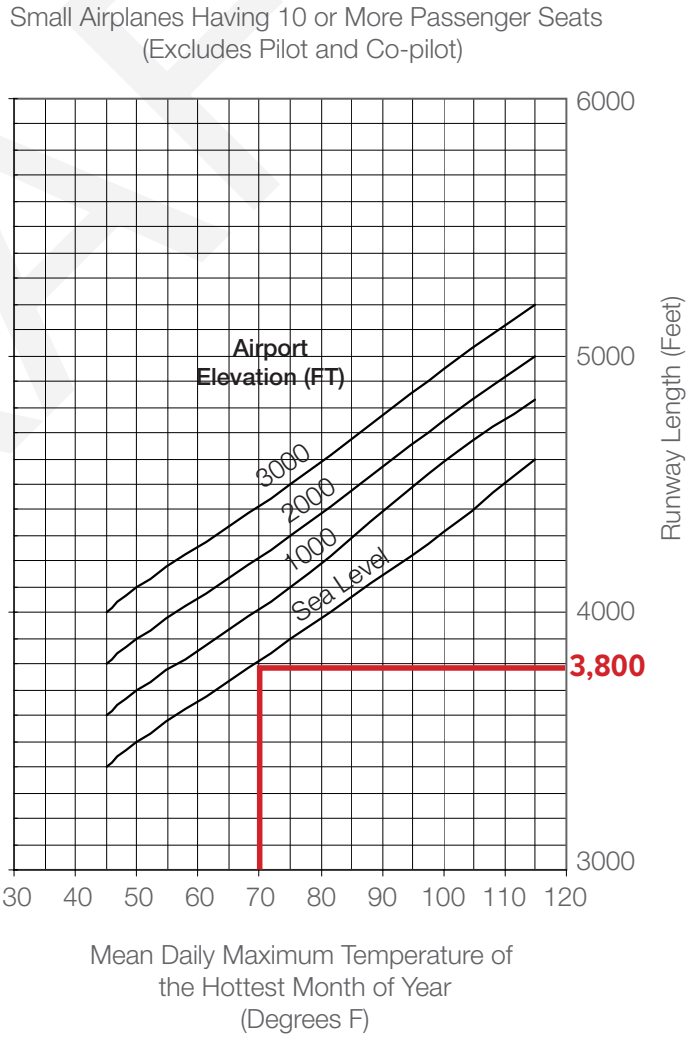
The FAA recommends a planning evaluation based on a "family of aircraft" assessment to capture the most common aircraft within a particular category. For GA runways that accommodate large or small airplanes, the FAA recommends use of performance curves for runway length planning. The curves were developed by FAA based on approved airplane flight manuals, and they are intended to represent the needs of the fleet, rather than a single aircraft or type. This approach provides a more effective indication of the requirements of overall aircraft rather than relying on the requirements for an individual aircraft. The design aircraft, or family of aircraft, defined in the evaluation of airport activity, is matched to the applicable runway length curves that are defined based on the factors described below.

Runway 13/31

Twin-engine turboprops are identified as the existing and future critical aircraft for Runway 13/31 in the updated aircraft activity evaluation. This segment of activity at TMK is driven by the scheduled air cargo/express service that generates more than 500 annual operations. The current critical aircraft (ADG I) weighs less than 12,500 pounds. This corresponds to the runway length requirements for "small aircraft."

The use of the runway length curve for small airplanes with more than 10 passenger seats most closely corresponds to the existing critical aircraft for Runway 13/31. **Figure 3-5** indicates that a runway length of 3,800 feet is required at TMK to accommodate this category of aircraft under normal conditions.

Figure 3-5: Runway Length Curve Small Airplanes with More Than 10 Seats (Existing Rwy 13/31 - BE 99)



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

The future critical aircraft (ADG II) weighs more than 12,500 pounds. This normally corresponds to the runway length requirements for "large aircraft" weighing between 12,500 and 60,000 pounds. However, FAA AC 150/5325-4B states that the large airplane runway length curves are based on a grouping of only the turbojet-powered fleet (business jets). As such, the FAA runway length planning guidance for large airplanes does not include large turbine propellor aircraft. (turboprops), including the future critical aircraft identified for Runway 13/31.

Since the future critical aircraft for Runway 13/31 is not a jet, the FA runway length curves are provided for reference and comparison to the runway length curves for small aircraft, including the current critical aircraft that is in the category of 10 or more seats. A supplemental evaluation of typical multi-engine turboprop aircraft is provided at the end of this section to represent the "family of aircraft" that represents the most demanding aircraft that meet the FAA regular use threshold.

For large airplanes (12,500 to 60,000 pounds), *AC 150/5325-4B* identifies "Airplanes that Make Up 75 Percent of the Fleet" and the "Remaining 25 Percent of Airplanes that Make Up 100 Percent of Fleet." The AC provides guidance for selecting the appropriate grouping of aircraft fleet and the corresponding runway length curves that should be used for planning. The FAA recommends that designers use the 75% fleet curves when the aircraft under evaluation are not found in the 100% fleet group. Based on FAA criteria, the 75% fleet runway length curves reflect the turbojet aircraft commonly operating on Runway 13/31.

The large airplane grouping is further characterized by determining the "useful load factor" at which they operate, based on the haul lengths and service needs of those aircraft. The runway length curves for these fleet segments provide for both 60% and 90% useful load factors. An aircraft's useful load represents the payload (passengers, fuel, etc.) that can be carried within its design/operating limits. For general reference, when an aircraft is at its maximum gross weight, it has reached its maximum useful load; however, that may not include full fuel tanks or a full passenger load depending on the aircraft's certificated design limits. Based on FAA-defined criteria, including the typical haul lengths and service needs of the critical aircraft, the 60% useful load curve is most appropriate for Runway 13/31.

Table 3-7 summarizes representative business jet aircraft within the 75% and 100% fleet groupings. **Figure 3-6** represents the runway length requirements for large aircraft (above 12,500 pounds) at TMK.

Table 3-7: 75% and 100% of Large Airplane Fleet (Representative Aircraft)

75% of Fleet	100% of Fleet
British Aerospace – Bae 125-700	British Aerospace – Bae Corporate 800, 1000
Beechcraft, Mitsubishi – Beech Jet - 400A, Premier I	Bombardier – Challenger 600, 601-3A/3ER, 604
Bombardier – Challenger 300	Cessna – S550 Citation S/II, 650 Citation III/IV, 750 Citation X
Cessna – Citation I, II, III, V, VII, CJ-2, Bravo, Excel, Encore, Sovereign	Dassault – Falcon 900C/900EX, 2000/2000EX
Dassault – Falcon 10, 20, 50	IAI – Astra 1125, Galaxy 1126
Israel Aircraft Industries – Jet Commander 1121, Westwind 1123/1124	Learjet – 45XR, 55/55B/55C, 60
Learjet – 20 series, 30 series, 40, 45	Raytheon Hawker – Horizon, 800/800 XP, 1000
Raytheon Hawker – Hawker 400, 600	Sabreliner – 65/75
Rockwell – Sabreliner 75A	

Source: FAA AC 150/5325-4B

Runway 1/19

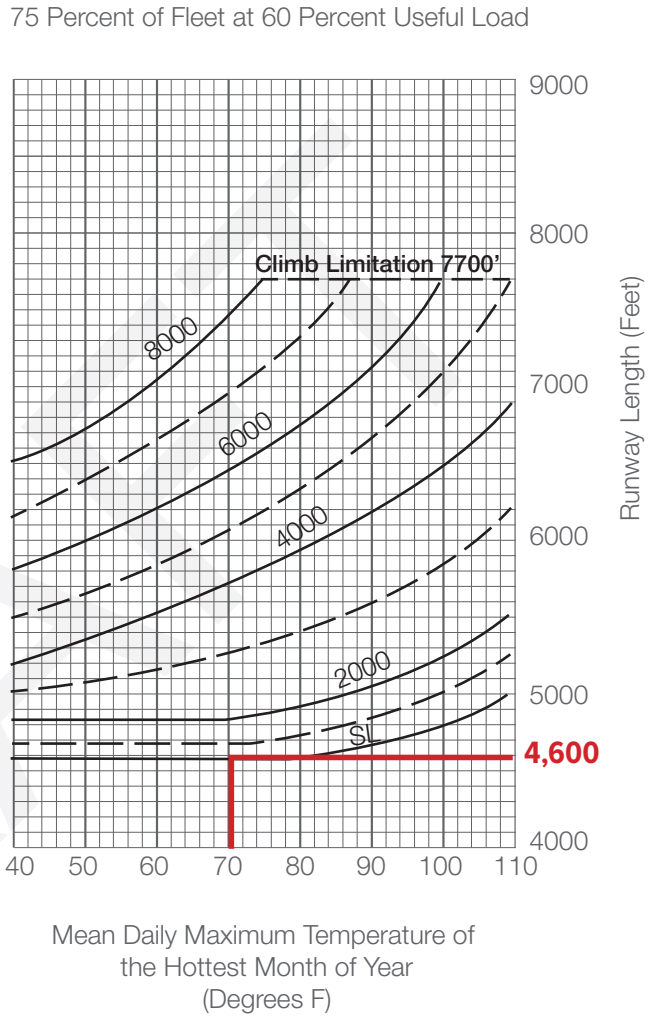
The current length of Runway 1/19 is 2,911 feet. The runway accommodates predominantly small aircraft, which correspond to the runway length curves for small aircraft (≤12,500 pounds). The current and future critical aircraft identified for the runway is a small single-engine piston aircraft, with the Cessna 182 Skylane (C-182). The C-182 is a four-passenger aircraft, which aligns with the "fewer than 10 seats" runway length curves for small aircraft. The "family of aircraft" that fall under A/B-I (small aircraft) standards weigh less than 12,500 pounds.

AC 150/5325-4B provides two sets of runway curves for small airplanes— aircraft with fewer than 10 seats and aircraft having 10 or more seats. The AC also provides runway length curves for two segments (95% and 100%) of the small airplane fleet for aircraft with 10 or fewer seats.

AC 150/5325-4B indicates that 100 percent of the fleet is *"...primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population from a metropolitan area."* *The 95% of the fleet designation "...applies to airports primarily intended to serve medium size population communities with a diversity of usage and a greater potential for increased aviation activities."* The 95% fleet definition most closely aligns with TMK, and for planning purposes, the 95% fleet curve will be used for Runway 1/19.

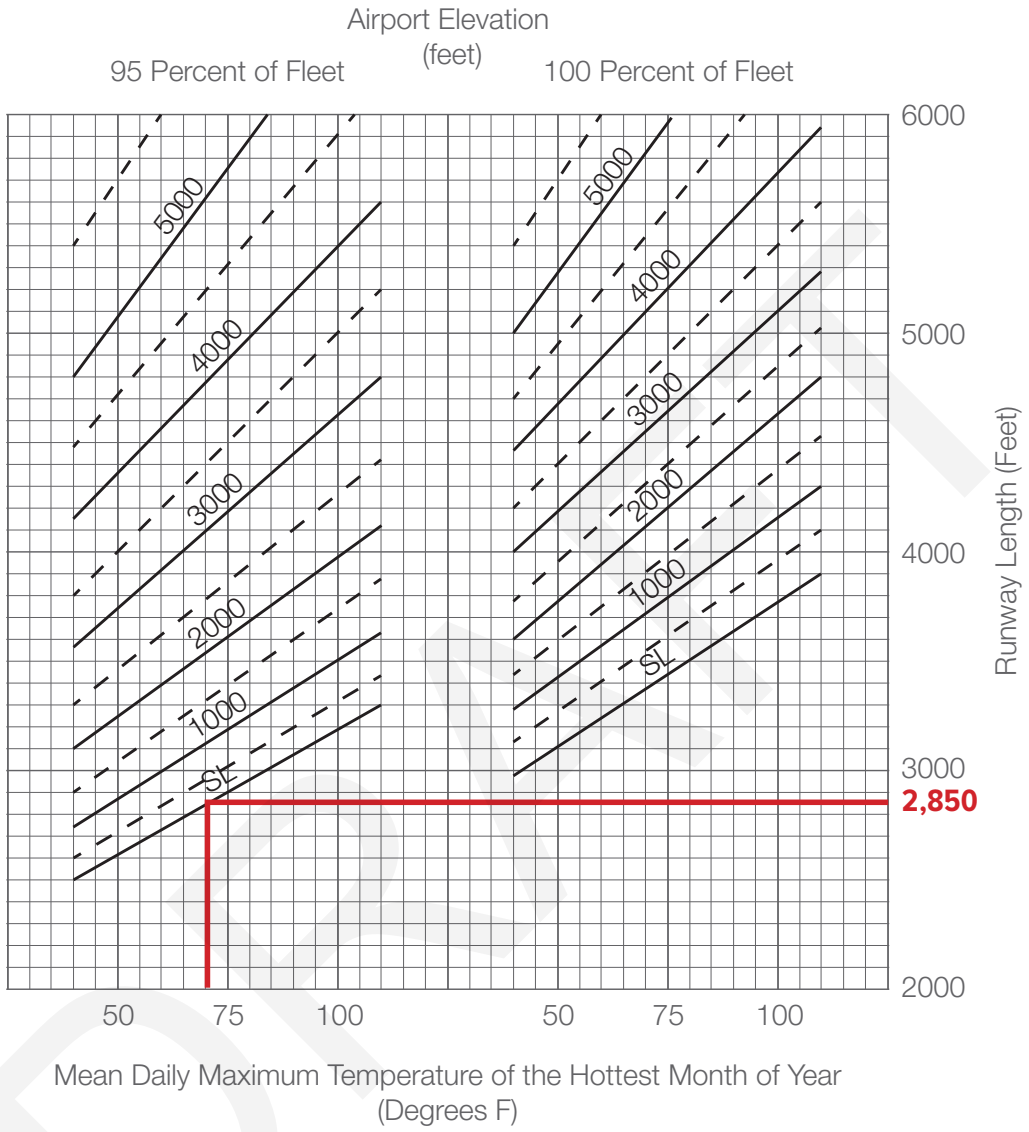
Figure 3-7 represents the runway length requirements for 95% of the small airplane fleet (less than 12,500 pounds) at TMK. This curve is aligned with the current and future critical aircraft for Runway 1/19. As depicted in **Figure 3-7**, a runway length of 2,850 feet is needed to accommodate 95% of the small airplane fleet based on local conditions. The current length of Runway 1/19 (2,911 feet) is roughly equivalent to the length defined in the FAA methodology. Runway 1/19 provides 58% of the length of Runway 13/31, which appears to be adequate for current and forecast use as the Airport's second runway.

Figure 3-6: Runway Length Curve for Large Airplanes 12,500 to 60,000 Pounds (Future Rwy 13/31 - BE 1900)



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

Figure 3-7: Runway Length Curve 95% of Small Airplane Fleet (Existing & Future Rwy 1/19 - C182)



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

Secondary Evaluation

FAA AC 150/5325-4B states that the large airplane runway length curves are based on a grouping of only the turbojet-powered fleet (business jets). As noted earlier, the future critical aircraft identified for Runway 13/31 is a large ADG II multi-engine turboprop.

To better define the runway length requirements based on the future critical aircraft for Runway 13/31, several multi-engine turboprops were evaluated using the Small Aircraft Runway Length Analysis Tool (SARLAT) currently being tested by FAA. Although the SARLAT is in the early stages of development and is not yet been widely utilized by FAA for defining runway length requirements in airport master planning, it does yield reasonable data for evaluation.[2]

The SARLAT model aircraft database remains limited and does not include the two critical aircraft identified for Runway 13/31 at TMK. To address this data gap, two listed aircraft, most similar to the Beechcraft 99 and 1900 models operated at TMK, were evaluated based on local site conditions. As noted earlier, these aircraft are operated under FAR Part 135, which is among the runway length outputs provided in the SARLAT model. The SARLAT runway length data in **Table 3-8** is provided for comparison to the FAA runway length curves described below. Based on the range of operational runway lengths calculated in the SARLET model, maintaining the existing 5,001-foot length of Runway 13/31 is recommended during the current planning period to meet future aircraft demand.

Table 3-8: SARLAT Airplane Runway Length Requirements (TMK)

Aircraft	Runway Length Requirement at TMK
Beechcraft King Air B200GT • Comparable to Beechcraft C99 – Existing Critical Aircraft Runway 13/31)	• Takeoff – Dry: 3,414 feet • Takeoff – Wet: 3,926 feet • Landing – Dry: 2,433 feet • Landing – Wet: 2,798 feet • Landing – Part 135: 3,479 feet • Landing – Part 135 Wet: 4,001 feet
Beechcraft King Air 350ER • Comparable to Beechcraft 1900 – Future Critical Aircraft Runway 13/31)	• Takeoff – Dry: 4,416 feet • Takeoff – Wet: 5,078 feet • Landing – Dry: 2,731 feet • Landing – Wet: 3,141 feet • Landing – Part 135: 3,905 feet • Landing – Part 135 Wet: 4,491 feet

Source: FAA AC 150/5325-4B

2 Development of Small Aircraft Runway Length Analysis Tool. Airport Cooperative Research Program (ACRP) Web-Only Document 54 (April 2022).

Airport Design Standards

The existing runways at TMK were originally constructed in 1943 with widths of 250 feet. The runways have been narrowed over time by relocating edge lights and relocating painted runway edge stripes. The original pavement has largely been left in place.

Runway 13/31 currently exceeds dimensional standards based on RDC B-I, with not lower than 1-mile approach visibility minimums. This visibility standard corresponds to the published non-precision GPS based approach to Runway 13. Based on the future design aircraft, the future design standards for Runway 13/31 are based on RDC A/B-II with not lower than 1-mile approach visibility minimums. Based on its historical development, the runway exceeds most design standards that correspond to the current RDC B-I (small) critical aircraft designation, and meets or exceeds most standards defined by the future critical aircraft designation (RDC B-II). Based on the projected use of the runway, maintaining existing dimensions is recommended where feasible, to preserve the runway's long-term ability to accommodate ADG II aircraft.

Runway 1/19 currently exceeds several design standards that correspond to the current and future critical aircraft designations (RDC A-I, small aircraft). Based on the type of aircraft and approach category for the runway, the applicable design standards for Runway 1/19 are based on RDC A/B-I (small aircraft) with "visual" approach visibility minimums.

FAA DESIGN STANDARDS

Runway Safety Area (RSA)

Dimensional, gradient, surface compaction, and obstacle clearing standards apply.

Rwy 13/31

Existing and Future Standard: RDC B-I 5000 standard is 120 feet wide (centered on runway) and 240 feet beyond runway ends.

Future Standard: RDC B-II 5000 standard is 150 feet wide and 300 feet beyond runway ends.

Existing Conditions: The RSA meets RDC B-II 5000 dimensional standards and appears to meet standards for surface gradient, compaction and obstacle clearance.

Rwy 1/19

Existing and Future Standard: RDC A-I (Small Aircraft) VIS standard is 120 feet wide (centered on runway) and 240 feet beyond runway ends.

Existing Conditions: The RSA meets RDC A-I (Small Aircraft) VIS dimensional standards and appears to meet standards for surface gradient, compaction and obstacle clearance.

Runway Object Free Area (ROFA)

Dimensional, gradient, and obstacle clearing standards apply.

Rwy 13/31

Existing Standard: RDC B-I 5000 standard is 400 feet wide and 240 feet beyond runway ends.

Future Standard: RDC B-II 5000 standard is 500 feet wide and 300 feet beyond runway ends.

Existing Conditions: The existing ROFA meets RDC B-II 5000 dimensional standards and appears to meet standards for surface gradient and obstacle clearance.

Rwy 1/19

Existing and Future Standard: RDC A-I (Small Aircraft) VIS standard is 250 feet wide (centered on runway) and 240 feet beyond runway ends.

Existing Conditions: The ROFA meets RDC A-I (Small Aircraft) VIS dimensional standards and appears to meet surface gradient and obstacle clearance standards. The aircraft hold line on the aligned taxiway at north end of the runway is outside the ROFA.

Runway Safety Area (RSA)

The RSA is a flat surface that sits at the same elevation as the runway and is intended to be clear of terrain and above ground objects. FAA standards define dimensional, gradient, surface compaction, and obstruction clearance requirements. The RSA is intended to enhance the safety of aircraft that overshoot, overrun, or veer off the runway without causing significant structural damage, as well as to provide access for equipment for emergency response. The RSAs for both runways at TMK appear to meet all applicable FAA standards.

Runway Object Free Area (ROFA)

The ROFA is a flat surface that sits at the same elevation as the runway. The ROFA should be clear of terrain and above ground objects except for those required for air navigation or aircraft ground maneuvering purposes. The ROFAs for both runways at TMK appear to meet all applicable FAA standards.

Runway Obstacle Free Zone (OFZ)

The FAA defines the ROFZ that surrounds a runway as "a design and an operational surface kept clear during aircraft operations. This clearing standard does not allow aircraft and other object penetrations, except for locating frangible NAVAIDs in the OFZ because of their function. The FAA will not consider modification of the OFZ surface." Based on current and planned approach capabilities and runway lighting, only the ROFZ applies to Runway 13/31 and 1/19 (abbreviated FAA definitions provided below):

Runway Width/Shoulders

Both runways at TMK meet or exceed the width standard defined for their respective RDCs. As noted earlier, the width of both runways in their original form was significantly greater than the current runways. This configuration results in significant areas of pavement surrounding the runway, including the shoulders. As the runways were narrowed over the last 80 years, the original pavement width and drainage was maintained.

FAA DESIGN STANDARDS

Runway Width/Shoulders
Rwy 13/31

Existing Standards: RDC B-I 5000 (Small Aircraft) standard runway width is 60 feet, with 10-foot shoulders.

Future Standards: RDC B-II 5000 standard runway width is 75 feet, with 10-foot shoulders.

Existing Conditions: The runway width and shoulders meets/exceeds all FAA standards. The existing asphalt runway and shoulders are located within the original 250-foot wide runway footprint constructed in the 1943.

Rwy 1/19

Existing/Future Standard: RDC A-I (Small Aircraft) VIS standard runway width for runways with visual or not lower than 1-mile visibility is 60 feet, with 10-foot paved shoulders.

Existing Conditions: The runway width and shoulders meets/exceeds all FAA standards. The existing asphalt runway and shoulders are located within the original 250-foot wide runway footprint constructed in the 1943.

Runway Obstacle Free Zone (ROFZ)
Rwy 13/31

Existing Standard: RDC B-I 5000 (Small Aircraft) standard is 250 feet wide (centered on runway) and 200 feet beyond runway ends. Obstacle clearing standards apply.

Future Standard: RDC B-II 5000 standard is 400 feet. The other noted standards also apply to the larger ROFZ.

Existing Conditions: The ROFZ meets/exceeds all FAA standards.

Rwy 1/19

Existing/Future Standard: RDC A-I (Small Aircraft) VIS standard is 250 feet wide (centered on runway) and 200 feet beyond runway ends. Obstacle clearing standards apply.

Existing Conditions: The ROFZ meets/exceeds all FAA standards. The aircraft hold line on the aligned taxiway at north end of the runway is outside the ROFZ.

Runway Protection Zones (RPZ)

By FAA definition *"The RPZ is a protection zone that serves to enhance the protection of people and property on the ground."* The RPZ shape and location often corresponds to the inner portion of the runway approach surface, although RPZs do not have vertical (slope) component. RPZ dimensions vary by runway design code (RDC).

The FAA airport design *Advisory Circular (AC 150/5300-13B, Change 1. Appendix I)* identifies several common conditions and facilities that are considered compatible with RPZs. An updated *Airport Land Use Compatibility Planning AC (150/5190-4B)*, issued by FAA in 2022, provides this guidance for RPZs.

The FAA recommends airport control of RPZ through property ownership or acquisition of an avigation easement that limits specific conditions and defines vertical clearances for the corresponding approach surfaces. In general, proposed runway changes that reduce the presence of incompatible land uses in an RPZ are considered to provide incremental safety benefits.

Although the FAA discourages roads in RPZs, they recognize that potential impacts vary, and in many cases the cost of realigning major roadways outside of RPZs, or reconfiguring runways to eliminate the RPZ conflict, may not be feasible. However, even in cases where roads pre-exist, or will continue to exist in an RPZ, maintaining a clear approach to the runway end is a high priority safety item for FAA. Since RPZs coincide with the inner portion of the Part 77 runway approach surface, vehicles traveling on these roads should not penetrate the runway approach, or if an obstruction does exist, it may be mitigated through a variety of actions.

FAA DESIGN STANDARDS

Runway Protection Zone (RPZ)
RPZs should be owned by the Airport or under control by easement and should be clear of incompatible land uses such as roads and buildings. RPZs begin 200 feet beyond each runway end and often coincide with the geometry of the inner approach surface for the runway. The current and planned approach visibility levels for each runway are referenced below.

Existing Conditions: Only one four RPZs at TMK extends beyond Airport property. The Runway 13 RPZ extends off of airport property and has a road within its boundary. The Port of Tillamook Bay has acquired an avigation easement for the portion of the Runway 13 RPZ that extends off airport property.

Rwy 13/31
Current Standard: RDC B-I 5000 (Small Aircraft) standard Approach and Departure RPZ dimensions are 250 x 450 x 1,000 feet (inner width, outer width, length).

Future Standard: RDC B-II 5000 standard Approach and Departure RPZ dimensions are 500 x 700 X 1,000 feet (inner width, outer width, length).

Rwy 1/19
Current/Future Standard: RDC A-I (Small Aircraft) VIS Approach and Departure RPZ dimensions are 250 x 450 x 1,000 feet (inner width, outer width, length).

Recommendation: Maintain the Runway 13 avigation easement.

Based on the current and future RDCs for both runways, no changes to existing RPZ dimensions are anticipated during the current 20-year planning period. The 2012 ALP depicts minor shifts for the Runway 1 and 19 RPZs in conjunction with runway reconfiguration. The previously planned RPZ shifts are contained fully within airport property. Any other changes in runway length or configuration that comes the master plan, may require changes in RPZ locations.

At TMK, only the Runway 13 RPZ is not fully located on airport property. The outer northeast corner of the Runway 13 RPZ extends over Long Prairie Road. The small area (<0.7 acres) that extends off airport property is entirely clear of the extended RSA and ROFA. The 2012 the Exhibit A drawing (Sheet 11) depicts an easement totaling 14.24 acres for this area that includes the small RPZ corner and additional land on the north side of Long Prairie Road for underground cable and power poles. Realigning the road outside the RPZ may be considered, however, based on the nominal impact within the RPZ, FAA funding for a roadway realignment would not likely be a high priority.

Runway Heading

A review of magnetic variation (MAGVAR) data indicates that Runway 13/31 will require a change in runway heading (14/32) during the current 20-year planning based on the ongoing annual rate of changes.

TAXIWAY/TAXILANE NETWORK

Taxiways

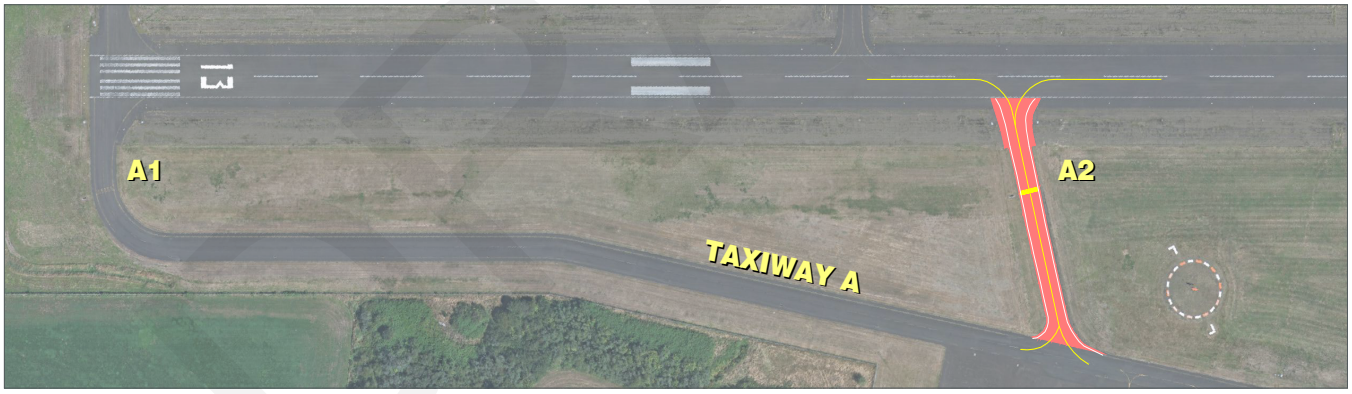
The major taxiways (A, A1-A3) associated with the primary runway (13/31) currently meet ADG II and TDG 2A/B standards (width, shoulders, safety area, etc.) based on their most recent construction. The runway separation for the parallel sections of Taxiway A is 300 feet, which exceeds the RDC B-I 5000 (Small Aircraft) and RDC B-II 5000 requirements for the current and future critical aircraft category based on the current/future approach visibility minimums (≥1-mile). The applicable dimensions are summarized in the adjacent text boxes.

Current FAA guidance recommends that taxiway connectors be designed to provide a 90-degree intersection (and aircraft alignment at the hold position) relative to the runway centerline, to increase situational awareness for pilots and reduce runway incursions. Another item not recommended by FAA are aligned taxiways that lead directly (on the extended runway centerline alignment) to a runway end. These taxiways create issues with potential runway incursions, situational awareness, taxiing aircraft obstructions to landing aircraft. Several items related to existing taxiway configurations at TMK are identified for evaluation based on current FAA design guidance:

- Runway 13/31 - Exit Taxiway A2 has an acute angle (<90 degree) connection to the runway.
  - » Taxiway A2 connects to the south side of the runway from its connection on Taxiway A. The acute angle is observed for aircraft traveling on the runway from the Runway 31 direction.
- Runway 1/19 - Aligned Taxiway (Taxiway B1) at the end of Runway 1. A section of Taxiway B1 extends approximately 350 feet on the extended runway centerline beyond north end of the runway.
- Runway 1/19 – Non-90-degree taxiway connections on Taxiway A at the Runway 1 threshold.

Figures 3-8 and 3-9 depict these taxiway conditions.

Figure 3-8: Runway 13/31 - Acute Angle Connector Taxiways



Source: Century West Engineering

Figure 3-9: Runway 1/19 - Acute Angle and Aligned Taxiways

Source: Century West Engineering

FAA DESIGN STANDARDS

Runway – Parallel Taxiway/Taxilane Separation

Rwy 13/31
Existing Standard: RDC B-I 5000 (Small Aircraft) standard is 150 feet (for runways with visibility minimums not lower than 1-mile).

Future Standard: RDC B-II 5000 standard is 240 feet (for runways with visibility minimums not lower than 1-mile).

Existing Conditions: Runway 13/31 and Taxiway A (two parallel sections at each end of the runway) separation is 300 feet, which exceeds the current and future standard.

Rwy 1/19
Existing/Future Standard: RDC A-I (Small Aircraft) VIS standard is 150 feet (for runways with only visual approaches).

Existing Conditions: No existing parallel taxiway for Runway 1/19. The north end of the runway has a 400' aligned taxiway that extends from the Runway 19 threshold.

Taxiway Safety Area (TSA)

Rwy 13/31 Taxiways (A, A1-A3)
Existing Standard: ADG I dimension is 49 feet wide (extends 24.5 feet from taxiway centerline, beyond the sides the taxiway). Additional gradient standards apply.

Future Standard: ADG II dimension is 79 feet wide (extends 39.5 feet from taxiway centerline, beyond the sides the taxiway). Additional gradient standards apply.

Existing Conditions: The TSA for Taxiway A and A1- A4 appears to meet/exceed ADG I and II dimensional, grading and obstruction clearing standards.

Rwy 1/19 Taxiways (B1, B2, A)
Existing/Future Standard: ADG I dimension is 49 feet wide (extends 24.5 feet from taxiway centerline, beyond the sides the taxiway). Additional gradient standards apply. Taxiway A design is determined by primary runway standards (Taxiway A connections at Rwy 1 end coexist with taxiway access to Runway 31 end).

Existing Conditions: The TSA for Taxiways B1, B2, and A are designed based on ADG II standards, which exceeds ADG I standards.

Taxiway Object Free Area (TOFA)

Rwy 13/31 Taxiways (A, A1-A3)
Existing Standard: ADG I dimension is 89 feet wide (extends 44.5 feet from taxiway centerline, beyond the sides the taxiway). Additional gradient standards apply.

Future Standard: ADG II dimension is 124 feet wide (extends 62 feet from taxiway centerline, beyond the sides the taxiway). Additional gradient standards apply.

Existing Conditions: The TOFA for Taxiway A and A1-A3 appears to meet ADG II dimensional, grading and obstruction clearing standards.

Rwy 1/19 Taxiways (B1, B2, A)
Existing/Future Standard: ADG I dimension is 89 feet wide (extends 44.5 feet from taxiway centerline, beyond the sides the taxiway). Additional gradient standards apply.

Existing Conditions: The TOFA for Taxiways B1, B2, and A are designed based on ADG II standards, which exceeds ADG I standards.

Taxilane Object Free Area (TLOFA)
Existing/Future Standard:

- The ADG I standard is 79 feet wide, or 39.5 feet each side of taxilane centerline (applies to small aircraft aprons and taxilanes)
- The ADG II standard is 110 feet wide, or 55 feet each side of taxilane centerline (applies to taxilanes and aprons used by large aircraft)

Existing Conditions: The existing aircraft hangar taxilanes generally meet or exceed the applicable TLOFA dimensional and obstruction clearance criteria. See recommendations later in this section for compliance with taxilane clearance.

Taxilanes

Taxilanes at TMK provide access to aircraft hangars located on Apron A1 and the northeast section of the Airport, and to aircraft parking areas on the Main Apron and Apron A2.

By FAA standard, taxilane object free areas (TLOFA) are defined and should be free of items that could create a hazard for taxiing aircraft including parked aircraft, hangars, fences, other built items, and natural terrain. It is common for taxilanes to serve aircraft parking aprons and hangar developments to be designed to meet the standards of a particular group of aircraft using the facilities. Applicable ADG I/II TLOFA dimensions are provided in the adjacent text boxes.

AIRFIELD INSTRUMENTATION, SIGNAGE, LIGHTING, AND MARKINGS

As noted in the existing conditions chapter, the existing airfield lighting systems at TMK are in good condition and function normally. All existing lighting systems are meet FAA standards for current approach capabilities. The service life of electrical systems vary, particularly in harsh maritime conditions. For planning purposes, it is assumed that all existing airfield lighting systems will reach the end of their service life during the current planning period and require replacement. FAA airfield lighting guidance supports use of common technology between systems. The current LED standard used at TMK will be applied to all new and replacement airfield lighting systems.

- Runway 13/31 – Medium Intensity Runway Edge Lights (MIRL). Runway edge and threshold lights
- Runway 13 – Runway End Identification Lights (REIL)
- Runway 13 & 31 – Precision Approach Path Indicator (PAPI). 2-box units
- Runway 1/19 – Medium Intensity Runway Edge Lights (MIRL). Runway edge and threshold lights
- Runway 1 & 19 – Precision Approach Path Indicator (PAPI). 2-box units
- Taxiway A, A1-A3, C and B are equipped with stake-mounted blue reflective cylinders.
- Airfield Signs - Mandatory Instruction, Location, Direction, Destination, Distance Remaining.
- Primary Wind Cone (lighted – located in the segmented circle between Runway 13/31 and Taxiway A).
- Airport Rotating Beacon (located north of aircraft fueling area and main apron on beacon tower)

Weather Reporting

TMK has an automated weather observation system (AWOS-3PT) owned and operated by the Airport that provides 24-hour weather information. The AWOS is located centered between Runway 13/31 and Runway 1/19, on the south side of Taxiway B2.

The AWOS was replaced (new) in 2023. Useful life replacement should be anticipated near the end of the current planning period.

Navigational Aids

There are no existing ground based electronic navigational aids at TMK.

Runway and Taxiway Markings

The runway and taxiway markings at TMK are consistent with FAA standards for color (white/yellow), configuration, and approach type. It is noted that most runway and taxiway edge markings at TMK are inset from the pavement edges, since the current usable widths are narrower than the original runway and taxiways. The markings are in good or fair condition. Regular repainting is required and is typically coordinated with sealcoat projects. It is recommended that all runway and taxiway markings be maintained consistent with the ODAV Pavement Maintenance Program.

Source: Century West Engineering

Runway 13/31

The existing non-precision instrument (NPI) markings on Runway 13/31 are consistent with FAA requirements. The markings include threshold markings, runway designation numbers, aiming point markings, centerline stripe, and pavement (runway) edge markings.

Runway 1/19

The existing (Basic) markings for Runway 1/19 are consistent with FAA requirements for visual approaches. The markings include a threshold bar (Rwy 19), runway designation numbers, centerline stripe, and limited areas of pavement (runway) edge markings.

Taxiways A-C

The markings on Taxiways A, A1-A3, B1, B2, and C include yellow centerline stripes and aircraft hold lines, consistent with FAA requirements. Three arrowheads are located on the aligned taxiway (B1) leading to the Runway 19 threshold. Regular repainting is required and is typically coordinated with sealcoat projects.

Source: Century West Engineering

Landside Facility Requirements

Landside facilities include aircraft parking apron(s), hangars, terminal, fixed base operator (FBO) facilities, and related items. The landside facility requirements at TMK were analyzed relative to hangar demand, apron and aircraft parking requirements, runway access, and conformance with FAA design standards. Future facility demand is estimated based on the updated evaluation of aviation activity. As noted earlier, a detailed aviation activity forecast was not submitted for FAA review and approval for this airport master plan, in accordance with current FAA policy for airports with less than 90,000 annual operations. The storage requirements by aircraft type are summarized in **Table 3-9** and described in the following sections.

BASED AND TRANSIENT AIRCRAFT PARKING

Aircraft parking aprons should be developed to avoid conflicts with adjacent runways, taxiways and helicopter landing areas.

The evaluation of apron and taxilane configurations in the Airport Development Alternatives (Chapter 4) will reflect the aircraft using each facility, consistent with FAA design guidance: *"Provide planning and design to accommodate varying aircraft types and sizes anticipated to use the airport." (AC 150/5300-13B, Change 1, Appendix E. E.1.3, General Aviation Facilities).*

Source: Century West Engineering

As noted in the Existing Conditions chapter, TMK currently has a total of 39 small airplane tiedowns located on the Main Apron and Apron A2. These aprons have been expanded and reconfigured in recent projects to add additional parking capacity (increased from 12 tiedowns in 2012). The aircraft parking areas and taxilanes for these aprons are designed to accommodate ADG I aircraft, although ADG II aircraft also routinely use the facilities. Apron A2 is used on a daily basis to accommodate short term loading/unloading by scheduled ADG I and ADG II air cargo aircraft. Apron A2 also has one designated small helicopter parking position.

Based on the overall demand projections, the 39 tiedowns on the Main Apron and Apron A2 appear to be adequate to meet locally based and transient small airplane parking needs described below (9 to 11 aircraft), plus an equivalent development reserve through the current planning period.

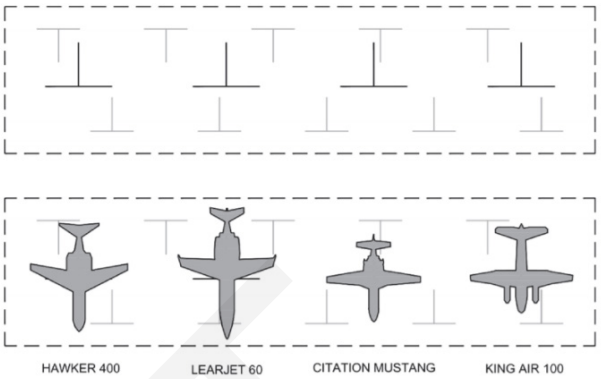
Locally-Based Aircraft

The evaluation of airport activity presented earlier projects an increase from 20 to 24 based aircraft (+4) at TMK by 2044. The 2012 ALP Report aircraft storage evaluation assumed that 90% of based aircraft would require hangar storage and 10% would require apron space. An additional 10% demand factor for apron parking was identified to account for locally based aircraft that require both hangar and apron space. By maintaining the same parking utilization in the future, the projected demand for based aircraft parking ranges from 4 to 5 aircraft during the planning period. The existing tiedown capacity is adequate to accommodate current and projected parking demand for based aircraft, and a comparable development reserve through the current planning period.

Transient Aircraft (Small Airplanes)

Transient aircraft parking needs were evaluated based on average peak day volumes in the updated airport activity evaluation summarized earlier in the chapter. The updated operational and peaking assumptions are similar to those defined in the 2012 ALP Report forecast.

Transient parking requirements are estimated based on 15% of the itinerant operations of the average peak day of the peak month. Using this formula, it is estimated that TMK will need to provide parking for approximately 5 to 6 transient small aircraft to accommodate normal busy day demand during the 20-year planning period. Based on the current and projected transient aircraft activity at TMK, the existing tiedown capacity is adequate to accommodate this parking demand, and to provide a comparable development reserve through the current planning period.

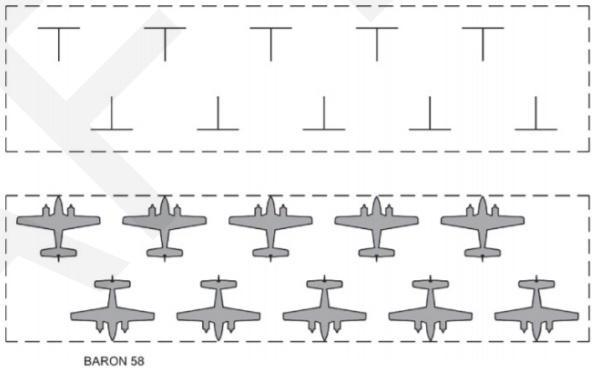


Note: The lighter lines depict the nested tiedown positions available for small aircraft
Source: Delta Airport Consultants, Inc.

Typical parking layout for small AC tiedown positions marked for larger aircraft.

Transient Aircraft (Business Class Airplanes)

The Main Apron accommodates transient business jets and other larger aircraft in its aircraft tiedown rows. The current configuration includes 18 small aircraft tiedowns and 1 large airplane tiedown. There are no designated drive-through parking positions available for business class aircraft on the apron. Based on current use, 2 to 3 ADG I or II business class aircraft may typically be accommodated on the Main Apron during peak periods. The aircraft parking duration varies, but often includes overnight parking or extended stays.



Source: Delta Airport Consultants, Inc.

Generic parking area for 10 tiedown positions

Based on current and projected use and available small airplane parking capacity, the Airport may consider reconfiguring a portion of the Main Apron to incorporate ADG II taxilane clearances and drive-through parking positions for transient business aircraft.

The maximum ADG II aircraft wingspan is 79 feet. Aircraft drive-through parking positions should be configured to provide adequate wingtip clearances and nose/tail clearances from adjacent taxilane object free areas (TLOFA). The ADG II TLOFA width standard is 110 feet, with 55 feet of clearance provided between the taxilane centerline and the nearest point on the parking position. For comparison, the current ADG I TLOFA is 79 feet wide (39.5 feet from centerline). As noted above, 2 to 3 transient drive-through positions would be able to accommodate current peak demand. Overflow demand could be accommodated through use of the small aircraft tiedown rows (see diagram for common dual use aircraft parking rows).

Source: Century West Engineering

Transient Aircraft (Helicopters)

TMK has one small helicopter parking position located on Apron A2 that is available for based or transient aircraft. There are no designated helicopter parking positions on the Main Apron or near services such as fuel. The addition of one helicopter parking position located in the terminal area could be considered based on potential transient user demand.

Table 3-9: Apron And Hangar Facility Requirements Summary

Item	Base Year (2024) Existing Facilities	2028	2033	2038	2043
Based Aircraft Projection	20	21	22	23	24
Aircraft Parking Apron - Existing Aircraft Parking Type/Capacity					
Main Apron (Existing)	13,900 sq yd[1]				
Small Aircraft Parking	19 Tiedowns				
Large Aircraft Parking[3]	0 Drive-Through Positions				
Apron A2 (Existing)	15,800 sq yd[1]				
Small Aircraft Parking	20 Tiedowns				
Transient Helicopter Parking[2]	1				
Aircraft Fueling Apron	840 sq yd[1,4]				
Total Fixed Wing Parking Positions	39 Tiedowns				
Projected Needs (Gross Demand)[4]					
Locally Based Tiedowns (@ 300 sq yd each)	4 spaces / 1,200 sq yd	4 spaces / 1,200 sq yd	4 spaces / 1,200 sq yd	4 spaces / 1,200 sq yd	5 spaces / 1,500 sq yd
Small Airplane Itinerant Tiedowns (@ 360 sq yd each)	5 spaces / 1,080 sq yd	5 spaces / 1,080 sq yd	5 spaces / 1,080 sq yd	6 spaces / 2,160 sq yd	6 spaces / 2,160 sq yd
Business Aircraft Parking Positions (@ 1,000 sq yd each)	0 spaces / 0 sq yd	2 spaces / 2,000 sq yd	3 spaces / 3,000 sq yd	3 spaces / 3,000 sq yd	3 spaces / 3,000 sq yd
Transient Helicopter Parking Positions (@ 800 sq yd each)	1 space / 280 sq yd	1 space / 800 sq yd	1 space / 800 sq yd	2 spaces / 1,600 sq yd	2 spaces / 1,600 sq yd
Aircraft Fueling Apron (SEP @ 400 sq yd each)	2 spaces / 840 sq yd	2 spaces / 800 sq yd	2 spaces / 800 sq yd	2 spaces / 800 sq yd	3 spaces / 1,200 sq yd
Electric Aircraft Charging Stations (@ 400 sq yd each)	none	2 spaces / 800 sq yd	2 spaces / 800 sq yd	3 spaces / 1,800 sq yd	4 spaces / 1,600 sq yd
Total	**12 spaces / 4,120 sq yd**	**16 spaces / 7,400 sq yd**	**17 spaces / 8,400 sq yd**	**20 spaces / 10,560 sq yd**	**23 spaces / 11,060 sq yd**
Aircraft Hangars (Existing Facilities)					
Existing Hangar Units / Aircraft Storage Capacity (Approx. 80,000 sf)[6]	41 Units[5]				
Projected Needs (Net Increase in Demand)[6]					
(New) Hangar Space Demand (@ 2,000 sq ft per space)[7] (Cumulative 20-year projected demand: 3Units/6,000 sq ft)		1 Unit / 2,000 sq ft	1 Unit / 2,000 sq ft	1 Unit / 2,000 sq ft	---

Source: Century West Engineering; Table 3-9 Notes:

1. Existing apron area, area calculation based on 2025 aerial photography review.
2. One designated transient helicopter parking space.
3. Business class aircraft parking is currently accommodated in small airplane tiedown rows.
4. Fueling Apron area clear of Taxiway A OFA.
5. Existing hangars include 4 conventional hangars, 4 T-hangars (37 units), and 1 commercial hangar.
6. Total aircraft storage hangar area is estimated at 80,000 square feet, which currently accommodates 20+ based aircraft. Not all aircraft located at TMK are active with current FAA registrations or airworthiness certificates.
7. Aircraft hangar demand levels identified for each forecast year represent forecast cumulative demand, assuming 95% of new based aircraft will be stored in hangars.

AIRCRAFT HANGARS

TMK currently has four Port-owned T-hangars (37 units) and four privately-owned conventional hangars used primarily for aircraft storage. A commercial hangar (Aerostar) is located adjacent to Apron A2, A3, and Taxiway B1. Approximately 90% of the aircraft fleet is currently stored in hangars. For planning purposes, it is assumed that 90% of new based aircraft at TMK will require hangar storage.

The projection of based aircraft presented earlier indicates an increase of 4 aircraft over the 20-year planning period. Based on the 95% hangar/5% apron storage ratio, the net additional hangar demand is 3 or 4 aircraft (rounded) during the planning period. Long term space requirements are approximated based on a review of existing hangar square footage and based aircraft totals to provide a rough square footage per aircraft value.

Tenant requirements will vary and the requirements for larger hangars capable of business aircraft or expanded commercial operations should be reflected in site planning. It is recommended that a 100% development reserve be incorporated into future landside planning. In effect, long term landside facility planning (forecast + reserve) for locally based aircraft is based on accommodating 8 additional aircraft.

GA Terminal/Pilot Lounge

The existing general aviation terminal building provides restrooms, flight planning, and waiting areas for pilots. The current configuration and amenities serve the Airport's current needs. However, it is recommended that (4,000-6,000 square feet) there should be an area reserved for FBO expansion and or a FBO future hangar.

Source: Century West Engineering

SUPPORT FACILITIES

Support facilities such as security/perimeter fencing and gates and utilities may also require upgrades during the planning period. A project is currently underway to upgrade the Airport's fueling system. Development or expansion of new hangar areas may require extensions of existing utility service lines.

Surface Access and Vehicle Parking

Vehicle access to the terminal area at TMK is provided by Airport Road and Oregon Coast Highway (U.S. 101). The landside facilities and the Tillamook UAS Test Range facilities, located on the north side of Airport, are accessed from Long Prairie Road. Blimp Blvd. provides access to the northeast hangar area (via Hangar B Road), Port of Tillamook Bay administrative offices, the Tillamook Air Museum and Port Industrial Park. The UPS facilities and the Apron A2 share a direct access road connection to Long Prairie Road. The north T-hangar area (Apron A1) also has a direct road connection to Long Prairie Road. Development or expansion of new hangar areas may require extensions of existing airport access roads and vehicle parking.

FUEL FACILITIES

The existing aviation fuel storage at TMK includes two 12,000-gallon aboveground tanks (1 - 100LL AVGAS, 1 - Jet A) owned by the Port of Tillamook Bay. The fixed tank fuel storage and dispensing system is located adjacent to the main apron and FBO building. The fueling system is equipped for 24-hour credit card payment. A project upgrading the fueling area facilities and apron is currently in design and will be completed in the near term.

Based on current and projected activity, the existing tank capacity for both 100LL and jet fuel appears to be adequate.

Demand for electric aircraft charging systems is anticipated during the current 20-year planning period.

Source: Century West Engineering

UTILITIES

The existing utilities at TMK appear to be adequate to support future development in the terminal area and north development areas of the Airport. It is recommended the existing utilities be maintained and extended, as required to accommodate new development during the planning period.

AIRPORT FIREFIGHTING

TMK has no on-site Airport Rescue and Fire Fighting (ARFF) facilities or assets and none are required based on current FAA regulations. Tillamook Fire District Stations 71 and 72, provide local fire/emergency response, and are located approximately 3 miles from TMK via Highway 101.

PERIMETER FENCING/GATES

The primary operating areas at TMK are fenced. Controlled access gates are located at the pilot/FBO building and main apron, the north hangar area, the UPS facilities, the north tiedown apron, and the Aerostar Tillamook facilities.

The majority of the Airport's operating areas are fenced (7-foot chain link with 3 strand barbed wire). Range fencing is used for portions of the Airport's boundaries where agricultural activities are conducted, and some small areas of the airport perimeter are not currently fenced. It is recommended that the unfenced areas identified be fenced to control access to all operational areas of the Airport.

Current Port plans include upgrades t the FBO/main apron gate and the gate adjacent to Apron A2 and UPS.

LAND USE

On-Airport Land Use

The Airport is located within unincorporated Tillamook County with M-1 (general industrial) zoning. The existing zoning accommodates all airport related development and provides adequate protection from potential incompatible land uses. The current City and County airport overlay zoning should be reviewed for consistency with the airport master plan and the updated airport layout plan (ALP) and Part 77 airspace plan. See Chapter 2 for information on existing land use and zoning.

Off-Airport Land Use

Portions of the Part 77 surfaces established for the Airport extend into unincorporated Tillamook County and the City of Tillamook. The review of off-airport land use provided in Chapter 2 identified no land use compatibility issues. A review of existing avigation easements noted on the 2012 Airport Layout Plan and Exhibit "A" Property Plan drawings appears to provide adequate protection for the portion of the Runway 13 RPZ that extends north of Long Prairie Road.

Summary

The updated forecasts of aviation activity anticipate modest growth in activity. This results in moderate airside and landside facility demands beyond existing capabilities. The existing airfield facilities can accommodate the forecast increase in activity, with targeted facility improvements. For the most part, the need for new or expanded facilities, such as aircraft hangars, will be market driven. The non-conforming items noted within this chapter can be addressed systematically during the current planning period to improve overall safety for all users. The summary of facility needs is provided in **Table 3-10**.

Preliminary airport development alternatives will be presented in Chapter 5 to evaluate different options capable of meeting forecast demand, in addition to identifying any development constraints that exist. The process of Planning Advisory Committee (PAC) review of the preliminary alternatives will allow the Port of Tillamook Bay to define and refine the preferred alternative for the master plan and develop a viable implementation strategy.

Table 3-10: Facility Requirements Summary

Facility	Short Term (0-10 years)	Long Term (10-20 years)
Runway 13/31	RDC: B-I (Small) 5000 *Note: Maintain existing RDC B-II dimensions based on future needs* Pavement Maintenance & Repaint Markings	RDC: B-II 5000 Pavement Maintenance & Repaint Markings
Taxiway A, A1-A3	TDG 2 Pavement Maintenance & Repaint Markings	TDG 2 Realign sections of A to improve function and configuration (south section of Taxiway A) Upgrade A2 to 90-degree connector Relocate existing A2 to align with B2 Add AC Hold Areas at A1 and A3 Pavement Maintenance & Repaint Marking
Runway 1/19	RDC: A-I (small) Pavement Maintenance & Repaint Markings	RDC: A-I (small) Pavement Maintenance & Repaint Markings
Taxiway B1-B2, C	TDG 2/1A (determine by section and AC use) Pavement Maintenance & Repaint Markings	TDG 2/1A (determine by section and AC use) Eliminate Aligned Taxiway (B1) at Rwy 19 end Pavement Maintenance & Repaint Marking
Navigational Aids and Lighting	none	End of Service Life Replacements (LED): • Rwy 13/31 MIRL • Rwy 1/19 MIRL • Rwy 13, 31, 1, 19 PAPI • Rwy 13 REIL • Airport Rotating Beacon
Weather Systems	None	Replace AWOS 3PT at end of useful life
Landside Facilities	Hangar Development • Terminal Area • North GA Areas • UAS/AAM Operations/R& D Areas Replace/Reconfigure existing T-hangars at end of useful life Apron and Taxilane Pavement Maintenance & Repaint Markings	Main Apron (Business AC Parking) Apron and Taxilane Transient Helicopter Parking Pavement Maintenance & Repaint Markings
Terminal Building/FBO	None	Expansion reserve and vehicle parking
Aircraft Fueling	Upgrade System - Existing (2) fuel tanks, apron, and facilities	Maintain existing systems
Surface Access	Maintain existing surface access	Same
Security	Maintain existing fencing and gates	Upgrade/replace existing fencing and gates as needed
Utilities	Maintain existing utilities and fire flow for structures	Extend electrical and water service to new hangar sites