

## City of Yakima

To: Honorable Mayor, Members of the City Council and City Manager

From: Doug Maples, Code Administration and Planning Manager  
Bill Cook, Community & Economic Development Department Director

Subject: **Airport Safety Overlay: Regulations for Land Use Policy / Risk Analysis**

The following reference document has been prepared using numerous technical journals and texts, all of which are referenced in the attached footnotes. We hope this information is helpful in the upcoming study session on the ASO.

### **I. EXECUTIVE SUMMARY: ISSUES FOR CITY OF YAKIMA**

As identified in this briefing paper, the City of Yakima is charged with evaluating federal and state regulatory requirements for protection of the land outside of the airport property but within the airport area of influence and the oversight of Yakima Air Terminal (YAT). This will include evaluation of the Airport Master Plan, resulting in potential changes, new development related to the runway expansion and aircraft operations that are directly addressed and governed by the Federal Aviation Administration (FAA). It will involve consideration of how the City exercises its statutory authority to control the airport pursuant to RCW ch. 14.08. It will involve recognition of the needs of the Essential Public Facilities (EPF) and the Growth Management Act (GMA) requirements to protect EPFs. It will involve consideration of what uses and/or restrictions on the development are appropriate on lands adjacent to the airport to address the land use compatibility requirements set forth by state statute. Finally, it will involve identification of protection zones using appropriate criteria for each zone to establish the standard for development within the airport area of influence.

Airports, both large and small, have been shown to spur economic benefits to the community in which they are located. The aviation industry is moving to serve more of the corporate and commuter service than just general aviation and private pilot pleasure flying. In light of homeland security, the airport plays a vital role such as an additional method of State transportation, delivery of emergency supplies, temporary military and police support, and medical evacuation of the injured as a result of a disaster. Many corporations, businesses, and companies consider proximity to both an air carrier and a general aviation airport within their top ten criteria when selecting a new area to locate their facilities. An airport, together with other local resources, help attract the industries so vital to community prosperity.

- The City must now determine:
  - What level of risk is the City willing to assume to protect the utility of and the public investment in the airport?
  - What level of regulations is reasonable and appropriate on private property around the airport?
  - What is the future length of runway that should be used for planning purposes?

The major question to be answered boils down to: What is an acceptable risk? The ultimate answer to this question is something that each elected official must decide. Many urban communities accept a somewhat higher level of risk than may be accepted in a rural area, just as they accept a higher level of ambient noise with traffic and commercial activity. The more a community becomes urbanized the more these levels are elevated. Safety can be described as relative, not absolute.

Finally, in view of the fact that the Yakima Air Terminal Master Plan has not been adopted by either the City of Yakima or Yakima County, the planning staff is uncertain and has no clear guidance regarding the Yakima Air Terminal Master Plan for the airport's long term planning. This creates a conundrum for the City planning staff for reasons such as which runway length to use as well as the coordination of the master plan with the City's current Comprehensive Plan.

## II. Introduction

The importance of aviation as a vital transportation element that is essential to the economic health of the City and region and its businesses and the quality of life to its citizens and visitors is well recognized. Therefore, the Washington State Transportation Commission has developed the Washington State Aviation Policy. Issues raised by this policy, such as the potential for encroachment of incompatible land uses in proximity to airports, considered to be essential public facilities under RCW 36.70A.200, have been further addressed, and formalized, by the Washington State Legislature. In 1996, Senate Bill 6422 and the resulting implementation of the bill, RCW 36.70.547, amended the Growth Management Act (GMA) to require every city planning under GMA, and having a general aviation airport in its jurisdiction, to discourage the siting of land uses that may be incompatible with aviation.

The issues related to compatibility of land use in proximity to an airport, particularly one in an urban context, are complex. In the City of Yakima, an Airport Safety Overlay Ordinance was adopted in January 2001. With any regulation there must be findings of fact to support the requirements

set forth, especially when boundaries with additional restrictive criteria are established.

### **Airport planning.**

The FAA has established a comprehensive process for airport planning to ensure the rational development of the national aviation system and the efficient use of federal funds for airport improvements. As further discussed below, the FAA reviews and approves an Airport Layout Plan ("ALP") for every airport that receives federal funds.<sup>1</sup> The FAA also requires such airports to prepare master plans, and, as noted above, has standards that govern when it is appropriate for the airport owner to consider expanding or improving various airport facilities. Additionally, the FAA uses accident data to justify on-airport design criteria and requirements. Finally, the FAA prioritizes airport improvement projects for purposes of federal funding by means of the National Plan of Integrated Airport Systems (NPIAS).

The Airport Master Plan, which is a forecast of potential airport development, is required to be part of the Comprehensive Plan, so the city may use this as a reference document for planning purposes. The compatible land uses adjacent to the Airport, which lie within the Airport Influence Area [note: the "Airport Influence Area" is that area defined as being within the outer limit of "Safety Zone 6," see Exhibit A] must be understood, regulated and defined so when development occurs over the coming years, there is appropriate protection for the airport and the development. The Airport Master Plan included the development of an airport community land use compatibility plan. The purpose of the airport community land use compatibility plan was to identify noise levels associated with the airport development program at Yakima Air Terminal and to recommend actions which can be taken to minimize adverse impacts on the community.

The Airport Safety Overlay regulations address compatible land use issues over the Airport Influence Area. The present Airport Safety Overlay generally runs east west, corresponding to the layout of the airport runway in a primarily linear layout. The current ordinance uses FAA Part 77 flight protection zones, which extends 15,000 feet from each end of runway 09 / 27 and 1250 feet on each side of the runway centerline.

### **Federal airport funding: grant assurances.**

Because Yakima Air Terminal (YAT) is part of the NPIAS, it is eligible for federal funds to acquire land and construct improvements. A lot of the

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<sup>1</sup> Advisory Circular 150/5070-6a - Airport Master Plan.

land at YAT has been acquired with federal grant money.<sup>2</sup> The FAA provides such grant money subject to various conditions (or "grant assurances") that are legally binding on the airport sponsor (here, the City of Yakima and Yakima County).<sup>3</sup> If the City/County violates these grant assurances, the FAA could bring an enforcement action to force corrective action by the City and/or County.<sup>4</sup> The City/County legal staff will have to evaluate the terms and implication of these grants assurances.

Within the grant assurance document the airport planning is to follow only the assurances of sections 1, 2, 3, 5, 6, 13, 18, 30, 32, 33, and 34 in section C as they apply to the project unless otherwise specified in the grant.<sup>5</sup> The subsection 21 in section C addresses "compatible land use", which is not automatically included within the assurance requirements. If compatible land use is a requirement of a grant assurance, then the jurisdiction is required to take appropriate action, to the extent responsible, which may include the adoption of zoning laws, to protect airport operations from noncompatible land uses.

### III. **Yakima Air Terminal (McAllister Field)**

An analysis of airport characteristics is critical to the formulation of a functional land use compatibility program. No two airports have the same dimensions, service capability, and are set in the same physical situation. The following characteristics are particular to the Yakima Air Terminal (McAllister Field) and serve to define the compatibility criteria for land uses in proximity to the Airport.

#### **Service Capability based on Functional Classification and Design Type**

Three aviation classifications apply to the Yakima Air Terminal. Yakima Air Terminal is a "Primary Service Short Haul Transport Airport" facility by the National Plan of Integrated Airport Systems (NPIAS). The NPIAS classifies Primary Service airports are public use airports receiving scheduled airline passenger service which also enplane 10,000 or more passengers per year. A Transport airport serves aircraft with wingspans greater than 118 feet and with approach speeds of 121 knots or more. Transport runways usually have the capability for precision approach operation. Aviation service for charter flights, aviation taxi service, business/corporate, and recreation flying is provided from Yakima Air Terminal to the Central Washington State.<sup>6</sup>

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<sup>2</sup> *Id.* at F.14 - F.15.

<sup>3</sup> Title 49, U.S.C., subtitle VII, Airport Grant Assurances, Appendix 1.

<sup>4</sup> *Martyn v. Port of Anacortes*, FAA Docket No. 16-02-03

<sup>5</sup> Title 49, U.S.C., subtitle VII, Airport Grant Assurances, Appendix 1 at 1, (B)(3).

<sup>6</sup> Yakima Air Terminal Master Plan.

## **National Plan of Integrated Airport Systems.**

Yakima Air Terminal is part of the regional and national aviation system called the National Plan of Integrated Airport Systems, or "NPIAS." The NPIAS identifies the airports and facility development that are eligible for federal funding.<sup>7</sup> Aviation demand forecasts establish the basis for proposed future development items to be included in the NPIAS and obtain federal funding approval.<sup>8</sup> Under the NPIAS, capacity development should be recommended when an activity approaches certain defined levels.<sup>9</sup> For example, planning for a runway extension should be evaluated when operations exceed 60% of annual capacity.<sup>10</sup>

FAA approval and implementation of capacity improvements would not occur until after environmental review and not without the airport operator's and users' agreement.<sup>11</sup>

The Airport Reference Code (ARC)<sup>12</sup> is a coding system developed by the Federal Aviation Administration to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at an airport. The ARC has two components relating the airport design to aircraft. The first component, depicted by a letter, is the aircraft approach category and relates to aircraft approach speed. The second component, depicted by a Roman numeral, is the airplane design group and relates to airplane wingspan. Generally, aircraft approach speed applies to runways and runway related facilities. Airplane wingspan primarily relates to separation criteria involving taxiways and taxilanes.

Airports expected to accommodate single-engine airplanes normally fall into ARC B-I. Airports serving larger general aviation and commuter-type planes are usually ARC B-II or C-II. Small to medium-sized airports serving air carriers are usually ARC C-III, while larger air carrier airports are usually ARC D-VI. The Yakima Air Terminal's ARC classification is C-III and the crosswind runway is classified as B-II.

There is a precision instrument landing system (ILS) approach to Runway 27 at the Yakima Air Terminal, a FAA tower, a non-precision approach, a VHF Omnidirectional Range/Tactical Air Navigation (VORTAC), and a non-directional beacon.

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<sup>7</sup> Advisory Circular 150/5070-6a - Airport Master Plan; Field Formulation of the NPIAS at 3.

<sup>8</sup> Title 49, U.S.C., subtitle VII, Airport Grant Assurances, Appendix 1

<sup>9</sup> Field Formulation of the NPIAS at 22.

<sup>10</sup> Advisory Circular 150/5070-6a - Airport Master Plan; Advisory Circular 150/5020-1 – 5325-4a, - Runway Length Requirements for Airport Design.

<sup>11</sup> Field Formulation of the NPIAS at 22.

## **User Type**

Most of the based aircraft at the Yakima Air Terminal, 90.4 percent, are single-engine. Multi-engine aircraft make up 7.6 percent, helicopters 1.1 percent, and jets 0.8 percent. Projections to 2021, included in the Yakima Air Terminal Business Plan (2002), indicate the increase in multi-engine and jet aircraft will be slight and only result in a total of 13 percent for these types.

## **Volume of Use**

Although the airport is used by commercial planes for take-offs of 737, 757, 767 and 777 aircraft for testing purposes, military, corporate jet, small cargo operation and Horizon Airlines commercial passenger service the primary use is by single-engine piston aircraft. The high use level by single-engine aircraft makes Yakima Air Terminal one of the top nine general aviation facilities in the state in aircraft landings and takeoffs.

There is some use and on occasion significant use of the Yakima Air Terminal by military aircraft, although following September 11, 2001, more military activity has used the Yakima Air Terminal for "touch and go" defense exercises.

## **Capacity**

Airfield, or airside, capacity is measured as the number of takeoffs and landings an airport can accommodate over a particular time period given the layout of runways and taxiways, weather conditions, and mix of aircraft using the facility. Commercial passenger service at the Yakima Air Terminal is about 10 percent of total airside capacity. Landside capacity is a measure of existing supply of parking (tie-downs or hangars).

Utilizing the methodology from FAA Advisory Circular 150/5070-6a<sup>13</sup> document produces statements of airfield capacity in two major terms:

- Hourly Capacity of Runways: The number of aircraft operations that can be placed on the runway system in one hour: and,
- Annual Service Volume (ASV): A reasonable estimate of the airport's annual capacity. The ASV accounts for differences in runway use, aircraft mix, weather conditions, and other limiting factors that can occur over a year's time.

The capacity of a runway system is determined by several factors. Among these are meteorology, runway use patterns, aircraft mix, percent of operations that are arrivals, percent of operations that are touch-and-goes, the spacing of exit taxiways, and runway length.

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<sup>13</sup> Advisory Circular 150/5070-6a - Airport Master Plan; Advisory Circular 150/5020-1 – 5325-4a, - Runway Length Requirements for Airport Design.

| <b>Airfield Capacity Summary</b> |             |             |             |             |
|----------------------------------|-------------|-------------|-------------|-------------|
| <b>Descriptor</b>                | <b>1991</b> | <b>1997</b> | <b>2002</b> | <b>2012</b> |
| Hourly Capacity                  | 110         | 89          | 88          | 88          |
| Design Hour Demand               | 26          | 31          | 33          | 36          |
| Annual Service Volume            | 181,000     | 163,000     | 161,000     | 162,500     |
| Annual Demand                    | 80,000      | 88,700      | 93,500      | 102,500     |

### **Physical Characteristics**

The Yakima Air Terminal is approximately 825 acres in size<sup>14</sup>. The asphalt and concrete runway has a full taxiway parallel along the north side. The runway 09/27 is 150 feet wide for a present 7,603 of useable runway length. Most business aircraft can conduct normal operations on a field of this length, larger commercial jets, however, may have to limit fuel loads on takeoff during hot weather.

The Yakima Air Terminal passenger terminal building is a two (2) level structure with ground level enplaning and deplaning operation. Typical of a small regional airport, the passenger terminal provides for ticketing, passenger processing, baggage handling, and security inspection. Food service, car rental, shops, restrooms, and other ancillary functions support these elements.

### **Airspace Characteristics**

Because the Yakima Air Terminal has a tower, the airspace above it is classified as Air Traffic Control Tower Airspace. For the Yakima Air Terminal, the airspace is classified as Control Zone Airspace. The airspace has a radius of approximately five (5) miles with extensions at the approach and departure paths. This airspace borders a Restricted Area associated with Yakima Firing Center.

### **STATE GROWTH MANAGEMENT ACT REQUIREMENTS.**

The Washington State Growth Management Act, Ch. 36.70A RCW ("GMA"), includes specific requirements for regulation of airports and also includes requirements regarding what uses may be permitted in an urban area. These GMA requirements are applicable to YAT, and City of Yakima, where the airport is located. As with the mandate to strive to harmonize Ch.14.08 RCW and RCW 35.22.415, the public participation

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<sup>14</sup> Yakima Air Terminal Master Plan.

process will also need to harmonize all of these GMA requirements and limitations.

#### **A. GMA protections for "essential public facilities."**

In recognition of the fact that certain types of facilities are both necessary to the region and likely to be resisted by neighboring property owners, the GMA includes provisions that protect such "essential public facilities" ("EPFs") and limit what local regulations can impose or require.

In particular, the GMA provides that "No local comprehensive plan or development regulation may preclude the siting of essential public facilities."<sup>15</sup> An airport is an "essential public facility."<sup>16</sup> YAT has NOT been designated an EPF in the City of Yakima Comprehensive Plan, consistent with this GMA provision, because the City /County process never formally adopted the Yakima Air Terminal Master plan.<sup>17</sup>

Washington courts have recognized that RCW 36.70A.200(5) and RCW 35.63.250 not only prevents a local jurisdiction from precluding the *initial siting* of an airport, but also prevents a local jurisdiction from precluding the *expansion of or improvements to* an already-existing airport. In a recent case, the Court of Appeals upheld the Growth Management Hearings Board's invalidation of several provisions of a city comprehensive plan on the ground that the plan precluded construction of a third runway at Sea-Tac International Airport.<sup>18</sup> The court rejected the city's argument that the statute applied only to siting a new essential public facility, as opposed to expanding or improving EPFs that have already been sited.<sup>19</sup> The court stated that "the legislative purpose of RCW 36.70A.200(2) would be defeated if local governments could prevent the construction or operation of an EPF."<sup>20</sup>

Similarly, the Growth Management Hearings Board has held that the GMA prevents a local jurisdiction from precluding airport uses on airport property. In a recent case involving the Anacortes airport, the Board held that RCW 36.70A.200(5) and RCW 35.63.250 establishes that a local government may not preclude expansion of "airport-related uses or facilities."<sup>21</sup> The Board therefore struck down a city's failure to change the zoning of a 4-acre portion of an airport from residential use, as the residential zoning designation "effectively precludes airport operations and

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<sup>15</sup> RCW 36.70A.200(5).

<sup>16</sup> *Concerned Citizens Against Runway Expansion v. City of Anacortes*, WWGMHB No. 01-2-0019c (Final Decision and Order, December 12, 2001), 2001 WL 1671801 at \*2.

<sup>17</sup> Yakima Air Terminal Master Plan.

<sup>18</sup> *City of Des Moines v. Puget Sound Regional Council*, 108 Wn. App. 836 (1999).

<sup>19</sup> *Id.* at 845-46.

<sup>20</sup> *Id.* at 846.



uses and therefore does not comply with the GMA."<sup>22</sup> The Board also struck down the city's imposition of requirements that precluded airport or airport-related uses on a larger portion of the airport property.<sup>23</sup>

Finally, the Growth Management Hearings Board has held that RCW 36.70A.200(5) and RCW 35.63.250 prevents a local jurisdiction from adopting permit processes for essential public facilities that are excessively onerous. In a case earlier this year, the Board struck down Snohomish County's conditional use permit process for essential public facilities, where that process appeared to have "no definite end" and no provision that "assures that a decision must ever be made."<sup>24</sup> The Board stated that the GMA prohibits local government EPF permit processes that are "fundamentally untimely, unfair and unpredictable."<sup>25</sup> The Board stated:

Local plans and regulations may not render EPF's impossible or impracticable to site, expand or operate, either by the outright exclusion of such uses, or by the imposition of process requirements or substantive conditions that render the EPF impracticable.<sup>26</sup>

## **B. Compatibility of adjacent uses.**

The GMA also imposes requirements regarding City of Yakima regulation of land use *outside* of City boundaries, which may be outside of airport property. In regulating properties adjacent to YAT, the City of Yakima must comply with a critical statutory requirement:

Every county, city, and town in which there is located a general aviation airport . . . shall, through its comprehensive plan and development regulations, discourage the siting of *incompatible uses adjacent to* such general aviation airport . . .<sup>27</sup>

The Growth Management Act requires that cities and counties implement this provision when adopting and amending their comprehensive plans and development regulations.<sup>28</sup>

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<sup>22</sup> *Id.*

<sup>23</sup> *Id.* at \*4. The Board also noted that hangars are airport related uses. *Id.* at \*3.

<sup>24</sup> *King County v. Snohomish County*, CPSGMHB No. 03-3-0011 (Final Decision and Order, October 13, 2003) at 16.

<sup>25</sup> *Id.* at 13.

<sup>26</sup> *Id.* at 16.

<sup>27</sup> RCW 36.70.547 (emphasis added).

<sup>28</sup> RCW 36.70A.510.

CalTran's sponsored an analysis in 1993 through a grant from the Federal Aviation Administration that plotted the location of historic aircraft accidents over a 10-year period across the country. In 2001, they commissioned an update of the analysis and added all hundreds of aircraft accidents plots in to the study. The 2002 Update confirmed the findings in 1993 and continued to groups the accident rate per acre into six primary areas where accidents tended to cluster at the same rate. The accident safety zone data is used by the State of Michigan, Maryland County, Washington and California.

The Washington State Department of Transportation Aviation Division has created guidelines for carrying out this mandate.<sup>29</sup> These guidelines are written to be helpful and provide current data and evidence in evaluating what types of land use compatibility regulations the City of Yakima should adopt governing properties adjacent to the airport to ensure that uses on those properties are consistent with airport operations. Part of the of the City of Yakima's responsibilities is to evaluate policies and regulations that apply to properties adjacent to the airport property to ensure that the compatibility requirements set forth by state statute are met.

Most commercial and industrial uses, especially those associated with the airport, are good neighbors. Land uses for which the airport creates demand, such as motels, restaurants, warehouses, shipping agencies, aircraft related industries, and other related industries that benefit from these uses, the City may find it desirable to promote the use of this land for commercial or industrial use through a program of marketing and incentives.

Care must be taken to ensure that buildings and structures do not obstruct the aerial approaches to Yakima Air Terminal, interfere with aircraft radio communications, or affect a pilot's vision due to glare or bright lights. Motels, restaurants, and office buildings should be soundproofed<sup>30</sup> to make them more comfortable and attractive to clientele and employees.

#### **IV. Risk Assessment**

When developing a program designed to ensure the safety and welfare of a community, decisions must be made that are based on an assessment of the risk inherent in the actions taken (or inaction). "Risk" is defined as exposure to the chance of loss. Risk can be voluntary, such as

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<sup>29</sup> Airports and Compatible Land Use Study, Volume 1.

<sup>30</sup> Airport Noise Compatibility Planning Toolkit, FAA; Advisory Circular 150/5020 – 1 – Noise Control and Compatibility Planning for Airports.

in lifestyle choices, or involuntary, such as people at risk on the ground under airspace.

In terms of aviation, potential loss can be fatal. "Zero risk" is almost impossible to achieve. Again, in the case of aviation, if all uses and people were removed from the Airport Influence Area, risk to airplane occupants would still exist. Zero risk from aviation would only be possible if no aviation took place. With involuntary risks, the best that can be hoped for is to reduce risks to a level that is acceptable to the jurisdiction and their citizens.

The development of an airport safety overlay ordinance is an attempt to reduce exposure to risk within the City of Yakima and to users of the Yakima Air Terminal. This can be done in several ways. First, landowners and developers can be made aware of strategies to ensure that development projects do not increase hazards to aviation. Planners, in reviewing such proposed projects, can use policies, criteria and development standards to assess the potential for incompatibility with aviation operations<sup>31</sup>. People with extreme fear of potential aviation mishaps or a high degree of sensitivity to aviation impacts can be made aware in various ways of areas to avoid when choosing a residence or place to work.

The nine separate airport aerial photos provided with the study session packet suggest a higher threshold for risk in other cities than currently accepted in Yakima. The assumption to be made, based upon these photos, is that the standard in other cities allows a greater degree of development than our current standard. The photos beg the questions, (1) How can this level of development occur in these cities? (2) Why is it not allowed here in the City of Yakima?

The primary focus of this report is reducing risk in the future, within a potential development area. Existing uses, although in close proximity to the airport, should not be analyzed to the level of new development in terms of aviation risk because, in Yakima, these land uses have already been established, until the land use is modified.

Given that risk cannot be completely eliminated, the goal is to reduce the highest risk elements. The strategies to achieve this include limiting the intensity and density of uses and providing protection to special populations in certain areas in proximity to the Airport.

The Federal Aviation Administration (FAA) regulates for safe operations of both airplanes and airports<sup>32</sup>. The FAA, however, has no

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<sup>31</sup> Airport Land Use Planning Handbook.

<sup>32</sup> *ee* A Model Zoning Ordinance to limit Height of Objects Around Airports.

jurisdiction over land uses adjacent to the airport. The Airport Safety Overlay is intended to increase safety and land use compatibility outside the boundaries of the airport.

## **Local Risk**

What is the level of risk in Yakima? This can be calculated by using national statistics and the most current data available to assess risk. Also, records of actual aviation emergency incidents in Yakima are available. [The aviation industry defines accidents as emergency events that result in fatalities or serious injury to people either on an airplane or on the ground. Incidents are events with less serious consequences. Mishaps are accidents and incidents together.] The unpredictable nature of aviation risk, however, means that only one accident can mean disaster. Off-airport accidents and injury to people on the ground from aviation emergencies are very rare. Even so, safety is a factor that can be increased.

National Transportation Safety Board data indicates the Yakima Air Terminal has experienced 53 aviation mishaps since 1964<sup>33</sup>. This is approximately 1.5 mishaps per year. The majority of the mishaps have occurred on airport property. Potential hazards to aviation have been regulated by ordinance (Ord. 2001-10) and in the Yakima Municipal Code since 2001. However, the nature of aviation has changed dramatically since adoption of these regulations.

The initiation of an Airport Safety Overlay is particularly timely because of the proposed road expansion for Washington Avenue and the Valley Mall Boulevard as well as recent interest shown by the development community. As density of population and intensity of use increases adjacent to the airport, the potential consequences of an aviation emergency incident also increase. Adoption of an Airport Safety Overlay using the most current data and evidence will ensure that City's excellent aviation safety record will be maintained.

In Yakima, record keeping of aviation emergency incidents locations off the airport is somewhat unreliable, due the information is not kept in one location or listed as an aircraft incident. Based upon the FAA records, it appears that on-airport accidents outnumber off-airport accidents about twenty to one.<sup>34</sup>

## **Risk Potential**

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<sup>33</sup> United States National Transportation Safety Board.

<sup>34</sup> United States National Transportation Safety Board.

With the exception of ensuring that obstructions are not allowed to interfere with airspace, compatible land use planning cannot influence the frequency of aviation accidents. In addition, off-airport accidents are infrequent. The foundation of updating an Airport Safety Overlay is an assessment of potential risk. Risk is measured in several ways. The basis for risk assessment within the Airport Influence Area are guidelines provided by the State of California Department of Transportation Division of Aeronautics, "California Airport Land Use Planning Handbook;" January 2002.<sup>35</sup>

Airplane accident risks have two notable characteristics that can be measured. They are physical in nature (as opposed to social or financial for example) and consist of a single event (as opposed to effects that evolve over an indefinite period of time). Assessment of risk ("what might happen") is measured in terms of frequency, distribution, and consequences. Frequency and distribution are quantitative assessments, but consequences are measured qualitatively.

The types of risk in aviation are accident risk, individual risk, and societal risk. The accident risk rate is the number of airplane crashes anticipated to occur on an annual basis within a given area. Individual risk is aviation hazard to an individual on a 24 hour, 365-day year basis. The risk of fatality, not injury, is usually the only consideration in assessing individual risk. A societal risk is one that has consequences beyond the accident itself. The societal risk may be a factor influenced by public perceptions such as the belief in a lack of safety of a particular type of aircraft.

### **Perception of Risk**

In addition to risks that can be largely measured in one way or another, the public's perception of risk is another factor to be considered in a risk assessment. Communication of risk is important in formulating policy to manage risk. The presentation of the City of Yakima's updated Airport Safety Overlay to elected officials, stakeholders, and the public should raise awareness of risk in Yakima from aviation accidents and, hopefully, reassure the community that the actual risk is low using the most current data to establish a minimum standard, boundaries and criteria.

### **Aviation Emergency Type in Relation to Risk**

In assessing potential risk, and planning for land use compatibility, a basic understanding of the types of aviation emergencies is required. Generally, aviation emergencies are of two types:

- One in which the pilot creates the emergency, and;
- Those caused by something other, but to which the pilot can react.

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<sup>35</sup> Airport Land Use Planning Handbook.

General aviation mishaps, which are the most common occurrence of the first type, are caused by the failure to maintain air speed, which in turn results in uncontrolled descent. The second type is most often caused by adverse wind and weather conditions and loss of power due to engine failure from mechanical problems or lack of fuel. If airspeed can be maintained, most airplanes (even large jets) can land without functioning engines, because the aircraft has the ability to glide.

### **Airplane Type in Relation to Risk**

Airplanes are primarily of two types, single-engine and multi-engine. Obviously, multi-engine airplanes may have a greater chance of landing safely if one engine fails. Ironically, however, while pilots may be able to land multi-engine airplanes in an emergency, the aircraft are more difficult to control due to asymmetrical thrust characteristics. Also, pilots tend to think they can make it back to the airport and continue to remain airborne longer than they should. With single-engine airplanes, when the engine fails, the pilot is forced to descend and land immediately. For these reasons, a factor of risk to a community is the proportion of single-engine to multi-engine planes that use the airport. At the Yakima Air Terminal, over 60 percent of the aircraft operations are general aviation airplanes, which are both single and multi engine.

### **Emergency Landing Characteristics**

Pilots are taught to follow certain procedures in case of an engine-failure emergency. The pilot's most important element is to maintain airspeed. The basic steps, if possible, include keeping the airplane under control, determining the problem, attempting to restart the engine, and finally if necessary, making an emergency landing. Pilots will look for a large, flat, open area without people, buildings, large trees, or other objects in which to land. Wires or other obstructions may be difficult to see and night emergency landings are particularly perilous.

### **Location of Accidents**

As mentioned above, important to the measure of frequency of accidents is the additional factor of location of the incidents. The National Transportation Safety Board (NTSB) compiles data on aviation accidents. Based on NTSB records from 1964 to 2003, 80 percent of general aviation accidents take place on the airport. Another 10 percent occur within five miles of the airport ("airport vicinity accidents"), and 10 percent occur more than five miles from the airport.<sup>36</sup>

Of the general aviation on-airport or near-airport landing accidents, most (80 percent) occur during touchdown or rollout after touchdown. The

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<sup>36</sup> United States National Transportation Safety Board.

remaining 10 percent take place within or near the landing pattern. For these reasons, the most critical safety zones are those that include the "Runway Protection" area, the "Inner Safety" area, the "Inner Turning" area, the "Outer Safety" area, and the "Sideline Safety" area.<sup>37</sup> These five zones account for only 20 percent of the total land area in the Airport Influence Area. In Yakima, this "high probability" or "high risk" area is located over the east and west portion of Yakima Air Terminal. The Sideline Safety area runs parallel to Washington Avenue on the north side and north of Ahtanum Road on the south side of the main runway.

Statistics indicate that the locations of take-off accidents are more wide spread than those during landing. At Yakima Air Terminal, take-offs usually occur over the west valley area and overflight of the City of Union Gap for landing from the east.

### **Collision Spatial Characteristics**

When planning to reduce risk from off-airport accidents, it is important to know the characteristics of emergency landings. Again, NTSB data can be used to develop minimum requirements for "Ideal Emergency Landing Sites" or as also indicated "open space area." The median area dimension for general aviation accidents, both with and without some pilot control, is about 75 feet. Perhaps the key element in compatible land use planning in urban areas is the ability to preserve open space that could be utilized by pilots during aviation emergencies. Statistics prove that risk to both airplane occupants and using this strategy can significantly reduce people on the ground.

### **Risk to Residences and Other Buildings**

Both NTSB data for 1982 through 1989, and that from the Aircraft Owners and Pilots Association for the years 1964 through 1982, indicate that few aviation accidents involve residences or other buildings. The data average of these two sources resulted in the conclusion that the annual percentage of building-airplane accidents over the years studied equal 0.65 percent of all accidents. In addition, the infrequency of building-airplane accidents, the wide range of variables such as aircraft size and type (design) and residential density or building type (number of stories) makes it difficult to predict probability of consequences. Again, in urban areas, provision of open space for emergency landings may be the best strategy. Clustering of residential units may increase opportunities for the creation of such space.

### **Risk and Compatible Land Use Planning**

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<sup>37</sup> Airports and Compatible Land Use Study, Volume 1.

If risk is exposure to chance of loss, the corresponding question is, "What is the cost of reducing that exposure?" In developing a compatible land use ordinance, certain costs must be weighed against the perceived increase in safety and/or reduction in inconvenience. Therein lies the "risk assessment." Each community must make this decision independent of what other jurisdictions may choose to do. The choices of reducing the costs in Yakima may include reducing, status quo, or increasing densities that lie within the Airport Influence Area. Any choice may be at the "expense" of density in the City.

**Strategies to reduce risk and increase safety are based on several principles. They are:**

- Intensity of land use measured by the number of people expected to be attracted to the use on a per acre basis. The Uniform Building Code could be used to assess the potential occupancy of buildings as a measure of intensity in concert with the number of parking spaces required for the structure.
- Intensity of residential use measured by the number of dwelling units per net developable acre. Although residential buildings have not been involved in a significant percentage of off-airport accidents, residential uses are generally provided more protection than non-residential uses. Intensity of nonresidential use is usually allowed at higher rates than density of residential use in airport land use compatibility planning. A reduction in the residential use intensity the closer the residential use is aligned to the runway could possibly be considered.
- Protection for special populations, such as school age children or those who have reduced mobility, such as the elderly or ill. This type of land use for such groups is understood and not difficult to recognize why additional controls as well as prohibition would be suggested. The uses included in this category are day care centers, K-12 schools, hospitals, churches, nursing homes, mobile/manufactured home parks and convalescent centers.
- Control of hazardous materials, such as aboveground storage of moderate to large quantities of flammable or other hazardous materials. In Yakima, the Code Administration and Planning Division uses fire code regulations (YMC Title 10.05.080 and 090) to control the storage of hazardous materials. Because effective regulations under the Uniform Fire Code are in place that provides maximum compatibility with aviation operations, no additional measures for hazardous material regulation are necessary at this time. However, in certain zones hazardous and flammable materials would not be allowed for safety reasons.
- Hazards to flight, such as obstructions of the airspace, danger to aviation from wildlife, and interference to navigation or communication.



In Yakima, obstructions have been prevented, based on Yakima Municipal Code regulations (YMC 15.30). These would be updated during the 2004 ordinance update, to include more current standards using the most up-to-date data. Of special concern is the proximity of potential salmon habitat in the Wide Hollow, Ahtanum and Bachelor Creek areas, which is immediately adjacent to the airport. The spawning of salmon attracts prey, most notably great blue heron and bald eagle, which can cause collision of birds and aircraft. In addition, any wetland areas such as found on the west and south side of the airport property could also create a habitat for wildlife that would be dangerous to aircraft.

- Aircraft occupants' survivability rate, as discussed above, the provision of open space provisions increases the opportunity for pilot-controlled emergency landings in the vicinity of the airport. Pilots, if at all possible, will direct their aircraft in order to prevent loss of life both on the airplane and on the ground. This strategy is particularly useful at airports with general aviation operations serving small aircraft. Some types of control have been achieved through the purchase of land by the airport.

## **Risk Assessment Conclusions**

As discussed in the introduction to this document, the primary purpose of the City of Yakima's Airport Safety Overlay ordinance update is to increase safety and land use compatibility outside the boundaries of the airport within the Airport Influence Area.

The Risk Assessment evaluates a number of factors related to safety, including the number, type, and frequency of on and off-airport aviation accidents in Yakima, national statistical information on aviation incidents in general, specific land use and airport operational characteristics unique to Yakima, safety principles (e.g., protecting special populations, limiting density and intensity of land uses, preventing hazards to flight), and safety compatibility criteria guidelines for determining density and intensity. The Risk Assessment is based on a significant review of a number of various resources, including but not inclusive: the Yakima Air Terminal Master Plan Update (1996)<sup>38</sup>; National Transportation Safety Board accident statistics<sup>39</sup>; the Washington State Department of Transportation's Airports and Compatible Land Use, Vol. 1, 1999<sup>40</sup>; the Puget Sound Regional Council's 2001 Regional Airport System Plan<sup>41</sup>; and, the State of California Department of Transportation's (CalTrans)

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<sup>38</sup> Yakima Air Terminal Master Plan.

<sup>39</sup> United States National Transportation Safety Board.

<sup>40</sup> Airports and Compatible Land Use Study, Volume 1.

<sup>41</sup> The Puget Sound Regional Council Regional Airport System Plan, 2001.

California Airport Land Use Planning Handbook, 2002<sup>42</sup>. The CalTrans study is the most recent and comprehensive study completed to date, and therefore is the one of the most desirable study to use as a base to the City of Yakima in that it addresses land use compatibility with airport operations in urban areas using the most current and up to date data and evidence.

As indicated in Airports and Compatible Land Use Study <sup>43</sup>, all of the area subject to the proposed Airport Safety Overlay ordinance update is located within six separate Safety Zones indicated as Zone 1 (Runway Protection Zone), Zone 2 (Inner Safety Zone), Zone 3 (Inner Turning Zone), Zone 4 (Outer Safety Zone), Zone 5 (Sideline Safety Zone), and 6 (Traffic Pattern Zone). Each zone has review criteria to regulate the land use compatibility, which include avoiding residential uses and limiting intensities of non-residential uses. Based on the "Basic Safety Compatibility Qualities"<sup>44</sup> and "Criteria Guidelines"<sup>45</sup> presented in the CalTrans Airport Land Use Planning Handbook (2002), there is "generally a low likelihood of accident occurrence at most airports; risk concern primarily is with uses for which potential consequences are severe" (e.g., outdoor stadium and similar uses with very high intensities). In Traffic Pattern Zone 6, residential uses and most nonresidential uses are allowed<sup>46</sup>. There are no limits on residential and non-residential densities/intensities, with the exception of "stadiums and similar high intensity uses"<sup>47</sup>.

This document has been developed to provide information related to the review and analysis of the data and applicable land use planning information. The appropriate land uses and associated densities across the site area should be consistent with the most current data such as WSDOT Aviation and CalTrans recommended guidelines and criteria. Residential use is prohibited within Safety Zone 5 (1000 feet from the centerline of the runway). Land uses and densities proposed for Safety Zone 6 reflect the consideration for existing land uses and their relationship with airport operations based on data reviewed. The data must address aviation safety both on the ground and to airplane occupants.

In conclusion, implementation of the Airport Safety Overlay ordinance update, which includes the review criteria and standards, based on the Risk Assessment described above, is intended to provide

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<sup>42</sup> Airport Land Use Planning Handbook, 2002.

<sup>43</sup> Airports and Compatible Land Use Study, Volume 1.

<sup>44</sup> Basic Safety Compatibility Qualities from "California Airport Land Use Planning Handbook".

<sup>45</sup> Criteria Guidelines from "California Airport Land Use Planning Handbook".

<sup>46</sup> Land Use Densities and Intensities from "California Airport Land Use Planning Handbook".

<sup>47</sup> Land Use Densities and Intensities from "California Airport Land Use Planning Handbook".

appropriate information so the level of risk within the City, users of the Yakima Air Terminal and the community can be measured.

## **V. Airport Safety Overlay Ordinance Update**

The Airport Safety Overlay ordinance update addresses three primary categories of airport land use compatibility. "Compatibility" includes issues of safety and noise annoyance, particularly when the latter may affect human health. The categories of airport land use compatibility most significant in the Airport Safety Overlay ordinance update are,

- 1) General aviation safety;
- 2) Airspace protection, and;
- 3) Aviation noise. [Note: Overflight is primarily a concern in safety zones 1 through 4]

While there may be some overlap, each has characteristics particular to its category. For that reason, each category included in the Airport Safety Overlay ordinance update is analyzed in terms of the compatibility objective and criteria intended to provide strategies to meet the objective, and the criteria and measurements used to ensure that the objective is met.

NOTE: It must be clearly understood, any actions directed toward the day-to-day activities of an airport or the manner in which aircraft operate are beyond the purview of the Airport Safety Overlay update.

## **FEDERAL REGULATORY FRAMEWORK**

For the City of Yakima to accomplish its tasks, it is necessary for the City of Yakima to understand the federal requirements that govern the operation and funding of airports such as YAT. Many of these requirements (discussed below) specifically bind the City of Yakima and Yakima County (as the operator of YAT). The City of Yakima charge is to recommend a policy that, among other things, allows YAT to operate in accordance with federal requirements.

### **A. Federal regulation of airports.**

To ensure safety and uniformity among airports throughout the United States, the FAA has comprehensive regulations governing aircraft and airport operations. These regulations are generally found in Title 14 of the Code of Federal Regulations ("CFR") and govern the layout and configuration of airport facilities, aircraft flight patterns, and virtually every

other aspect of aircraft and airport operations.<sup>48</sup> For example, federal regulations require that airports have clear safety areas around runways and taxiways and that vertical obstructions into airspace be controlled.<sup>49</sup>

The FAA also has extensive regulations regarding aircraft noise. These regulations establish standard noise modeling methodology, identify land uses which are incompatible with various levels of airport noise, provide for voluntary development of noise exposure maps and noise compatibility programs by airport operators and for FAA review thereof, and establish procedures and criteria for noise projects to be eligible for federal funding.<sup>50</sup> Noise compatibility programs include the development of various measures to mitigate an airport's noise impacts.<sup>51</sup>

The FAA's requirements for airports are contained in a variety of sources. In addition to the United States Code and the Code of Federal Regulations, the FAA has published additional regulatory documents, such as Advisory Circulars, Airport Compliance Requirements, etc.

**Compatible Land Uses**

Land uses most compatible with airports are those, which have low sensitivity to noise, require minimal human interaction with the surrounding environment, and have a complementary relationship with airport's operation and facilities.

| <b>Table 1*:</b>   |  |
|--|--|
| <b>COMPATIBLE LAND USES</b>  |  |
| <p><b><u>AVIATION INDUSTRIES:</u></b><br/>           Air Freight Terminals<br/>           Air Cargo Forwarders<br/>           Aircraft and Parts Manufactures<br/>           Aircraft Repair Shops<br/>           Aerial Survey Companies<br/>           Aviation Schools<br/>           Aviation Research and Testing</p> | <p><b><u>OTHER USES:</u></b><br/>           Storage Facilities<br/>           Warehouses<br/>           Wholesale Distribution Center<br/>           Shopping Centers<br/>           Banking Services<br/>           Office Buildings<br/>           Factories<br/>           Large Store Retail Sales</p> |
| <p><b><u>AIRPORT RELATED USES:</u></b><br/>           Trucking Terminals<br/>           Taxi and Bus Terminal<br/>           Parking Facilities and Auto Storage</p>   | <p><b><u>OPEN SPACES:</u></b><br/>           Golf Courses<br/>           Picnic Areas<br/>           Forests<br/>           Landscape Nurseries</p>  |

<sup>48</sup> 14 CFR Part 71 (airspace regulations), 77 (objects affecting navigable airspace), 91 (operating and flight rules), and 139 (certification and operations of airports). This list is not exhaustive. Other federal regulations govern other aviation-related matters.

<sup>49</sup> 14 CFR 139, subpart D; 14 CFR 77, subpart C.

<sup>50</sup> 14 CFR Part 150; Overview of FAR Part 150 Airport Noise Compatibility Planning Program.

<sup>51</sup> Overview of FAR Part 150 Airport Noise Compatibility Planning Program.

|  |   |
|--|---|
| Car Rental Agencies<br>Gas Stations<br>Motels and Hotels<br>Restaurants<br>Convention Centers<br>Night Clubs | Arboretum<br>Farming<br>Mining and excavation<br>Cemeteries |
|--|---|

\*This list is not all-inclusive, but a list to provide use types. Other similar uses may be considered.

**FACTORS AFFECTING LAND USE COMPATIBILITY:**

It is important to remember that 80% of the 53 aircraft incidents at Yakima Air Terminal have occurred on airport property since 1964<sup>52</sup>. It is expected the Yakima Air Terminal will continue to have predominately a mix type of aircraft over the next few decades. This relates to safety in that mix type aircraft range from a limited experience pilot to very experienced pilot. Some kind of criteria for open space may lessen casualties or property damage from potential crashes.

The designation of emergency landing sites, or as otherwise referred to as open space requirement, address and provide safety for the occupants of an aircraft forced to make an emergency landing away from a runway. The training a pilot receives teaches them to attempt emergency landings in a clear area.

Limitation of density or intensity of use in areas most susceptible to off-airport aviation emergency incidents are done using the number of people per acre and using the occupant loading level for the structure pursuant to the building code. In addition, the uses of NTSB statistics for dimensions of emergency landing sites minimum amounts of functional open space requirements resulting in the cumulative acreage for each zone within the Airport Influence Area.

**INCOMPATIBLE LAND USES**

Residential housing is the most predominant urban land use. However, it is also the use most incompatible with aircraft operations and airports. During periods of rapid growth, residential uses have often developed too close to airports. As with the Yakima Air Terminal, residential use expansion into the area around the airport, homeowners have inevitably expressed concerns regarding safety and noise. Residential growth restricts the airport by acquiring the land needed for expansion and by removing the buffer between airport and residential

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<sup>52</sup> United States National Transportation Safety Board.

neighborhoods. This buffer is important because it diminishes the impact of aircraft noise and increases the safety of residents in the airport influence area. As residential development fills the vacant or former agricultural land around the airport, the possibility of potential airport restriction increases.

Obviously, residential neighborhoods, schools, churches, hospitals, nursing homes and other similar land uses are the most susceptible to the effects of aircraft operations. It is in the interest and viability of the airport and community to locate these uses where they will be subject to the least impact of aircraft takeoffs and landings.

Wildlife attractants on and near airports also create hazards to air navigation, which can be prevented through proper land use planning. Airports have or acquire wildlife hazard problems<sup>53</sup> because 1) an attractant has been created near the airport because of changes in land use, or 2) urban encroachment has limited available habitat and concentrated wildlife on or very near the airport. A number of land uses contribute to bird and other wildlife hazard problems, and are considered incompatible if located within 10,000 feet of an airport. These include sanitary and other waste facilities<sup>54</sup>, agricultural practices which attract birds, and wildlife sanctuaries, refuge and production areas.

It is clearly in the City’s best interest that action be taken to prevent such land use conflicts.

| <b>Table 2*:</b>  |  |
|---|--|
| <b>INCOMPATIBLE LAND USES</b>   |  |
| <p><b><u>RESIDENTIAL:</u></b><br/>                     Residential development &gt; 1 DU per acre<br/>                     Mobile/Manufacture Home<br/>                     Parks<br/>                     Multi-family Large Complexes</p> | <p><b><u>INSTITUTIONAL:</u></b><br/>                     School<br/>                     Church<br/>                     Hospital<br/>                     Nursing home<br/>                     Day care Facilities</p>   |
| <p><b><u>SANITARY:</u></b><br/>                     Landfill<br/>                     Transfer Station<br/>                     Sewage Pond<br/>                     Sludge Disposal</p>  | <p><b><u>WILDLIFE:</u></b><br/>                     Water Reservoir<br/>                     Feed Lot<br/>                     Slaughter House<br/>                     Waterfowl Production<br/>                     Wildlife Refuge/ Sanctuary<br/>                     Fish Pond<br/>                     Lake/Pond</p> |

<sup>53</sup> Advisory Circular 150/5200 – 33, Hazardous Wildlife Attractants on or near Airports.

<sup>54</sup> Advisory Circular 150/5200 – 34, Construction of Establishment of Landfills Near Public Airports.

\*This list is not all-inclusive, but a list to provide use types. Other similar uses may be considered.

### **Airspace Protection**

To use Title 14 of the Code of Federal Regulations ("CFR") Part 77 "Imaginary Surfaces" to establish the boundaries, dimensions and configuration (airspace protection thresholds<sup>55</sup>, to reduce airspace obstruction and hazards to aviation in proximity to Yakima Air Terminal, which regulates the height of a structures, noise, smoke and trees. It also should be mentioned that cities and counties are not allowed to change or overrule these regulations. The CFR's will provide maximum protection to Yakima Air Terminal airspace from obstructions and hazards to aviation.

Our present and proposed ASO ordinance prohibit buildings, structures, or other objects from being constructed or altered so there is no penetration of the airspace surfaces, except incidental to airport operations as approved by the FAA and Yakima Air Terminal. Aviation accidents are not primarily caused by interference from obstructions and/or hazards. Nevertheless, it is important to keep aviation operations free from obstructions and hazards, which in turn also meets the CFR requirements. Currently the Yakima Air Terminal runway does not have obstructions and hazards within the approach areas. Since 2001, Ordinance 2001-10 has provided some form of regulations regarding the airport approach, transition and turning zones, height and use restrictions, and hazard marking and lighting for the Yakima Air Terminal.

The Airport Safety Overlay should be modified so the current standard for determining airport land use compatibility, obstructions and hazards, uses the most current data and evidence to regulate the airspace and land uses. The Federal Aviation Administration Part 77 is intended to apply to the airspace above Yakima Air Terminal and the data from multiple sources including Washington Department of Transportation Aviation Division Guidelines would apply to the land use compatibility matters.

### **Aviation Noise**

A number of factors underlie the need for controlling land uses around airports, including safety, airport growth constraints, traffic, and environmental concerns, but the most prominent issue is that of aircraft

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<sup>55</sup>, e.g., 14 CFR Part 71 (airspace regulations), 77 (objects affecting navigable airspace), 91 (operating and flight rules), and 139 (certification and operations of airports). This list is not exhaustive. Other federal regulations govern other aviation-related matters.

noise. Airport operation must be concerned with the impacts of aviation noise that is at a level deemed to be a health hazard or disruptive of noise-sensitive activities.

There are a number of measures that can be employed to lessen the undesirable effects of noise in the vicinity of airports. These measures can be grouped into four (4) classes:

1. Land use in the airport vicinity
2. Airport planning and design
3. Aircraft operation and use
4. Aircraft design and modification

The aviation industry is taking the lead in developing methods to alleviate noise by aircraft operations through updating design standards for both aircraft and airports. Therefore, the effect of commercial aircraft of today verses the commercial aircraft of yesterday is significant.

The Aviation Safety and Noise Act of 1979 was enacted, "... to provide and carry out noise compatibility programs, (and) to provide assistance to assure continued safety in aviation..." This legislation requires the establishment of a single system for measuring aircraft noise, determining noise exposure, and identifying land uses which are normally compatible with various noise exposure levels. Federal Aviation Regulation (FAR) 150<sup>56</sup> sets requirements for airport operators who choose to undertake an airport noise compatibility study.

FAR Part 150 provides a defined study process, voluntarily undertaken by airports sponsors, to develop map and a noise compatibility program. The noise exposure maps document existing and future noise impacts based on the existing and future operations and runway utilization at an airport. The noise contours are generated through computer modeling using Federal Aviation Administration (FAA) approved program entitled, Integrated Noise Model Version 3.10. These noise contours depict the noise levels for an average annual day to the 65, 70, and 75 Day-Night Average Sound Level (DNL). The noise contours<sup>57</sup> are then plotted on an existing land use map and a future land use map to show the areas of incompatible land use<sup>58</sup>. The noise compatibility program includes provisions for the abatement of aircraft noise through the modification of aircraft operating procedures, air traffic control procedures, airport regulations, and/or airport facility modification. Noise mitigation strategies such as land acquisition, sound insulation, and modifications to

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<sup>56</sup> 14 CFR Part 150; Overview of FAR Part 150 Airport Noise Compatibility Planning Program.

<sup>57</sup> Yakima Air Terminal Master Plan, Airport Layout Plan Noise Contour Maps; NASA/FAA Survey, Reducing Community Concerns related to Aircraft Noise.

<sup>58</sup> Yakima Air Terminal Master Plan



zoning legislation and local land use plans are also recommended in the noise compatibility program.<sup>59</sup>

A number of controls on aircraft operations can be imposed to minimize the noise effects. The most dramatic of these measures has been the FAA's decision to prohibit civilian aircraft from flying at supersonic speeds over the United States. At facilities where multiple runways are available, aircraft may be assigned to depart or approach on runways that will take the aircraft over sparsely populated areas. Similarly, pilots may be required to utilize a certain power level, or achieve a specific altitude, to decrease the noise levels over heavily populated areas.

Federal Aviation Regulation Part 36 places limitations on the noise created by the new subsonic turbojet and transport category aircraft, as part of the aircraft certification process. Manufacturers have made significant advances in recent years to design quieter aircraft, primarily through quieter engines and improved aerodynamics.

## **PREEMPTIVE EFFECT OF FEDERAL AND STATE LAW.**

There is considerable federal regulation of matters related to aircraft and airports. Under certain circumstances, federal law may "preempt" (render impermissible) local regulation of the same subjects. In addition, there are various state statutes that allocate authority between the City and County over regulation of the airport. While the interplay of these state statutes is somewhat unclear, these statutes limit the County's authority over the airport to some degree.<sup>60</sup>

### **A. Federal preemption of local regulation of airport and aircraft operations and aircraft noise.**

The United States Supreme Court has unequivocally held that federal law preempts local government regulation of aircraft noise.<sup>61</sup> Lower courts have followed the Supreme Court's lead.<sup>62</sup> Some courts have distinguished between regulations that control noise sources (i.e.,

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<sup>59</sup> NASAO/FAA Survey, Reducing Community Concerns related to Aircraft Noise.

<sup>60</sup> Federal and state court decisions, state statutes, Growth Management Hearings Board decisions, and Pierce County plan provisions. The legal effect of the decisions of the Growth Management Hearings Boards and the courts may vary depending on where a jurisdiction is located, and which Hearings Board or court decision is being considered.

<sup>61</sup> *City of Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624, 638 (1973) (holding that federal law preempted city ordinance prohibiting jet aircraft from taking off between hours of 11 pm and 7 am).

<sup>62</sup> *San Diego Unified Port District v. Gianturco*, 651 F.2d 1306, 1316 (9<sup>th</sup> Cir. 1981) (federal law preempted curfew on aircraft flights pursuant to state law that forbade operation of airports which exceeded preset noise level).

aircraft), which are preempted, and regulations that mitigate noise impacts without impinging on aircraft operations (such as zoning regulations that assure harmonious development near airports), which are not preempted.<sup>63</sup>

A more complicated question is what other types of local government regulation related to airports are preempted by federal law. The Ninth Circuit Court of Appeals has held that local governments “are preempted from regulating airports in any manner that directly interferes with aircraft operations.”<sup>64</sup> In the 1992 *Burbank* case, that court held that a city was preempted from regulating construction and reconstruction of taxiways and runways; the court reasoned that the proper placement of taxiways and runways is critical to the safety of takeoffs and landings, and regulation of runways and taxiways was thus a direct interference with the movement and operations of aircraft and therefore was preempted by federal law.<sup>65</sup>

Since YAT is located within the Ninth Circuit, *Burbank* governs the City of Yakima and Yakima County regulation of YAT. However, other courts have recognized a distinction between local government regulation of aircraft operations and matters directly related thereto (which are preempted), and other local regulation of the expansion of airport ground facilities on land use grounds (which may not be preempted).<sup>66</sup>

## **B. State law regarding allocation between City and County of authority over airport.**

State statutes grant certain powers to a municipality operating an airport whose operations extend outside its city limits. Under RCW 14.08.120(2), a municipality that has established an airport has the power “to adopt and amend all needed rules, regulations, and ordinances for the management, government, and use of any properties under its control, whether within or outside the territorial limits of the municipality.” Under RCW 14.08.330, every airport shall be “under the exclusive jurisdiction

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<sup>63</sup> *Id.* at 1313-14.

<sup>64</sup> *Burbank-Glendale-Pasadena Airport Authority v. City of Los Angeles*, 979 F.2d 1338, 1340 (9<sup>th</sup> Cir. 1992).

<sup>65</sup> *Id.* at 1341.

<sup>66</sup> *Compare Price v. Charter Township of Fenton*, 909 F.Supp. 498, 505 (E.D. Mich. 1995) (federal law preempted ordinance limiting frequency of flights of certain airplanes) and *U.S. v. City of Berkeley*, 735 F.Supp. 937, 940 (E.D. Mo. 1990) (federal law preempted local government's denial of special use permit for construction of air navigation radar system) with *City of Cleveland v. City of Brook Park*, 893 F.Supp. 742, 751 (N.D. Ohio 1995) (federal law did not preempt local government's requirement of conditional use permit for new runway and runway extension) and *City of Burbank v. Burbank-Glendale-Pasadena Airport Authority*, 72 Cal.App.4th 366, 380 (Cal. Ct. App. 1999) (while federal law preempted direct regulations of aircraft or airspace, local government retained power to regulate land use; rejecting facial challenge to statute requiring city approval for expansion of airport to accommodate new terminal).

and control of the municipality or municipalities controlling and operating it. . . No other municipality in which the airport or air navigation facility is located shall have any police jurisdiction of the same. . .”

At the same time, state statutes recognize under RCW 35.22.415, “whenever a first class city owns and operates a municipal airport which is located in an unincorporated area of a county, the airport shall be subject to the county’s comprehensive plan and zoning ordinances in the same manner as if the airport were privately owned and operated.” This provision does not apply to Yakima Air Terminal. In addition, the Yakima Urban Area Comprehensive Plan addresses all areas within the Urban Area Growth Boundary.

Under Washington law, statutes touching upon the same subject are to be interpreted harmoniously, whenever possible.<sup>67</sup> No court has yet considered the interplay of these statutory provisions. However, the law requires that these statutes be read harmoniously to give effect to both of them. The City of Yakima has strived to address both statutes with the Yakima Urban Area Comprehensive Plan.

### **Airport Master Planning:**

Airport master planning is a level of planning relating directly to airport facilities. The airport master plan includes an analysis of the specific improvements necessary to provide the proper level of service for the forecast demand. The most significant noise issue has been repeatedly identified as the impact from commercial and military jet aircraft training.

The airport master plan process should identify the impact of airport operations on land use in the vicinity and recommend actions to alleviate negative impacts. These impacts could provide methods to restrict the location of noise-sensitive land uses from areas of high noise levels. The Yakima Air Terminal per the Yakima Air Terminal’s Airport Master Plan indicates the potentially noise-sensitive land within the 65 DNL (or higher) noise contour. The master plan should indicate the areas for which simple land acquisitions and easements ought to be obtained for a fee. In fact, Congress has required an airport sponsor requesting federal aid under the Airport Improvement Program (AIP) to show the actions taken to restrict the use of land adjacent to, or in the immediate vicinity of the airport, or possibly land influence by aircraft operation.

One of the methods to aid some protection and assistance is within the airport influence area, require aviation easement activity notice be

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<sup>67</sup> *Vashon Island Committee for Self-Government v. Washington State Boundary Review Board*, 127 Wn.2d 759, 771 (1995).

placed on land title when property has any land use activity such as subdivided, or as part of approval of land use permits, special use permits, building permits, or other SEPA non-exempt projects. Such notice will relate to noise, low overhead flights, and aviation operations that create high levels of noise, or aviation.

Additionally, provide limited residential use and/or residential density, when deemed necessary, to reduce negative impacts on residents from aviation operation noise. The residential use or residential density/intensity would be limited based on recommended safety zones and other data such as using the building code occupant loading, parking requirements and units per acreage factors. Non-residential use and/or intensity shall be limited based on similar restriction using the building code occupant loading, parking requirements and units per acreage factors.

Of course, the need to follow Federal, state and other current data and criteria for maximum acceptable noise levels in different situations and land use control should always be maintained. These include the Federal Noise control Act of 1972, the Aviation Safety and Noise Abatement Act of 1979, and Revised Code of Washington Title 70.107. The primary guidelines, used nationally for aviation land use compatibility, are included in the "California Airport Land Use Planning Handbook," 2002 edition, by the State of California Department of Transportation (CalTrans) Division of Aeronautics. The CalTrans document incorporates the guidelines in "Airports and Compatible Land Use, vol.1," by the Washington State Department of Transportation, Aviation Division.

Based on the Yakima Air Terminal's Airport Master Plan, the report concluded that Yakima does not have a cumulative noise problem and noise impacts from aviation activity is expected to remain moderate (no significant increase over current levels) over the next several years. The only area outside of the airport that is affected by the 65 DNL noise contour is the area just outside of the runway but primarily on airport property, which is at 65 DNL.

The Yakima Air Terminal Airport Master Plan states that "noise problems" are from a combination of sources including touch-and-go training flights, operation noise from jets, military, and other aircraft.

VI. **Exhibits**

- A. Yakima Air Terminal Safety Zone Map (1.1 KB)
- B. *Yakima Air Terminal Master Plan Update* April 1996 prepared by Bucher, Willis, & Ratliff for the Yakima Air Terminal Airport Board, April 1996.

- C. [Airport Land Use Planning Handbook](#), prepared for California Department of Transportation Division of Aeronautics by Shutt Moen and Associates, 2002
- D. State of California. <http://www.dot.ca.gov/hq/planning/aeronaut/htmlfile/landuse.html>. *Airport Land Use Planning Handbook*. State of California Department of Transportation Division of Aeronautics.
- E. *Airport Land Use Planning Handbook*, prepared for California Department of Transportation Division of Aeronautics by Hodges & Shutt, December 1993.
- F. *Basic Safety Compatibility Qualities* from "California Airport Land Use Planning Handbook;" State of California Department of Transportation, Division of Aeronautics; January 2002
- G. *Land Use Densities and Intensities* from "California Airport Land Use Planning Handbook;" State of California Department of Transportation, Division of Aeronautics; January 2002
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