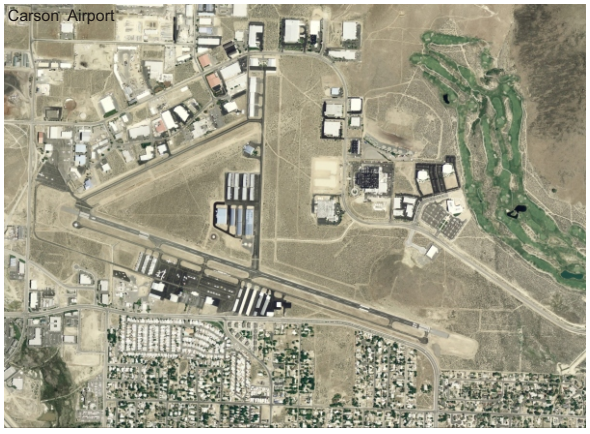
ANALYSIS OF LAND USE AROUND NEVADA AIRPORTS- A FRAMEWORK FOR ACTION

PREPARED FOR

NEVADA DEPARTMENT OF TRANSPORTATION



PREPARED BY

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JANUARY 2009

Protecting Nevada's Investment in Public Airports From Incompatible Land Use Development - A Framework for Action

Prepared for

Nevada Department of Transportation
Aviation Planning Section
Carson City, Nevada

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EXECUTIVE SUMMARY

The purpose of this document is to provide the Nevada Department of Transportation (NDOT) a framework for the continuing discussion of potential statewide actions to protect the investment in Nevada's public use airports from the effects of incompatible development in areas surrounding the airports. This document explores various aspects of this issue including what several other states have accomplished, as well as the range of remedies that are available generally and in the State of Nevada. The document concludes by setting forth an initial series of actions that are intended to increase awareness of this issue and use of the available remedies. Also identified are longer-term actions that are intended to determine the effectiveness of the applied remedies and need for future legislative changes, if such actions are required.

In addition to reviewing State of Nevada legislation pertaining to planning, zoning and other elements for controlling land use in the vicinity of airports, the study looked at similar legislation in several other states, specifically California, Georgia, Oregon, Texas, Washington, and Wisconsin. All of these states, including Nevada, use Federal Aviation Administration (FAA) airport design standards for safety, as well as federal criteria for noise and controlling the height of objects. Such conformity is generally required within each state because as a condition for receiving FAA airport improvement grants each airport sponsor must agree to use these criteria as the basis for protecting the airport investment. The State of California stood out by conducting additional research regarding aircraft accident impact areas which was used to create a set of safety compatibility zones that are added to the federal criteria. The States of Washington and Oregon have, or are embracing, the addition of California-like safety zones.

While the standards for identifying airport incompatible land uses are generally uniform across the states examined, the application of these standards within the land use decision making process varies widely. Among the states examined, these wide variations reflect the different measures of importance given to the incompatible land use issue within the broader context of legislation pertaining to planning, zoning, and environmental review. California, Washington and Oregon have each evolved and continue to evolve rather complex organizational structures for planning and environmental reviews with the result that the evaluation and management of airport incompatible development is imbedded in these review processes. The State of California has created county-level Airport Land Use Commissions whose sole purpose is to manage the development of airport land use compatibility policies and their application in day-to-day and long-term land use decision making. Texas and Georgia each have a unique way (among this group of states) to manage airport incompatible development. The State of Texas utilizes a state mandated zoning overlay concept to individually control noise and building heights, but limits the application of these controls within a maximum envelope that extends out to five miles from the end of a runway for defined runway types. The State of Georgia tackled the issue by mandating ultimate airport design criteria that when implemented provides a constant long-term perspective on the needs of the airport without committing the state or federal governments to actually build the ultimate airport. Wisconsin, like California, Washington and Oregon, has integrated their planning and zoning functions, but also addressed the incompatible land use issue directly in the legislation through an airport approach protection law that can extend

protections up to three miles from an airport boundary and allows extra-territorial actions by the airport-owning municipality. One of the key conclusions of this review was that existing planning and zoning enabling legislation in Nevada appears to be comparable to that available in the states examined, however Nevada legislation places virtually no emphasis on protecting its airports from encroachment.

Collectively these different state-level views for defining and managing airport incompatible development become a list of possible directions for future legislation in Nevada. However, as noted above, the State of Nevada already has in place the need to follow federal standards for noise and height controls together with planning and zoning laws that allow a county, city or town to implement such controls, and has laid the groundwork for a community to exceed those requirements if they so choose. Before embracing any of these future legislative possibilities, it was useful for this study to understand the current and likely future status of airport incompatible development in Nevada, including the extent to which available legislation was being applied to address existing airport land use incompatibility issues. For this study, the current status of incompatible development was evaluated from several angles, but at a relatively high level.

The beneficiaries of any new legislation will be the airports located in the more rapidly developing counties, cities and towns. These are the places that will be under pressure to convert open space to development, some of it near their airports. Nevada had a 66 percent increase in population over the last decade and with 87 percent of the State being owned by the federal government, this growth has been concentrated in the urban areas. The State population is forecast to increase more than 41 percent over the next decade and the concentration of population in urban areas is expected to continue. By examining this information the study identified what counties and associated airports are likely to experience the most development pressure.

This study also explored the status of incompatible land uses and development at existing airports. In 1995, NDOT examined five specific airports to sample the extent of the problem. This more recent effort looked across all the airports, but with less depth of investigation. Part of the reason for not expending considerable resources examining the current situation is that planning and zoning, the principal management resources employed by local governments, are preventative devices. In those locations already incompatible, the solution options have moved beyond preventative measures, and may involve spending public funds to either extinguish an incompatible land use, or worse, to relocate or supplement the airport. For example, the airports at Las Vegas McCarran International and Spanish Springs Airports are in this situation at this time.

The study also explored how the State of Nevada's airports are treated in county and community master plans and in the individual zoning codes. Several local governments, including Clark County and Churchill County, among others, employ overlay zoning to provide protections for some airports. In some counties, planning and/or zoning documents refer to the airport height or safety requirements identified in the airport master plan. Perhaps the most striking observation in this analysis was the lack of consistency statewide in how the airport master plans are

incorporated or referenced in community master plans and zoning, or worse received no mention at all. The reason this is so striking is that while each community is expected to provide assurances that they will protect the airport as a condition for receiving FAA airport improvement grants, the needs of the airport as reflected in the airport master plans are potentially being ignored in the very documents and mechanisms that support that assurance. Why this situation exists is not obvious. However, the most likely conclusion is that this situation stems from a lack of understanding or knowledge on the part of local planners and decision makers regarding the airport incompatible development issue, available remedies, and what could be achieved within the existing legislation.

Finally, the study explored the implications of all the information collected and whether or not the results point to a specific direction for new legislation or other action on the part of NDOT. Based on the conclusion that information is lacking at the local level and the further conclusion that this information gap needs to be closed before additional legislative remedies are sought, the report recommends three objectives and a number of subtasks to address these issues. The three objectives are:

Objective-1 Implement within local zoning ordinances height controls at all Nevada Airport System Plan airports.

Objective-2 Change existing legislation to allow land use controls in areas to be defined as accident safety zones. These would be similar in concept to the accident potential zones developed for military airports, the provision of which already exists in Nevada legislation.

Objective-3 Add land use compatibility reporting to the Nevada Airport System Plan and use the NDOT web site to distribute information regarding airport land use compatibility. In addition to increasing the information available to local planners and decision makers, this information would also highlight what has been achieved in Nevada, and by whom, and would provide a continuing benchmark to determine if progress was being made with respect to Objectives 1 and 2.

Chapter 1

INTRODUCTION

1.1 Purpose

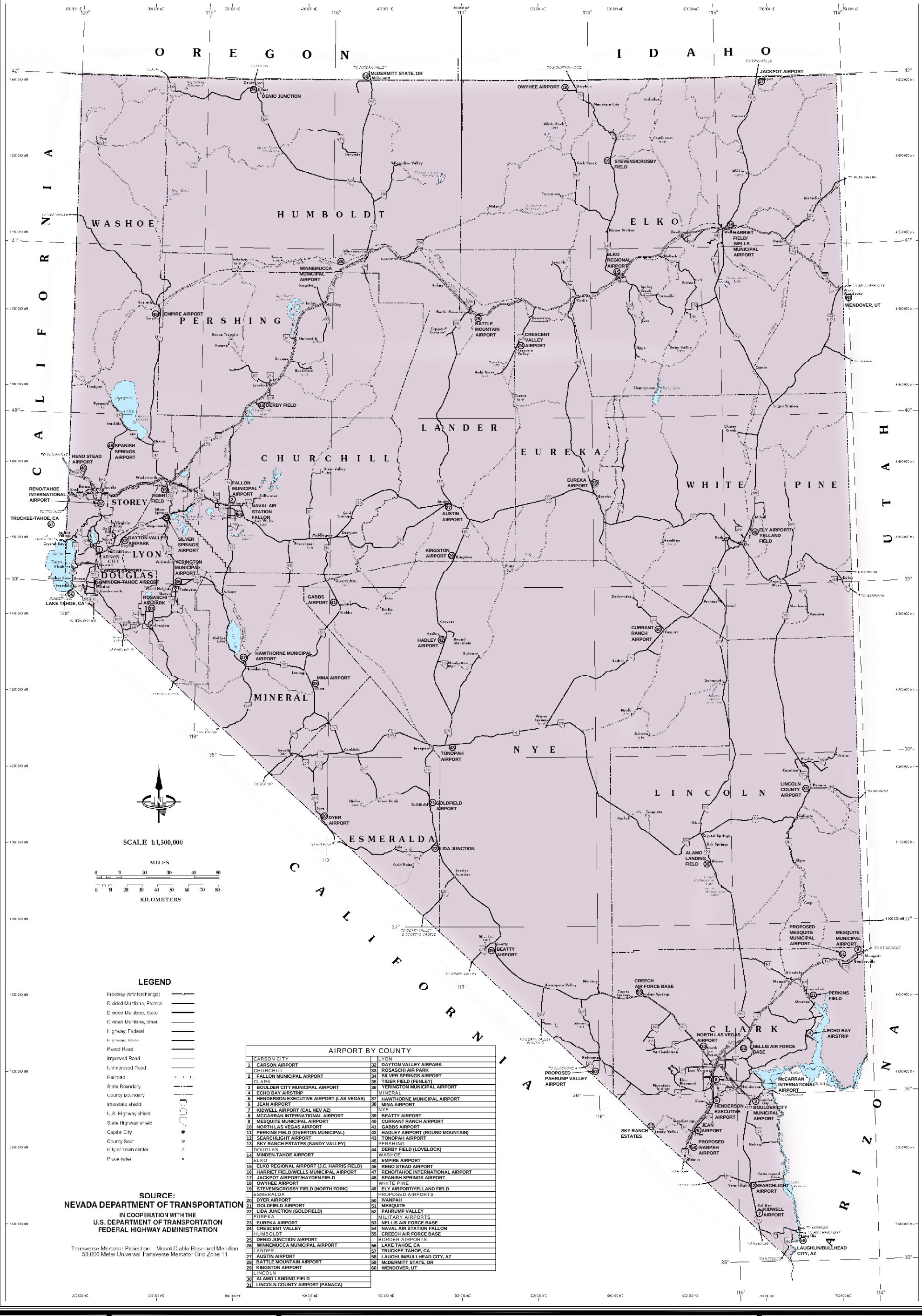
Aviation plays a vital role in Nevada's economy and airports play a vital role in the communities they serve. However, rapid population growth in Nevada over the past two decades has accelerated the conversion of open space for development of housing, schools, and other land uses that attract large numbers of people such as shopping centers and sports arenas. When located in certain areas near airports, such as in areas where the likelihood of an aircraft accident is higher or where the exposure to aircraft noise is greater, these land uses are generally considered to pose increased public safety risks. This encroachment by incompatible land uses poses a threat to continued safe operation of the affected airports, which if not addressed with sufficient lead times to resolve the incompatibilities, could lead to situations that call for the closure or relocation of some airports at considerable public expense. The ability to find new sites for airports that are at the same time environmentally acceptable and land use compatible is limited and the costs associated with new airports are generally prohibitive.

The purpose of this document is to provide the Nevada Department of Transportation (NDOT) a framework for the continuing discussion of potential statewide actions to protect the investment in Nevada's public-use airports from the effects of incompatible development. This document explores various aspects of this issue including what several other states have accomplished, as well as the range of remedies that are available generally and in the State of Nevada. The document concludes by setting forth an initial series of actions that are intended to increase awareness of this issue and use of the available remedies. Longer-term actions that are intended to determine the effectiveness of the applied remedies and need for future legislative changes are also identified.

1.2 Scope

Those airports that are of primary interest to the State of Nevada are included in the Nevada Airport System Plan, shown on Figure 1. The Nevada Airport System Plan includes 49 existing public-use airports and three new public-use airports that are being planned. In addition, there are three key military airports within the State and five commercial air carrier airports just outside the State which are considered to be important from an aviation system planning perspective.

There are also many more airports scattered throughout the State that are privately-owned, some of which are also open to public-use. These are not specifically identified on Figure 1. While the State has no obligation to aid development of a privately-owned airport, it does have a responsibility to protect the public health and safety in areas surrounding the privately-owned airports.



LEGEND

- Freeway (w/interchange)
- Divided Multilane, Federal
- Divided Multilane, State
- Divided Multilane, other
- Highway, Federal
- Highway, State
- Paved Road
- Improved Road
- Unimproved Road
- Railroad
- State Boundary
- County Boundary
- Interstate shield
- U.S. Highway shield
- State Highway shield
- Capital City
- County Seat
- City or Town center
- Place (site)

AIRPORT BY COUNTY

	CARSON CITY		LYON
1	CARSON AIRPORT	32	DAYTON VALLEY AIRPARK
	CHURCHILL	33	ROSASCHI AIR PARK
2	FALLON MUNICIPAL AIRPORT	34	SILVER SPRINGS AIRPORT
	CLARK	35	TIGER FIELD (FENLEY)
3	BOULDER CITY MUNICIPAL AIRPORT	36	YERINGTON MUNICIPAL AIRPORT
4	ECHO BAY AIRSTRIP		MINERAL
5	HENDERSON EXECUTIVE AIRPORT (LAS VEGAS)	37	HAWTHORNE MUNICIPAL AIRPORT
6	JEAN AIRPORT	38	MINA AIRPORT
7	KIDWELL AIRPORT (CAL NEV AZ)		NYE
8	MCCARRAN INTERNATIONAL AIRPORT	39	BEATTY AIRPORT
9	MESQUITE MUNICIPAL AIRPORT	40	CURRANT RANCH AIRPORT
10	NORTH LAS VEGAS AIRPORT	41	GABBS AIRPORT
11	PERKINS FIELD (OVERTON MUNICIPAL)	42	HADLEY AIRPORT (ROUND MOUNTAIN)
12	SEARCHLIGHT AIRPORT	43	TONOPAH AIRPORT
13	SKY RANCH ESTATES (SANDY VALLEY)		PERSHING
	DOUGLAS	44	DERBY FIELD (LOVELOCK)
14	MINDEN-TAHOE AIRPORT		WASHOE
	ELKO	45	EMPIRE AIRPORT
15	ELKO REGIONAL AIRPORT (J.C. HARRIS FIELD)	46	RENO STEAD AIRPORT
16	HARRIET FIELD/WELLS MUNICIPAL AIRPORT	47	RENO/TAHOE INTERNATIONAL AIRPORT
17	JACKPOT AIRPORT/HAYDEN FIELD	48	SPANISH SPRINGS AIRPORT
18	OWYHEE AIRPORT		WHITE PINE
19	STEVENS/CROSBY FIELD (NORTH FORK)	49	ELY AIRPORT/YELLAND FIELD
	ESMERALDA		PROPOSED AIRPORTS
20	DYER AIRPORT	50	IVANPAH
21	GOLDFIELD AIRPORT	51	MESQUITE
22	LIDA JUNCTION (GOLDFIELD)	52	PAHRUMP VALLEY
	EUREKA		MILITARY AIRPORTS
23	EUREKA AIRPORT	53	NELLIS AIR FORCE BASE
24	CRESCENT VALLEY	54	NAVAL AIR STATION FALLON
	HUMBOLDT	55	CREECH AIR FORCE BASE
25	DENIO JUNCTION AIRPORT		BORDER AIRPORTS
26	WINNEMUCCA MUNICIPAL AIRPORT	56	LAKE TAHOE, CA
	LANDER	57	TRUCKEE-TAHOE, CA
27	AUSTIN AIRPORT	58	LAUGHLIN/BULLHEAD CITY, AZ
28	BATTLE MOUNTAIN AIRPORT	59	McDERMITT STATE, OR
29	KINGSTON AIRPORT	60	WENDOVER, UT
	LINCOLN		
30	ALAMO LANDING FIELD		
31	LINCOLN COUNTY AIRPORT (PANACA)		

SOURCE:
NEVADA DEPARTMENT OF TRANSPORTATION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

Transverse Mercator Projection Mount Diablo Base and Meridian
50,000 Meter Universal Transverse Mercator Grid Zone 11

NEVADA AIRPORT SYSTEM PLAN

Nevada Department of Transportation

FIGURE 1

NEVADA AIRPORT SYSTEM PLAN

ARIES CONSULTANTS LTD.

NAME: NDOT-II-13-Loc	NO: 4200-05
DATE: 09-03-2004	PLOT SCALE: 1" = 200'

The requirement for an action plan frames the scope of this study. While incompatible development around airports seems like a relatively new topic, the federal government, other states, and even the larger cities and counties of Nevada have had to deal with the associated issues beginning as far back as the 1950s. As a result, significant research exists regarding land use compatibility near airports, what areas around an airport pose the greater safety risks, the influence of aircraft noise on various types of land use, and other relevant topics. Consequently, the scope of this document is on collecting, reporting, and where possible updating this research particularly as it pertains to airports in the Nevada Airport System Plan. The listing below sets out a number of specific activities, which collectively set out the scope of this effort.

- Identifies and discusses the resources available generally and in existing Nevada legislation that help to identify and manage "airport incompatible development".
- Identifies what several other states have done to manage incompatible development.
- Evaluates at a subjective level the extent to which existing airports are affected by encroachment of incompatible development.
- Looking forward 10 years, examines several indicators of future encroachment conditions that may suggest at which airports such problems might arise and examines at a high level the extent to which the local airport is currently represented in local plans and zoning.
- Identifies and discusses future changes that could be made to change Nevada Legislation.
- Sets forth an initial set of actions to be taken by, or through, NDOT to increase local awareness of the incompatible land use issue and the resources that are available to manage land use development in a way that reduces the likelihood of future incompatibility.
- Makes recommendations that could improve the effectiveness of dealing with incompatible land use even in the absence of new legislation.

Chapter 2

RESOURCES AVAILABLE TO IDENTIFY AND MANAGE AIRPORT INCOMPATIBILE DEVELOPMENT

2.1 Identifying Airport Incompatible Development

Incompatible land uses at airports is not a new phenomenon, nor is it unique to Nevada. It is a complex national issue that has at its core the balance between maintaining and improving community aviation services, growing the local economy, and protecting public health and safety in areas surrounding the airport. All levels of government are affected by this issue because no one level of government has control of all the relevant variables. The federal government manages the aviation system to further interstate commerce and provides the principal funding for its development. The State of Nevada coordinates with the federal government and ensures that the State aviation system is developed in a way that benefits the State as a whole. Local governments who are trying to grow the local economy wield the planning and zoning powers and through that process manage the location of jobs and housing within the community. This chapter identifies and discusses criteria used to identify airport incompatible development. This chapter also identifies the resources that can be applied to manage such development, including references to existing State of Nevada enabling legislation.

2.1.1 Federal Criteria to Identify Incompatible Development

Due to the migration of population from rural to urban areas since World War II, most of the principal airports in the federal aviation system have dealt with incompatible development. As a result, the federal government has evolved a set of criteria that defines incompatible development with respect to an airport. Understandably, this is an airport centric perspective that is designed to maintain the operational effectiveness of an airport while protecting general public health and safety at acceptable levels. The Federal Aviation Administration (FAA), who is the responsible federal agency, recognizes only two criteria that specifically identify incompatible development: 1) the influence of aircraft noise, and 2) the influences of land uses that attract wildlife species that are in size, numbers, or location hazardous to aviation. Relevant policies are cited in these references:

- FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, presents guidance for airport operators and planners to help achieve noise compatibility between airports and their surrounding areas. Relevant FAA guidelines are also published in 14 Code of Federal Regulations (CFR) Part 150, *Airport Noise Compatibility Planning*. Table 1 provides a listing of land uses normally considered compatible, or incompatible, with various exposures of individuals to airport-related noise. This is a reproduction of Table 1 found in 14 CFR Part 150. The criteria in Table 1 are based upon the Day-Night Average

Table 1

FEDERAL LAND USE COMPATIBILITY GUIDELINES

Based upon Yearly Day-Night Average Sound Levels (DNL)

Land use	Yearly day-night average sound level (DNL) in decibels					
	Below 65	**65-70**	**70-75**	**75-80**	**80-85**	**Over 85**
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade – general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

KEYS and NOTES to this Table appear on the next page.

SOURCE: Federal Aviation Regulations Part 150, *Airport Noise Compatibility Planning*, Title 14 Code of Federal Regulations, Appendix A, Part B - Noise Exposure Map Development, Section A150.101 - Noise contours and land usages, Table 1

Table 1 (continued)
FEDERAL LAND USE COMPATIBILITY GUIDELINES

Numbers in parentheses refer to notes.
*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table 1

SLUCM = Standard Land Use Coding Manual.
Y (Yes) = Land Use and related structures compatible without restrictions.
N (No) = Land Use and related structures are not compatible and should be prohibited.
NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35 = Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes for Table 1
(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.
(5) Land use compatible provided special sound reinforcement systems are installed.
(6) Residential buildings require an NLR of 25.
(7) Residential buildings require an NLR of 30.
(8) Residential buildings not permitted.

Sound Level[1] (DNL), which is the standard federal noise metric for determining the cumulative exposure of individuals to noise.

It should be noted that the guidelines in FAA Advisory Circular 150/5020-1 and in Table 1 do not adequately address the effects of aircraft noise on visitors to areas within a historic site, national park, or wildlife refuge where non-aircraft sound levels are very low and a quiet setting is a generally recognized feature or attribute. The FAA has published separate guidance regarding such situations – see *Guidance on Procedures for Evaluating the Potential Noise Impacts of Airport Improvement Projects on National Parks and Other Sensitive Park Environments* (June, 2007).

- FAA Advisory Circular (AC) 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports*, which lists specific land uses that may attract wildlife and the distances from the airport at which they are of concern. This Advisory Circular cites solid waste landfills, existing or proposed dredge spoil containment areas, wastewater treatment facilities, and wetlands and wildlife refuges as potential wildlife attractants. However, any other land uses that attract wildlife, are located in the vicinity of an airport, and have the potential to create a hazard to aviation, should also be considered. The term "vicinity" in the context of this discussion is defined by FAA AC 150/5200-33B as being within 5,000 feet of an airport serving piston-powered aircraft; and within 10,000 feet of an airport serving turbine-powered aircraft; and/or 5 statute miles of a runway end where a landfill could cause hazardous bird species to fly across the airport's approach or departure airspace.

- FAA Advisory Circular (AC) 150/5200-34, *Construction or Establishment of Landfills Near Public Airports*, provides guidelines for implementing Public Law 106-181, the *Wendell H. Ford Aviation* Investment *and Reform Act for the 21st Century*, (49 USC 44718(d)). The limitations of Section 44718(d), as amended, only apply to a new municipal solid waste landfill (constructed or established after April 5, 2000). The airports that are affected by the statute are limited to only those that 1) are recipients of federal grants (under the Airport and Airway Improvement Act of 1982, as amended, 49 U.S.C. § 47101, *et seq*.) and 2) primarily serve general aviation aircraft and scheduled air carrier operations using aircraft with less than 60 passenger seats. The statute does not apply to those airports that serve only general aviation aircraft operations. On an airport-by-airport basis, the State aviation agency can request an exemption of this restriction, but the FAA Administrator must find that such exemption would have no adverse impact on aviation safety.

In addition to the FAA, the Department of Defense (DOD) has four major programs designed to address potential conflicts between military airports and civilian land uses. The Air Installations Compatible Use Zones Program (AICUZ) is most relevant to this discussion. Guidelines for the AICUZ program require that a study be prepared for each military airport, the contents of which

[1] The Day Night Average Sound Level (DNL) is determined by sampling noise exposure events over a 24-hour period. To account for human sensitivity to noise between the hours of 10 p.m. and 7 a.m., noise events occurring during these hours receive a "penalty" when the DNL is calculated. Each nighttime event is measured as if ten daytime events occurred.

include noise maps similar to those contained in an airport master plan or FAR Part 150 study and delineation of a Clear Zone and Accident Potential Zones (APZ). The Clear Zone and Accident Potential Zones extend along the runway centerline beginning at the end of the runway and extending out between 8,000 and 15,000 feet, depending upon the runway classification. The DOD has also developed a land use compatibility table associated with these zones similar to that created by the FAA. The DOD compatibility table is presented in Table 2.

Nevada legislation supports zoning that is designed to foster the coordination and compatibility of land uses with any military installation (see NRS Section 278.250(2)(o) and NRS Section 278.160(1)(f)). Several communities in Nevada have adopted the AICUZ zones as the basis for protecting nearby military facilities. Churchill County uses these zones as a way to protect Fallon Naval Air Station and Clark County uses these zones at Creech Air Force Base and at Nellis Air Force Base. See also the discussion of Clark County land use compatibility standards under the topic "Overlay Zoning" in Section 2.2.1.

Other DOD programs include the Range AICUZ Program; the Operational Noise Management Program (ONMP); and the Compatible Use Program. All of these programs were developed to identify noise affected areas around installations and to implement cooperative approaches for reducing adverse impacts. These programs are employed by all branches of the military.

2.1.2 Other Criteria to Identify Incompatible Development

The following FAA criteria also can be used to identify incompatible development; however that is not the purpose for which they are normally used:

- FAA Airports Division, Policy and Procedure Memorandum 5300.1B, *Runway Protection Zone and Airport Object Clearing Policy*, which sets out FAA's policies regarding runway protection zones, runway object free areas, runway safety areas, and obstacle free zones. The memorandum also cites a number of other FAA regulations, orders and advisory circulars that are relevant to this policy. By itself, this memorandum is not very useful for day-to-day management of objects near the runway, but the policies contained herein should be reflected in the airport master plans (discussed later in Section 2.2) and should be used by the State and local governments through the airport master plans.

- Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*. This regulation was first issued in January 1975 and is used by FAA to manage obstructions and hazards in navigable airspace. FAR Part 77 establishes a set of imaginary surfaces around an airport. By definition, an object that penetrates any of the FAR Part 77 surfaces or slopes is an obstruction. The FAA, through an airspace study, will determine whether an obstruction is a "hazard" or "no hazard" to air navigation. The FAA's finding of hazard or no hazard is advisory in nature. A determination of a hazard by the FAA may place some implied or perceived liability on the structure's owner, but the FAA cannot prohibit its construction.

Table 2

DEPARTMENT OF DEFENSE
LAND USE COMPATIBILITY GUIDELINES FOR CLEAR ZONE
AND ACCIDENT POTENTIAL ZONES

Land Use Category	Compatibility [1]		
	Clear Zone	**APZ I**	**APZ II**
Residential			
Single family	NO	NO	YES [2]
2-4 family	NO	NO	NO
Multifamily dwellings	NO	NO	NO
Group quarters	NO	NO	NO
Residential hotels	NO	NO	NO
Mobile home parks or courts	NO	NO	NO
Other residential	NO	NO	NO
Industrial and Manufacturing [3]	NO	NO	YES
Food and kindred products	NO	NO	YES
Textile mill products	NO	NO	NO
Apparel	NO	YES	YES
Lumber and wood products	NO	YES	YES
Furniture and fixtures	NO	YES	YES
Paper and allied products	NO	YES	YES
Printing, publishing	NO	YES	YES
Chemicals and allied products	NO	NO	NO
Petroleum refining and related industries	NO	NO	NO
Rubber and miscellaneous plastic goods	NO	NO	NO
Stone, clay, and glass products	NO	YES	YES
Primary metal industries	NO	YES	YES
Fabricated metal products	NO	YES	YES
Professional, scientific and controlling instruments	NO	NO	NO
Miscellaneous manufacturing	NO	YES	YES
Transportation, Communications and Utilities [4]			
Railroad, rapid rail transit (on-grade)	NO	YES [4]	YES
Highway and street rights-of-way	YES [5]	YES	YES
Auto parking	NO	YES	YES
Communication	YES [5]	YES	YES
Utilities	YES [5]	YES [4]	YES
Other transportation, communications and utilities	YES [5]	YES	YES
Commercial and Retail Trade			
Wholesale trade	NO	YES	YES
Building materials (retail)	NO	YES	YES
General merchandise (retail)	NO	NO	YES
Food-retail	NO	NO	YES
Automotive, marine, aviation (retail)	NO	YES	YES
Apparel and accessories (retail)	NO	NO	YES
Furniture, home-furnishing (retail)	NO	NO	YES
Eating and drinking places	NO	NO	NO
Other retail trade	NO	NO	YES
Personal and Business Services [6]			
Finance, insurance and real estate	NO	NO	YES
Personal services	NO	NO	YES
Business services	NO	NO	YES

Table 2 (continued)

DEPARTMENT OF DEFENSE LAND USE COMPATIBILITY GUIDELINES FOR CLEAR ZONE AND ACCIDENT POTENTIAL ZONES

Land Use Category	Compatibility [1]		
	Clear Zone	APZ I	APZ II
Repair services	NO	YES	YES
Professional services	NO	NO	YES
Contract construction services	NO	YES	YES
Indoor recreation services	NO	NO	YES
Other services	NO	NO	YES
Public and Quasi-Public Services			
Government services	NO	NO	YES [6]
Educational services	NO	NO	NO
Cultural activities	NO	NO	NO
Medical and other health services	NO	NO	NO
Cemeteries	NO	YES [7]	YES [7]
Non-profit organizations including churches	NO	NO	NO
Other public and quasi-public services	NO	NO	YES
Outdoor Recreation			
Playground's neighboring parks	NO	NO	YES
Community and regional parks	NO	YES [8]	YES [8]
Nature exhibits	NO	YES	YES
Spectator sports including arenas	NO	NO	NO
Golf course [9], riding stables [10]	NO	YES	YES
Water based recreational areas	NO	YES	YES
Resort and group camps	NO	NO	NO
Entertainment assembly	NO	NO	NO
Other outdoor recreation	NO	YES [8]	YES
Resource Production & Extraction and Open Land			
Agriculture [11]	YES	YES	YES
Livestock farming, animal breeding [12]	NO	YES	YES
Forestry activities	NO	YES	YES
Fishing activities and related services [13]	NO [14]	YES [13]	YES
Mining activities	NO	YES	YES
Permanent open space	YES	YES	YES
Water areas [13]	YES	YES	YES

FOOTNOTES:

1. A "Yes" or "No" designation for compatible land use is to be used only for gross comparison. Within each, uses exist where further definition may be needed as to whether it is clear or usually acceptable/unacceptable owing to variations in densities of people and structures.
2. Suggested maximum density 1-2 dwelling units per acre, possibly increased under a Planned Unit Development where maximum lot covered less than 20 percent.
3. Factors to be considered: Labor intensity, structural coverage, explosive characteristics, air pollution.
4. No passenger terminals and no major above ground transmission lines in APZ I.
5. Not permitted in graded area, except as noted in table 2-7.
6. Low intensity office uses only. Meeting places, auditoriums, etc., not recommended.
7. Excludes chapels.
8. Facilities must be low intensity.
9. Clubhouse not recommended.
10. Concentrated rings with large classes not recommended.
11. Includes livestock grazing but excludes feedlots and intensive animal husbandry.
12. Includes feedlots and intensive animal husbandry.
13. Includes hunting and fishing.
14. Controlled hunting and fishing may be permitted for the purpose of wildlife control.

SOURCE: Departments of the Air Force, the Army and the Navy, *Airfield and Heliport Planning Criteria*, AFR 86-14/TM 5-803-7/NAVFAC P-971, Attachment 3, 12May1981

Associated with FAR Part 77 is FAA Advisory Circular (AC) 150/5190-4A, *A Model Zoning Ordinance to Limit Height of Objects Around Airports*, December 14, 1987. This publication concerns itself with developing local zoning ordinances to control the height of objects based upon the imaginary obstruction surfaces described in FAR Part 77. FAA's purpose in developing these sample zoning ordinances is to ensure that the airport sponsor (typically, a local government) can meet the assurances required when the airport sponsor receives FAA Airport Improvement Program grant funding. Among the various assurances currently required of an airport sponsor are the following (from FAA document: *Terms And Conditions Of Accepting Airport Improvement Program Grants*, January 2007):

- Hazard Removal and Mitigation. It will take appropriate action to assure that such terminal airspace is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) and will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.
- Compatible Land Use. It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.

The federal government is not alone in developing criteria pertaining to incompatible development. Several of the states sampled have aggressively pursued the issue of incompatible development in areas surrounding airports as discussed later in Section 4. However, the work accomplished by California stands out because at least two other states in the sample reference the California work and, either already have done so, or are moving to adopt the same or similar concepts.

2.2 Resources Available to Manage Airport Land Use Compatibility

This section briefly identifies the various resources that might be employed to deal with airport incompatible development. Included in the discussion are references to existing State of Nevada legislation that either supports existing management of incompatible development or could be expanded to support such efforts.

2.2.1 Planning Resources

The following resources are available for the purpose of focusing planning activities at the identification and management of incompatible land uses.

- **State System Plan** - The *Nevada Airport System Plan* provides for the orderly and timely development of a system of airports adequate to meet the future aviation needs of the State over a 20-year planning period. The plan defines the State Airport System and establishes the current and future role of each airport in the system. The information developed is provided to the FAA for possible inclusion in the *National Plan of Integrated Airport Systems* (NPIAS), which allows the various proposed improvements to be eligible for federal development assistance. Of the 49 existing public-use airports in the Nevada Airport System Plan, 31 are included in the NPIAS and are eligible for Federal financial assistance.

  At present, the *Nevada Airport System Plan* contains no specific information regarding incompatible land use. Emphasis is given to an evaluation of the various improvement programs associated with individual airports and the organization of that information into a coherent aviation investment plan for the State as a whole and as input to the NPIAS.

- **Airport Master Plan** – An airport master plan is typically a 20 year plan prepared for each airport in the State System Plan. The airport master plan is generally a pre-requisite for federal funding and is a recommendation of the FAA, not the State of Nevada. Airports that serve relatively small communities may prepare an Airport Layout Plan Narrative Report, which is an equivalent planning document, but at a commensurate scale. The airport master plan includes estimates of the future demand for aviation services, determines compliance with existing aviation regulations and standards identifies alternative ways those demands and standards can be met and, following input from the community served by the airport, documents the recommended plan. The resultant airport master plan is a community planning document and the associated planning effort is an opportunity to examine compatibility between the airport and surrounding land uses.

  There is no requirement in existing legislation to incorporate airport master plans with community master plans. NRS Section 278.160 (1)(r) which addresses the transportation plan element of the county/city/town master plan emphasizes the locations of rights-of-way, terminals, viaducts and grade separations, but leaves aviation, ports and harbors and related facilities as an option for inclusion in the plan.

- **Airport Layout Plan** - The airport layout plan (ALP) is a set of detailed drawings filed with the FAA. The ALP is a requirement of the FAA and the ALP is approved by the FAA. The ALP drawings show existing and proposed airport facilities, their location on the airport, together with clearance and dimensional information required to show conformance with federal standards. The ALP drawings generally reflect the airport master plan and are typically prepared after the airport master plan is adopted by the local government. The FAA reviews these drawings and uses them as the basis to provide various preliminary and final approvals of proposed airport projects. The ALP drawings will identify relevant obstructions and hazards with respect to the criteria defined in FAR Part 77, and other similar federal standards. The ALP is an information source to consider when identifying incompatible land uses, if there is no airport master plan.

- **Comprehensive Planning, Community Master Plan** - A comprehensive plan is a long-range plan for community development that identifies the physical, economic, social, political, aesthetic, and other related factors of the community. Nevada Revised Statues (NRS) Section 278.150 provides for the creation of a Master Plan for a city, county or region and NRS Section 278.160 identifies the subject matter of such plans.

  As noted above, there is no requirement in Nevada's master plan legislation to incorporate airport master plans with community master plans. However, several other requirements that are in Nevada legislation pertaining to community master plans are of note because of their potential applicability to identify and manage airport incompatible development:

  - NRS Section 278.160(1)(f), which addresses the inventory and classification of land use includes in subsection (1) (II) the coordination and compatibility of land uses with any military installation. Churchill and Clark Counties use the DOD AICUZ concepts as the basis for protecting military airports located there as noted previously in Section 2.1.1. It would seem that this legislation could be expanded to accommodate civilian airports, but based on a different set of safety zones and compatibility criteria. Also see the discussion under the topic "Overlay Zoning" in Section 2.2.1.
  - NRS Section 278.160(1)(r) addressing the transportation plan emphasizes the locations of rights-of-way, terminals, viaducts and grade separations, but leaves aviation, ports and harbors and related facilities as an option for enclosure in the master plan. Given the considerable effects that air carrier and general aviation airports exert on surrounding land uses (i.e. noise, safety and height limitations) coupled with the fact that a local community who accepts federal funding for airport improvements agrees in the various grant assurances to protect the airport investment, one would expect a stiffer requirement in the legislation for the inclusion of aviation facilities. Changing this legislation to require inclusion of an airport master plan, or FAA approved airport layout plan, in the community master plan would not only strengthen protections within the planning process, but because of the required linkage between the community master plan and the application of zoning (NRS Section 278.250 (2) indicates that zoning regulations must be adopted in accordance with the master plan for land use), certain protections for the airport would need to be considered in the zoning code.

2.2.2 Implementation Resources

The previous section examined the planning resources available to identify airport incompatible land uses. This section examines the implementation resources in the same manner.

- **Zoning** – Zoning is the most commonly used form of land use control. Zoning designates those areas of the community most suitable for particular land uses. The desired distribution of land uses in the comprehensive plan, or master plan, becomes the basis for the zoning scheme.

In Nevada the creation of zoning districts is provided through NRS Section 278.250. This legislation allows a governing body to divide the city, county or region into zoning districts of such number, shape and area as are best suited to carry out the purposes of NRS Chapter 278, *Planning and Zoning*. Within each zoning district, the governing body may regulate and restrict the erection, construction, reconstruction, alteration, repair or use of buildings, structures or land.

Zoning is a preventative tool and one of its limitations is that once a right is granted through a change in zoning there is no going back to what it was before without extinguishing the right that was granted. That does not mean the zoning cannot be changed back for good and valid reasons. However, an existing use must be permitted to continue as a nonconforming use as long as the use is continuous and unchanged. Once the majority of land in an area is rezoned and developed, it is extremely difficult to change the development pattern. Zoning is not a means to eliminate existing uses that may not conform to the desired plan.

As noted previously in Section 2.1.2, in the discussion of FAA's Model Zoning Ordinance, a local government that receives a federal grant for airport improvements is required to accept, in writing, a set of assurances that among other things assures that appropriate action will be taken to protect the airspace required for the airport and to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations. The adoption and enforcement of appropriate zoning laws that include the necessary land use and height restrictions provides the basis for most communities to make these assurances.

- **Overlay Zones** – Overlay zoning provides a secondary set of conditions that are imposed on a zoning district due to special circumstances. These contingent conditions are additive to the restrictions and requirements of normal zoning. Overlay zones are not specifically authorized by NRS Chapter 278, but under the broad mandate of NRS Section 278.250(4), their use is not denied. NRS Section 278.250(4) states that in exercising the powers granted for zoning, the governing body may use any controls relating to land use or principles of zoning that the governing body determines to be appropriate, including, without limitation, density bonuses, inclusionary zoning and minimum density zoning.

  As noted previously in Section 2.1.1, Churchill and Clark Counties use the DOD AICUZ concepts as the basis for protecting military airports located in these counties. Those protections are implemented through overlay zoning. As discussed in Chapter 3, at least four counties in Nevada are known to have implemented overlay zoning techniques. Additional counties may have implemented overlay zoning, but the discovery of that fact may have been limited by the research methods which were confined to an Internet search of the County web sites. In those counties that have implemented overlay zoning only two have applied the technique specifically to an airport. In this regard, however, Clark County overlay zoning provides an excellent example for other counties.

Table 3

CLARK COUNTY AIRPORT ENVIRONS OVERLAY DISTRICT
LAND USE COMPATIBILITY TABLE

CODE #S	SLUCM MAJOR GROUPS [1]	SLUCM MINOR GROUPS [1]	SUBDISTRICTS RISK ZONES AND NOISE ZONES [2]									
			AE-RPZ	APZ-1	APZ-2	AE-65	AE-70	AE-75	AE-80	LOZ-1	LOZ-2 APZ-3	LOZ-3 APZ-4
0	Undetermined	An undetermined use	( )	( )	( )	( )	( )	( )	( )	NO	NO	NO
0	Nonresidential	General accessory use	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
0	Residential	General accessory use	( )	( )	( )	( )	( )	( )	( )	NO	NO	NO
1110	Residential	Accessory use to residential (up to 2 du/ac)	NO	NO	YES	25	30	[NO]	[NO]	NO	NO	NO
1110	Residential	Single family (up to 2 du/ac)	NO	NO	YES	25	30	[NO]	[NO]	NO	NO	NO
1115	Residential	Accessory use to residential (over 2 du/ac)	NO	NO	YES	25	(NO)	[NO]	[NO]	NO	NO	NO
1115	Residential	Single family (over 2 du/ac)	NO	NO	NO	25	(NO)	[NO]	[NO]	NO	NO	NO
1120	Residential	Two family	NO	NO	NO	25	(NO)	[NO]	[NO]	NO	NO	NO
1130	Residential	Multifamily structures	NO	NO	NO	25	(NO)	[NO]	[NO]	NO	NO	NO
1200	Residential	Group quarters	NO	NO	NO	25	(NO)	[NO]	[NO]	NO	NO	NO
1300	Residential	Residential hotels	NO	NO	NO	25	(NO)	[NO]	[NO]	NO	NO	NO
1410	Residential	Permanent mobile home parks courts	NO	NO	NO	25	(NO)	[NO]	[NO]	NO	NO	NO
1420	Residential	Transient mobile home parks courts (Also known as RV Park)	NO	NO	NO	YES	(NO)	[NO]	[NO]	NO	NO	NO
1510	Residential	Hotels and motels & tourist courts	NO	NO	NO	25	30	35	[NO]	NO	NO	NO
1900	Residential*	Other residential	NO	NO	NO	25	(NO)	[NO]	[NO]	NO	NO	NO
2100	Manufacturing	Food & kindred products	NO	NO	(YES)	YES	YES	(30)	(35)	NO	NO	(YES)
2200	Manufacturing	Textile mill products	NO	NO	NO	YES	YES	(30)	(35)	NO	NO	NO
2300	Manufacturing	Apparel and finished products	NO	NO	NO	YES	YES	(30)	(35)	NO	NO	NO
2400	Manufacturing	Lumber & wood products (except furniture)	NO	(YES)	YES	YES	YES	(30)	(35)	NO	NO	(YES)
2500	Manufacturing	Furniture & fixtures	NO	(YES)	(YES)	YES	YES	(30)	(35)	NO	NO	(YES)
2600	Manufacturing	Paper & allied products	NO	(YES)	(YES)	YES	YES	(30)	(35)	NO	NO	(YES)
2700	Manufacturing	Printing, publishing	NO	(YES)	(YES)	YES	YES	(30)	(35)	NO	NO	(YES)
2800	Manufacturing	Chemicals and allied products	NO	NO	NO	YES	YES	(30)	(35)	NO	NO	NO
2900	Manufacturing	Petroleum refining & related industries	NO	NO	NO*	YES	YES	(30)	(35)	NO	NO	NO
3100	Manufacturing	Rubber & misc. plastics	NO	NO	NO	YES	YES	(30)	(35)	NO	NO	NO
3200	Manufacturing	Stone, clay & glass products	NO	(YES)	(YES)	YES	YES	(30)	(35)	NO	{(YES)}	(YES)
3300	Manufacturing	Primary metal industries	NO	(YES)	(YES)	YES	YES	(30)	(35)	NO	NO	(YES)
3400	Manufacturing	Fabricated metal products	NO	(YES)	(YES)	YES	YES	(30)	(35)	NO	{(YES)}	(YES)

Table 3 (continued)
CLARK COUNTY AIRPORT ENVIRONS OVERLAY DISTRICT
LAND USE COMPATIBILITY TABLE

CODE #S	SLUCM MAJOR GROUPS [1]	SLUCM MINOR GROUPS [1]	SUBDISTRICTS RISK ZONES AND NOISE ZONES [2]									
			AE-RPZ	APZ-1	APZ-2	AE-65	AE-70	AE-75	AE-80	LOZ-1	LOZ-2 APZ-3	LOZ-3 APZ-4
3500	Manufacturing	Instruments and optical goods	NO	NO	NO	25	30	NO	NO	NO	NO	NO
3900	Manufacturing	Misc. Manufacturing	NO	(YES)	(YES)	YES	YES	(30)	(35)	NO	{(YES)}	(YES)*
4100	Trans. & utils.	Railroad & rapid rail & street railway	NO	[YES]	YES	YES	YES	YES	YES	NO	NO	(YES)
4200	Trans. & utils.	Motor vehicle transportation	NO	[YES]	YES	YES	YES	(30)	(35)	NO	NO	(YES)
4300	Trans. & utils.	Aircraft transportation	NO	[YES]	YES	YES	YES	(30)	(35)	NO	NO	NO
4500	Trans. & utils.	Highway & street ROW	[YES]	[YES]	YES	YES	YES	YES	YES	{YES}	{YES}	YES
4600	Trans. & utils.	Auto parking	[YES]	[YES]	YES	YES	YES	YES	YES	NO	{YES}	YES
4700	Trans. & utils.	Communications	[YES]	(YES)	YES	YES	(25)	(30)	(35)	{YES}	{YES}	YES
4800	Trans. & utils.	Utilities	[YES]	[YES]	YES	YES	YES	YES	YES	{YES}	{YES}	YES
4900	Trans. & utils.	Other trans, communications and utilities	[YES]	[YES]	YES	YES	YES	YES	YES	NO	NO	NO
5100	Trade	Wholesale trade	NO	YES	YES	YES	YES	(30)	(35)	NO	NO	(YES)
5200	Trade	Building materials and hardware	NO	YES	YES	YES	(25)	(30)	(35)	NO	{YES}	(YES)*
5300	Trade	General merchandise (retail)	NO	NO	YES	YES	25	30	35	NO	NO	NO
5399	Trade	Miscellaneous General Merchandise	NO	NO	NO	YES	25*	30	35	NO	NO	NO
5400	Trade	Food, retail	NO	NO	YES	YES	25	30	35	NO	NO	NO
5500	Trade	Automotive, marine & aircraft accessories	NO	YES	YES	YES	25	30	35	NO	NO	NO
5600	Trade	Apparel and accessories (retail)	NO	NO	YES	YES	25	30	35	NO	NO	NO
5700	Trade	Furniture & home furnishings (retail)	NO	NO	YES	YES	25	30	35	NO	NO	NO
5800	Trade	Eating and drinking places	NO	NO	NO	YES	25*	30	35	NO	NO	NO
5900	Trade	Other retail trade	NO	NO	YES	YES	25*	30	35	NO	NO	NO
5999	Trade	Resort Condominium	NO	NO	NO	30*	NO	NO	NO	NO	NO	NO
6100	Services	Finance, insurance & real estate	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
6200	Services	Personal services	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
6240	Services	Cemeteries	[YES]	[YES] *	[YES] *	YES	(25)	(30)	(35)	[(YES)]	[YES]	[YES]
6300	Services	Business services	NO	NO*	(YES)	YES	25	30	35	NO	NO	NO
6370	Services	Warehousing and storage services	NO	YES*	YES	YES	YES	(30)	(35)	NO	{YES}	(YES)
6380	Services	Explosives storage	NO	NO	NO	YES	(25)	(30)	(35)	NO	NO	NO
6400	Services	Repair services	NO	(YES)	(YES)	YES	(25)	(30)	(35)	NO	NO	(YES)*
6510	Services	Medical & other health services	NO	NO	NO	25	30	NO	NO	NO	NO	NO
6520	Services	Legal services	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
6590	Services	Other professional services	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
6600	Services	Contract construction services	NO	(YES)	(YES)	YES	(25)	(30)	(35)	NO	NO	NO

Table 3 (continued)
CLARK COUNTY AIRPORT ENVIRONS OVERLAY DISTRICT
LAND USE COMPATIBILITY TABLE

CODE #S	SLUCM MAJOR GROUPS [1]	SLUCM MINOR GROUPS [1]	SUBDISTRICTS RISK ZONES AND NOISE ZONES [2]									
			AE-RPZ	APZ-1	APZ-2	AE-65	AE-70	AE-75	AE-80	LOZ-1	LOZ-2 APZ-3	LOZ-3 APZ-4
6700	Services	Government services	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
6800	Services	Educational services	NO	NO	NO	25	30	NO	NO	NO	NO	NO
6910	Services	Religious activities	NO	NO	NO	25	30	NO	NO	NO	NO	NO
6990	Services	Other misc. services	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
7110	Recreation	Cultural activities	NO	NO	NO	25	30	NO	NO	NO	NO	NO
7120	Recreation	Nature exhibitions	NO	(YES)	(YES)	YES	NO	NO	NO	NO	{(YES)}	(YES)
7211	Recreation	Outdoor entertainment assembly	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO
7212	Recreation	Indoor entertainment assembly	NO	NO	NO	25	30	NO	NO	NO	NO	NO
7221	Recreation	Outdoor sports assembly	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO
72211	Recreation	Outdoor motor vehicle race tracks & related uses	NO	(YES)	(YES)	YES	(25)*	(30)*	(35)*	NO	NO	(YES)
72212	Recreation	Recreational vehicle accommodations and campgrounds in conjunction with and on the same property as an outdoor motor vehicle racetrack having fifty thousand (50,000) or more seats and used in connection with events thereon	NO	NO	NO	YES	YES	NO	NO	NO	NO	(YES)
7222	Recreation	Indoor sports assembly	NO	NO	NO	YES	25	30	35	NO	NO	NO
7230	Recreation	Misc. public assembly	NO	NO	NO	(25)	(30)	NO	NO	NO	NO	NO
7310	Recreation	Fairgrounds and amusement parks	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO
7395	Recreation	Outdoor amusements	NO	NO	(YES)	YES	YES	NO	NO	NO	NO	NO
7396	Recreation	Indoor amusements	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
7411	Recreation	Outdoor sports activities	NO	(YES) (YES)	YES	YES	NO	NO	NO	NO	NO	
7413	Recreation	Indoor sports activities	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
7420	Recreation	Outdoor playgrounds and athletic areas	NO	NO	(YES)	YES	YES	NO	NO	NO	NO	NO
7425	Recreation	Indoor playgrounds and athletic areas	NO	NO	(YES)	YES	25	30	35	NO	NO	NO
7430	Recreation	Golf courses, driving ranges, riding stables & water recreation	[YES]	(YES)	(YES)	YES	(25)	(30)	(35)	[(YES)] *	{(YES)} *	(YES)*
7490	Recreation	Other recreation	NO	(YES)	(YES)	YES	YES	NO	NO	NO	NO	(YES)
7500	Recreation	Resorts & group camps	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO
7600	Recreation	Parks	NO	NO	(YES)	YES	YES	NO	NO	NO	NO	(YES)
8150	Resources	Dairy farming	NO	YES	YES	(25)	(30)	(35)	NO	NO	{(YES)}	(YES)

Table 3 (continued)
CLARK COUNTY AIRPORT ENVIRONS OVERLAY DISTRICT
LAND USE COMPATIBILITY TABLE

CODE #S	SLUCM MAJOR GROUPS [1]	SLUCM MINOR GROUPS [1]	SUBDISTRICTS RISK ZONES AND NOISE ZONES [2]									
			AE-RPZ	APZ-1	APZ-2	AE-65	AE-70	AE-75	AE-80	LOZ-1	LOZ-2 APZ-3	LOZ-3 APZ-4
8160	Resources	Livestock farms and ranches {2}	NO	YES	YES	(25)	(30)	(35)	NO	NO	NO	NO
8190	Resources	Other agriculture {1}	YES	YES	YES	(25)	(30)	(35)	(35)	NO	NO	YES
8200	Resources	Agricultural related activities {2}	NO	YES	YES	(25)	(30)	(35)	NO	NO	NO	NO
8300	Resources	Forestry activities & related services	NO	YES	YES	(25)	(30)	(35)	(35)	NO	{(YES)}	(YES)
8400	Resources	Fishing activities & related services {3}	NO	YES	YES	YES	YES	YES	YES	NO	{(YES)}	(YES)
8500	Resources	Mining activities and related services	NO	YES	YES	YES	YES	YES	YES	NO	{(YES)}	(YES)
9100	Undeveloped	Undeveloped and unused land	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9300	Undeveloped	Water areas {3}	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9910	Undeveloped	Open space	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: 1) The abbreviation "SLUCM" refers to the Standard Land Use Classification Manual

2) Subdistrict abbreviations are defined as follows:

AE-RPZ	Runway protection zone
APZ-1	Accident potential zone I
APZ-2	Accident potential zone II
APZ-3	Accident potential zone III
APZ-4	Accident potential zone IV
AE-65	65 - 70 Ldn (Day-Night Sound Level)
AE-70	70 - 75 Ldn (Day-Night Sound Level)
AE-75	75 - 80 Ldn (Day-Night Sound Level)
AE-80	80 + Ldn (Day-Night Sound Level)
LOZ-1	Live ordnance zone 1
LOZ-2	Live ordnance zone 2
LOZ-3	Live ordnance zone 3

3) Subdistrict values are defined as follows:

( )	Means uses not associated with structures or people intensive uses like lakes, hunting, and similar uses and therefore no restrictions are applied.
NO	Unless permitted by Section 30.48.070, not compatible and not allowed.
(NO)	If permitted by Section 30.48.070, a noise level reduction of thirty (30) decibels is required.
[NO]	If permitted by Section 30.48.070, a noise level reduction of thirty- five (35) decibels is required.
YES	Land use and related structures are allowed without restrictions.

Table 3 (continued)
CLARK COUNTY AIRPORT ENVIRONS OVERLAY DISTRICT
LAND USE COMPATIBILITY TABLE

Note 3 (continued)

(YES)	Special use permit required. Additional factors to be considered: labor intensity, height of structures, structural coverage, explosive characteristics, air pollution, size of establishment, people density, peak period concentrations (including shopper/visitors), low intensity office uses only (limited scale of concentration of such uses). Meeting places, auditoriums, areas of public assembly, etc. not allowed in runway protection zones or live ordnance zones.
{YES}	Use permitted. However, no buildings, or structures suitable for habitation or occupancy allowed.
[YES]	Use permitted. However, no buildings, structures, or above ground transmission lines allowed.
25, 30, 35	A noise level reduction of twenty- five (25), thirty (30), or thirty- five (35) decibels, respectively.
(25), (30), (35)	A noise level reduction of twenty- five (25), thirty (30), or thirty- five (35) decibels, respectively where public is received, office areas, noise sensitive areas or where the normal ambient noise level is low.
1900*	Includes manager's units for commercial, industrial, and other uses that may not otherwise be classified or zoned for residential uses.
2900*	Indoor bulk storage of motor oil may be permitted for wholesale distribution only, subject to special use permit approval, use of double-wall (minimum U.L. 142) storage tanks for all motor oil products, limited number of employees on site, and no processing of any motor oil products.
3900*	No motion picture production.
5200*	Wholesale sales only with no retail sale of products.
5800*	Outside dining is permitted subject to recording a Commercial Noise Disclosure Statement.
5900*	Temporary outdoor commercial events and seasonal outdoor sales are permitted without sound attenuation.
5999*	35 dB reductions (exterior to interior) shall be required where habitable space exceeds a maximum height of thirty – five (35) feet.
6240*	Crematory is permitted subject to no memorial services or areas which may allow for memorial services to be performed at the site.
6300* & 6370*	Automobile rental and related sales may be permitted as an accessory use if established in conjunction with automobile storage as the principal use, subject to approval of a special use permit and restricting the number of employees and customers, if necessary, to minimize public safety concerns.
6400*	Aircraft, automobile, boat, truck and heavy machinery repair only.
72211*	Sound attenuation not required for facilities designed to accept or direct patrons or participants of outdoor races and events nor for temporary or permanent facilities designed to allow patrons to view such events.
7430*	Golf courses and riding stables not permitted.
8190{1}	Includes livestock grazing but excludes livestock feed/sales yards and commercial livestock uses.
8160 & 8200{2}	Includes livestock feed/sales yards and commercial livestock uses.
8400 & 9300{3}	Includes hunting and fishing.

Source: Clark County, Nevada, County Code Chapter 30.48, Zoning Overlay Districts, Part A, *Airport Environs Overlay District*

The Clark County overlay zoning ordinance contains Parts A through L, but only Part A and Part B are applicable to the County's airports. Part A, Airport Environs Overlay District, addresses aircraft noise and safety in the airport vicinity and implements the DOD AICUZ criteria at military airports. Table 3, which is extracted from Part A of the ordinance, presents the County's interpretation of compatible land use criteria. The compatibility information in Table 3 is at a finer level of detail than that established by the FAA (presented earlier in Table 1) or the DOD (presented earlier in Table 2). The Part A requirements are applied only at McCarran International Airport, Creech Air Force Base and Nellis Air Force Base.

Part B of the Clark County ordinance, Airport Airspace Overlay District, addresses height limitations and obstructions and essentially implements FAR Part 77. Part B requirements are applied at McCarran International Airport, North Las Vegas Air Terminal, Perkins Field/Overton Airport, Jean Airport, and Nellis Air Force Base. As of February 2008, the seven remaining public-use airports in the County are not specifically included in this ordinance.

- **Airport Height Limitation Zoning** - NRS Chapter 497, entitled "Zoning" is cited as the Airport Zoning Act. This legislation originated in 1947 and thus predates FAR Part 77. The underlying premise of this legislation is that the creation or establishment of an airport hazard is a public nuisance and an injury to the community served by the airport. The term "airport hazard" is defined in the legislation to be "any structure or tree or use of land which obstructs the airspace required for the flight of aircraft in landing or taking off at any airport, or is otherwise hazardous to the landing or taking off of aircraft". In Part B of the Clark County zoning ordinance, discussed above, the hazard to air navigation is determined by the FAA though the procedures established in FAR Part 77.

  Under the provisions of NRS Section 497.060, the airport zoning regulations can be incorporated into the local zoning ordinance regulating the height of buildings and under NRS Section 497.070 the more stringent limitations would govern when regulations conflict.

  NRS Section 497.040 provides the authority to adopt, administer and enforce airport zoning regulations. Under this authority, every political subdivision having an airport hazard area within its territorial limits may adopt, administer and enforce, zoning regulations for such airport hazard area. Within such zones the political subdivision may prohibit those land uses which could cause a hazard to air traffic and may regulate and restrict the height to which structures and trees may be erected or allowed to grow.

  At least two other authorities from NRS Chapter 497 are noted:

  - NRS Section 497.270 allows the use of eminent domain to remove, lower or otherwise terminate a nonconforming structure, tree or use when an airport hazard has been identified.

- This same legislation at NRS Section 497.270 (1)(c) allows for property rights other than ownership, such as avigation easements.

- **Other Implementation Resources** – There are several other resources available to municipalities that provide for the review and approval of new development, points at which control over height and the location of incompatible uses could be monitored. These include plat and subdivision review and building codes enforcement. Collectively these ministerial actions provide a point of local review to determine if a particular project would constitute an incompatible land use. Unfortunately, if the local reviews for airport compatibility are not mandated through local planning and zoning documents or procedures, or the local planning and zoning documentation does not include policies associated with the local airport, then reviewers have no basis for making findings of incompatibility. As discussed in the next Chapter, which evaluates at a high level the potential for airport incompatible development in Nevada, awareness of the protections needed for the airport and the means already available within existing legislation to achieve that goal are one of the key issues that needs to be addressed within the State before moving forward with new legislation.

Chapter 3

THE POTENTIAL FOR AIRPORT INCOMPATIBLE DEVELOPMENT IN NEVADA

3.1 Introduction

Planning and zoning with all of their variations are the primary resources available to local governments in Nevada for managing incompatible development around airports, or any other place in the community. When zoning is based on comprehensive planning these resources are forward looking in that they seek to prevent a situation from happening rather than providing a solution after the fact. New legislation can expand the scope of comprehensive planning and stretch the application of these resources, but not the fundamental role they play. In developing a roadmap to achieve some new objective, one needs to understand the starting point, even though the end may not clearly be in focus. This Chapter begins to define that starting point based on readily available information. However, as will be seen in the discussion, the information readily available to support this effort is randomly available at best. This fact, alone, poses a problem for explaining the existing situation or crafting comprehensive solutions and virtually rules out developing new legislation at this time, unless a very significant need can be identified and supported.

To establish an understanding of the current status of incompatible land use around airports in the Nevada Airport System Plan, the research focused on three questions:

1. What is the nature and significance of development currently surrounding airports included in the Nevada Airport System Plan?
2. What Counties/Cities/Towns already recognize the incompatible land use issue at local airports and have done something about it? And what exactly was done?
3. At what locations within the State Airport System might future problems be expected?

This discussion starts with a brief description of the results of a 1995 study of four airports in Nevada. The study measured whether land in the vicinity of the airports served to limit the expansion or otherwise impose constraints upon each airport's continued safe operation. The remainder of this chapter then starts with question 3 above. The answer to that question provides an indicator of the future demand to convert land from open space to something else, and thus serves as a measure of the importance of moving forward with a program to manage incompatible development.

3.2 1995 Nevada Department of Transportation Study

In 1995 the Nevada Department of Transportation (NDOT) studied four airports to measure whether land in the vicinity of the airports constrained each airport's continued safe operation. The four airports included were Carson Airport, Minden-Tahoe (Douglas County) Airport,

Jean Airport[2], and Yerington Municipal Airport. The scope of this study included site visits and interviews with local planners and decision makers and the collection and mapping of the following information:

- **Airport Facilities** – both existing and proposed airport facilities with emphasis on runway configurations, associated aircraft approaches, and runway protection zones.
- **Operational Influence Areas** – defined to include the area encompassed by the "horizontal surface" as described by Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*.
- **Vicinity Land Use Patterns** – emphasis was on identifying land uses that might pose a hazard to aircraft operations due to height or land uses that attract wildlife.
- **Aircraft Noise** – compared land use patterns to the compatibility criteria defined in FAR Part 150, *Airport Noise Compatibility Planning* (Table 1, presented earlier).
- **Airport Access** – evaluated the effects of new development on access routes to the airport.
- **Land Use Controls** – evaluated to what extent the community used planning and zoning to prevent the establishment of future airport hazards.

Based upon the interviews and data collected the following conclusions were made:

- The community master plan and general zoning provisions are the basis for land use controls in the airport vicinity
- The community master plan typically made specific reference to the airport master plan and either incorporated elements of the airport master plan or referenced the reader to utilize the airport master plan as the basis for additional information.
- Communities were sensitive to the need to control building heights in the approach and departure corridors and had enacted what they considered to be the appropriate zoning legislation to implement such controls.
- Issues surrounding an airport were likely to be considered less important than sewers, water, schools, tax revenues and the other concerns of a growing community.
- Decision makers and planners lacked a sufficiently detailed understanding of the incompatible land use issue and its relation to other actions that may need to be taken to solve the associated problems. As a result, each community responded to the land use compatibility issue in different ways, if at all.
- The lack of understanding on the part of decision makers and planners was largely due to a lack of relevant information in a usable form free of technical jargon.
- There is no "official" state resource (legislation, brochure, position paper, etc.) that explains State of Nevada policy regarding land use compatibility in areas surrounding airports.
- Beyond the programs that maintain the Nevada Airport System Plan and the individual airport master plans, there is no funded assistance program at the State level.

[2] Jean Airport has been completely rebuilt since the 1995 study was completed.

- Information developed through the Nevada Airport System Plan and the individual airport master plans is insufficient and is not collected in an organized fashion that provides useful information to State-level decision makers and planners.
- FAA standards for runway protection zones or approach zones were considered adequate with respect to safety.

3.3 Methodology for This Evaluation

While a comprehensive assessment of the issues similar to the earlier NDOT study is the ideal, the availability of funding provides limits to such an effort. In the current study emphasis was placed on determining an overall perspective of the land use incompatibility issue across all the airports in the Nevada Airport System Plan.

Since completion of the earlier study, the Internet has considerably improved the availability of information from local governments particularly with respect to community master plans and local ordinances. Although availability does not always translate into usability, the Internet provides a low-budget way to examine the available information for a great many of Nevada's counties, cities and towns. To the extent possible, the Internet was used to search local plans and ordinances for current information pertaining to local airports and the areas surrounding them. The county/community level information was supplemented with information from the Nevada Airport System Plan, relatively recent NDOT aerial photos and sketches of the airports, Google Maps to obtain a broader aerial view of the community, and other sources, when available. While this does not provide 100 percent coverage of the State, it is broader in geographical coverage than the 1995 study, but lesser in depth of analysis.

Since planning and zoning are proactive remedies for incompatible land uses, the study began by focusing on those places that are likely to gain population and hence have a demand for new subdivisions and commercial and industrial structures. In places with little or negative population growth it is unlikely that there would be opportunities to apply zoning restrictions and thus prevent further problems. Particular emphasis was placed on locations likely to grow over the next ten years – through 2018. Historic and forecast population information from the Nevada State Demographer was used for this determination, as discussed in the next section.

The second part of the analysis focused on identifying those airports with known issues. Unfortunately, data collection regarding obstacles and hazards at airports has not improved since the 1995 study. In addition to information in the Nevada Airport System Plan, information is documented on the Airport Layout Plans and on FAA Form 5010-1, *Airport Master Record*. These were reviewed to identify which airports noted a building or other man-made structure as the controlling obstacle or otherwise identified potential obstacles or hazards. This research also examined the various approach and departure notes to determine when pilots were being told to avoid residential or other sensitive land use areas on approach or departure, or when wildlife was noted as potentially in the approach or departure paths. Results of this evaluation are discussed in Section 3.5.

The last step in this analysis examined the planning and zoning legislation at the county level. The focus of this analysis was to determine if and how the airport and its surrounding area are managed for incompatible land uses, as reflected in the plans and ordinances. A part of this analysis was to assess the extent to which local jurisdictions are taking advantage of existing legislation.

3.4 The Influence of Population Change

Population change underlies the demand to convert open space to housing and industrial and commercial development. According to the Nevada Legislative Counsel Bureau, Nevada had the distinction of being the fastest growing state between 1990 and 2000 with more than a 64 percent increase in population. Since 2000 the population has increased again by almost 35 percent to a total above 2.7 million persons. Although Nevada ranks 43rd in the nation in the density of population (20.4 persons per square mile), paradoxically it ranks 10th in the percentage of persons living in metropolitan areas and is one of the most urbanized states in the nation. The concentration of growth in the urban areas of Nevada is expected to continue over the next decade.

To determine what airports are likely to receive additional pressures to convert surrounding open space to development, the State Demographer's county-level forecast for 2018 was evaluated to determine where the largest changes are expected to occur. This analysis is summarized in Table 4, which rank orders the counties from largest to smallest in percentage of population gain or loss. According to the State Demographer one of the key reasons for the declines in population in some counties is due to an expected near-term peaking then gradual decline in mining employment over the decade. Across the State mining employment could decline as much as 37.7 percent by 2018. Table 4 shows 11 counties are gaining population and six are losing population.

With respect to the 53 airports in the Nevada Airport Systems Plan, 35 airports are located in counties that are expected to grow over the next ten years and 15 are located in counties that are expected to lose population. All three of the new airports being planned in Nevada are in counties that are expected to grow. Collectively, there may be as many as 38 airports in the Nevada Airport System Plan (68 percent) that are potentially exposed to development pressures as a result of population growth over the next ten years.

3.5 Status of Incompatible Land Uses and Development at Existing Airports

One purpose of this analysis was to explore available airport-related documentation to determine at which airports existing aircraft operations might be affected by potentially incompatible development. The Nevada Airport System Plan information, documented on the Airport Layout Plans, FAA Form 5010-1 *Airport Master Record*, and available aerial photography were used to determine if any buildings were so located as to create an obstruction as defined by FAR Part 77, or whether certain land uses in the approach and departure corridors were flagged so that pilots might avoid them. Table 5 provides a summary of this research.

Table 4

EXPECTED POPULATION CHANGES IN NEVADA COUNTIES
Ranked by Percentage Change in Population
2008 - 2018

County	2008 Estimated Population	2018 Estimated Population	Change in Population (2008 – 2018)	Percentage Change in Population
Clark County	1,956,484	2,925,580	969,096	49.5%
Lyon County	51,844	77,468	25,624	49.4%
Nye County	45,180	65,161	19,981	44.2%
Lincoln County	4,029	5,570	1,541	38.2%
Washoe County	418,717	523,837	105,120	25.1%
Carson City	61,099	72,158	11,059	18.1%
Storey County	4,412	5,256	844	19.1%
Douglas County	53,502	60,087	6,585	12.3%
Churchill County	28,625	32,118	3,493	12.2%
Mineral County	4,274	4,693	419	9.8%
Eureka County	1,527	1,565	38	2.5%
Esmeralda County	1,052	1,033	(19)	-1.8%
White Pine County	9,644	9,250	(394)	-4.1%
Lander County	5,904	5,510	(394)	-6.7%
Humboldt County	18,734	16,224	(2,510)	-13.4%
Pershing County	7,796	6,697	(1,099)	-14.1%
Elko County	54,010	42,470	(11,540)	-21.4%
Totals:	2,726,833	3,854,677	1,127,844	41.4%

SOURCES: Nevada State Demographer. *Nevada County Population Estimates, July 1, 1986 to July 1, 2007.* July 2007
Nevada State Demographer. *Nevada County Population Projections, 2006 to 2026.* July 2006.

Table 5

INCOMPATIBLE LAND USE AND STATUS OF DEVELOPMENT AT NEVADA AIRPORTS

County [1]	Airport	Potential Incompatibility			Estimate of Percent Developed [5]
		Noise [2]	Wildlife [3]	Structures [4]	
Clark County	Boulder City Municipal Airport	X	--	X	2
	Echo Bay Airstrip	--	X	--	1
	Henderson Executive Airport	X	--	--	3
	Jean Airport	--	--	--	1
	Kidwell Airport [6] at Cal-Nev-Ari	--	--	--	3
	McCarran International Airport	X	X	X	4
	Mesquite Municipal Airport	X	--	X	4
	North Las Vegas Airport	--	--	X	4
	Perkins Field / Overton Municipal	--	--	X	2
	Searchlight Airport [6]	--	--	X	2
	Sky Ranch Estates at Sandy Valley [6]	X	X	X	2
Lyon County	Dayton Valley Airpark [6]	X	--	X	4
	Rosaschi Air Park [6]	--	--	X	1
	Silver Springs Airport	--	--	--	2
	Tiger Field at Fernley	--	--	--	1
	Yerington Municipal Airport	--	--	X	2
Nye County	Beatty Airport	---	--	--	1
	Currant Ranch Airport	X	--	X	1
	Gabbs Airport	--	--	--	1
	Hadley Airport at Round Mountain	--	--	--	1
	Tonopah Airport	--	--	--	1
Lincoln County	Alamo Landing Field	--	X	--	1
	Lincoln County Airport at Panaca	--	--	--	1
Washoe County	Empire Airport	--	--	X	1
	Reno Stead Airport	--	--	--	4
	Reno-Tahoe International Airport	X	X	--	4
	Spanish Springs Airport	--	--	X	4
Carson City	Carson Airport	--	--	--	4
Storey County	n/a [7]	n/a	n/a	n/a	n/a
Douglas County	Minden-Tahoe Airport	X	X	--	1
Churchill County	Fallon Municipal Airport	--	--	--	1
Mineral County	Hawthorne Industrial Airport	--	--	--	2
	Mina Airport	--	--	--	1
Eureka County	Crescent Valley	--	X	--	2
	Eureka Airport	--	--	X	1
Esmeralda County	Dyer Airport	--	--	X	1
	Goldfield Airport [8]	n/a	n/a	n/a	n/a
	Lida Junction Airport at Goldfield	--	--	X	1
White Pine County	Ely Airport / Yelland Field	--	--	X	1

Table 5 (continued)
INCOMPATIBLE LAND USE AND STATUS OF DEVELOPMENT AT NEVADA AIRPORTS

County [1]	Airport	Potential Incompatibility			Estimate of Percent Developed [4]
		Noise [2]	Wildlife [3]	Structures [4]	
Lander County	Austin Airport	--	--	--	1
	Battle Mountain Airport	--	--	--	1
	Kingston Airport	--	--	X	2
Humboldt County	Denio Junction Airport	--	--	X	1
	Winnemucca Municipal Airport	--	--	--	1
Pershing County	Derby Field at Lovelock	--	--	--	1
Elko County	Elko Regional Airport/J.C. Harris Field	--	--	--	4
	Harriet Field/Wells Municipal Airport	--	--	X	1
	Jackpot Airport/Hayden Field	--	X	X	2
	Owyhee Airport	--	X	--	1
	Stevens/Crosby Field at North Fork	--	--	--	1

NOTES:
1. Counties are listed by the percentage of population change expected over the period 2008 – 2018, (see Table 4).
2. Noise – An "X" indicates pilots receive advice about overflying residential areas or advice regarding noise abatement procedures.
3. Wildlife – An "X" indicates that pilots receive advice about animals on the runways or wildlife in the approach/departure paths.
4. Structures – An "X" indicates that a building or a power line are recognized obstacles. Terrain and other obstacles such as berms, roads, fences, railroads or trees are not recorded here. None of obstacles cited are "hazards".
5. Represents an estimate of the percentage of existing and committed development within approximately one mile of the airport based on values explained below. The larger the percentage of existing and committed development the less likely that any new legislation might have an influence on future land uses. Numerical values represent the following:
   4 = between 75 and 100 percent developed or committed
   3 = between 50 and 75 percent developed or committed
   2 = between 25 and 50 percent developed or committed
   1 = between 0 and 25 percent developed or committed
6. Airport is a residential airpark, or in the case of Searchlight is becoming one.
7. Story County has no airports in State Aviation System
8. The Goldfield Airport is closed.

SOURCES: Federal Aviation Administration, Form 5010-1, *Airport Master Record*
Nevada Department of Transportation, *Nevada Airport System Plan*, 2004
Aries Consultants Ltd.

Table 5 provides a very high-level overview of airports, by county and airport, at which aircraft noise, structures or wildlife may pose a compatibility problem. The airports in Table 5 are organized by their population growth potential over the next decade as noted earlier in Table 4. The specifics of each potential incompatibility problem are not identified, only the categories: Noise, Wildlife, and Structures. The first two categories represent the basic federal criteria for determining incompatibility and the last category represents criteria associated with hazards to air navigation. Under each of these topics, an "X" in the table indicates:

- Noise – pilots receive advice about overflying residential areas or advice regarding noise abatement procedures. Advice regarding overflights of institutional facilities, such as the prison located near Jean Airport, could be provided for reasons of security at the institution and these were ignored as potential incompatibility issues, although they may be so.
- Wildlife – pilots receive advice about animals on the runways or wildlife in the approach/departure paths.
- Structures – a building or a power line may be present in a location that may affect how a pilot lands or takes off from the airport. Terrain and other obstacles such as berms, roads, fences, railroads or trees are not recorded here and may pose additional risk. Buildings and power lines were singled out because these are land uses that have height and would have required a permit or other approval to erect. Although roads and railroads may require a permit they were ignored because they typically become an obstacle only when there is traffic at which time clearance over the road/rail bed does not meet minimum FAA criteria. Other potential obstacles like berms, fences, or trees typically do not require a permit to exist and would not be subject to land use regulations. Many additional airports would be flagged under this topic if these additional criteria had been included. Based on the records that were reviewed, none of airports have obstacles that are cited as "hazards".

The results in Table 5 suggest that around at least eight airports residential uses have been established sufficiently close to the airport, or along the airport approach and departure corridors, to trigger a noise or noise abatement notice to pilots using that airport. This analysis did not examine the cumulative effects of aircraft noise which may be represented as a set of noise contours. Many of these airports have such a low air traffic volume that cumulative noise affects are unlikely to produce noise contours outside the airport perimeter fence or property line.

The results in Table 5 also suggest that at nine airports there is the likelihood that either stock animals might be found on the runway or that wildlife could be found along the approach and departure paths. At 21 airports either a building or tower can be found in the approach and/or departure paths.

A second purpose of this analysis was to evaluate the extent to which development had already occurred in areas surrounding each airport. The underlying question is whether or not new efforts to control incompatible land uses actually had the potential to influence future land uses in these areas. If all the land was developed or committed to development, the ability to change that situation through planning and zoning is already lost. The last column in Table 5 estimates

the percentage of development that has already taken place or been committed to within about 1 mile of an airport. This measure was derived from a review of various aerial photos and is admittedly quite subjective based on this source. In places where subdivision roads where in place, but clearly there were no structures, such an area was counted as a 'committed' land use because the right to develop had apparently already taken place through a zoning or development approval process. The numerical values in the table represent the following criteria:

4 = between 75 and 100 percent developed or committed
3 = between 50 and 75 percent developed or committed
2 = between 25 and 50 percent developed or committed
1 = between 0 and 25 percent developed or committed

The inverse of these values can be viewed as the potential for land use regulations to have an influence on continuing development. A high value in the percentage developed and committed, for example a "4", when viewed from an inverted perspective suggests a low potential that new regulations would influence the land use patterns in the surrounding areas. For example, at Hawthorne Industrial Airport, when viewed in an aerial photo the existing physical development in the area surrounding the airport appears to be slightly less than 25 percent. However, the roads for an industrial subdivision are already committed, and the land uses are unlikely to change before the project is developed. In Table 5, it is recorded as a "2" representing between 25 and 50 percent developed. At least 26 of the 47 airports (55 percent) listed in Table 5 received a "1" rating and 10 additional airports (21 percent) received a "2" rating. This suggests that about 76 percent of the airports listed in Table 5 could potentially benefit from any new initiatives addressing incompatible land use around airports.

The actual percentage and number of airports that might benefit could be higher or lower depending upon how one views the data. Since the airparks represent a planned community with occupants who tolerate the noise and activity of an airport, and who are likely to defend the airport in local development decisions, it seems unfair to add them in with airports and communities that feel significantly different about an airport. If those airports receiving a "3" (2 airports) were added to the above calculations and if those airports that are airparks (5 airports) were removed from Table 5 (leaving 42 airports), the percentage that might experience benefits would be increase to about 81 percent.

In those counties likely to experience a loss of population, the opportunities to affect land use changes are very limited. There are 14 airports in counties likely to experience loss of population. If those 14 airports are removed from the original list (leaving 33 airports, including the airparks), and the remaining airports receiving a 1, 2, or 3 rating (25 of these airports) were considered to benefit, the percentage of airports that benefit from a new initiative would be about 76 percent. Removing the 5 airparks reduces the list to 28 airports, 21 of which received a 1, 2, or 3 rating. This later calculation suggests that from a starting list of 47 airports any new initiative to control land use in areas surrounding an airport could provide benefits to at least 21 airports, or almost 45 percent. But this calculation is still potentially misleading when one

considers that some of these airports may already benefit from good planning and zoning policy, a subject addressed in the next section.

3.6 Treatment of the Airport in Planning and Zoning

The last part of this analysis set focuses on the treatment of the airport in existing planning and zoning documents, together with various observations about the contents of the zoning ordinances. The information developed here was based upon the availability of planning and zoning documents through the Internet. Both counties and cities/towns were researched. Not every county or city/town has its planning and zoning documents on-line; some have one or the other; some have both, some have neither. This necessarily limits the ability to completely evaluate all of the airports.

The results of this analysis are presented in Table 6, which contains simple yes and no indicators to the three questions listed below. The counties are presented in the order that they appear in Table 4, presented earlier, which ranks the counties by anticipated growth over the next ten years. In those cases where the information was not available or could not be found, or was otherwise undeterminable, the indicator "UNK" was used. The three questions and the meanings of a "Y" for "Yes" are:

1. **Is the airport represented in the community master plan?** Yes indicates that the airport master plan is considered to be an included element of the community master plan through a specific reference; or the airport master plan is mentioned as a source for specific information; or there are specific policies included that reference the airport(s).
2. **Is the airport represented in the zoning ordinance?** Yes indicates that Federal Aviation Regulations (FAR) Part 77 is used to control the height of structures in the airport vicinity.
3. **Does the county use or allow overlay zoning?** Yes indicates that the concept of overlay zoning is allowed and/or used in the zoning ordinance. This does not imply, however, that the airport(s) are necessarily protected through overlay zoning techniques.

The information in Table 6 is at best only a partial snapshot of the way in which the airport is represented throughout the state. The results show that counties have choices in the way in which they represent and protect the airport in their community master planning documents and zoning ordinances. What the data does not show is whether all airports in a particular county receive the same level of protection. For example, Clark County, which has been fairly aggressive in creating planning and zoning protections for airports generally, does not apply available overlay zoning protections to all of the County's airports. They may have a long-term perspective to accomplish that level of protection, but through 2008, only McCarran International Airport, North Las Vegas Air Terminal, Perkins Field/Overton Municipal and Jean Airports receive protections under the Airport Airspace Overlay District, Chapter 38.48.090 through 38.48.160 of the zoning ordinance. Nellis Air Force Base also receives this protection.

Table 6

REPRESENTATION OF THE AIRPORT IN COMMUNITY MASTER PLANS AND ZONING

County [1]	Is Airport Represented in Community Master Plan [2]	Is Airport Represented in Zoning Ordinance [3]	Use or Allow Overlay Zoning [4]
Clark County	Y	Y	Y
Lyon County	N	Y	N
Nye County	N	N	Y
Lincoln County	UNK	N	N
Washoe County	Y	Y	N
Carson City	Y	Y	Y
Storey County	n/a	n/a	n/a
Douglas County	Y	Y	N
Churchill County	N	Y	Y
Mineral County	UNK	UNK	UNK
Eureka County	UNK	UNK	UNK
Esmeralda County	UNK	UNK	UNK
White Pine County	UNK	Y	N
Lander County	UNK	UNK	UNK
Humboldt County	Y	Y	N
Pershing County	Y	Y	N
Elko County	UNK [5]	UNK [5]	UNK

NOTES: 1. Counties are ordered by the percentage of population change expected over the period 2008 – 2018, (see Table 4).

2. A "Y" for Yes indicates that the airport master plan is considered to be an included element of the community master plan through a specific reference; OR the airport master plan is mentioned as a source for specific information; OR there are specific policies included that reference the airport(s). An "N" is a no response and "UNK" is unknown or undetermined.
3. A "Y" for Yes indicates that Federal Aviation Regulations (FAR) Part 77 is used to control the height of structures in the airport vicinity. An "N" is a no response and "UNK" is unknown or undetermined.
4. A "Y" for Yes indicates that the concept of overlay zoning is allowed and/or used in the zoning ordinance, but does not necessarily indicate that the airport is covered by an overlay zone. An "N" is a no response and "UNK" is unknown or undetermined.
5. The City of Elko has specific policies in the housing element regarding compatibility with the Airport. The Zoning code references the Airport Master Plan for height controls. Allows overlay zones, but they are not relevant to the Airport.

SOURCE: Aries Consultants Ltd.

Another interesting observation about the information in Table 6 is that many of the counties that are likely to experience little or no growth also tend to be those where information is missing or unavailable. The reasons for this cannot be determined based on the methods of research employed. However, one might surmise that county resources are likely to be limited and incompatibility issues at the airport, even planning and zoning, are not going to receive much attention. These counties are going to find it difficult to support future legislation pertaining to airport protections, and particularly so, if that future legislation places a mandatory planning or zoning burden on the counties.

One aspect of this that was not evaluated was the efficiency of the planning and zoning documents as constructed to in fact provide the desired land use controls. This question may need to be addressed at some future time and could be a future research item on the road to legislation.

3.7 Observations and Conclusions

If the State's forecast of population growth over the next ten years is valid, as many as 33 of the airports in the Nevada Airport System Plan could be subjected to various development pressures that may result in airport incompatible land uses. At least 21 airports could benefit from a program that encourages County/City/Town use of existing legislation to manage airport incompatibility issues.

Narrowing the number of airports to those that are likely to be the greatest impacted by future growth ignores the fact that some of the remaining airports have existing land use compatibility problems. Planning and zoning can address these issues going forward only in the context of redevelopment – either the airport is redeveloped or moved, or the surrounding uses that are incompatible are redeveloped. Waiting for that redevelopment event to occur could be a poor strategy because even at those airports where incompatibility is the norm, some future benefit can be achieved if the County/City/Town recognizes the possibilities for managing the problem and acts to implement the necessary controls. However, such action is not without risk because implementing the kinds of policies that are required at some airports is going to create many non-conforming land uses. The risk to the community is that the new regulations limit what can be done with an established land use such that when a particular activity wants to expand they are constrained and instead elect to move the activity to another location. The community gains the land use control objective for the airport, but loses jobs.

NRS Section 497.270 allows the use of Eminent Domain to remove, lower or otherwise terminate a nonconforming structure, tree or use when a clear hazard exists at an airport. Based on the information developed for Table 5, none of the existing incompatible development has been determined to be a "hazard". As noted in the discussion in Chapter 2, the FAA would need to make this determination through its formal review procedures under FAR Part 77, but the State of Nevada, or the affected County/City would need to take the necessary legal action. Absent these determinations pertaining to a hazard, there is no legislative remedy to remove existing incompatible uses in the vicinity of an airport.

There may be non-legislative ways to address incompatible land uses if they are impacted by aircraft noise at levels above 65 dBA DNL. Table 5, presented earlier, indicated that as many as nine airports may be adversely affected by aircraft noise. An airport may be eligible for an FAA sponsored FAR Part 150 noise compatibility study, and if areas are adversely impacted, land owners could be further eligible for one of the several remedial measures available through that program, if a reduction in noise cannot be achieved through operational changes. However, most general aviation airports would need to reach 90,000 annual aircraft operations (the sum of takeoffs and landings) before qualifying for this FAA program. Very few airports in Nevada experience that level of aircraft operations.

Chapter 4

WHAT SOME OTHER STATES HAVE DONE

4.1 Introduction

The discussion in this chapter is focused upon the ways in which other states have taken planning, zoning and other resources and used them in different ways to achieve what each perceives is a desirable level of control over airport incompatible land use.

4.2 State of California

From an historic perspective, the State of California began addressing airport land use compatibility issues with passage of the Airport Approaches Zoning Law in 1953. The law, which found that the creation or establishment of an airport hazard is a public nuisance and an injury to the community served by the airport, allowed county and city jurisdictions to adopt zoning controls to protect critical airspace from buildings, structures or other airspace obstructions. This early legislation also allowed for the establishment of an airport zoning commission to recommend the boundaries of the various zones to be established and the regulations to be adopted. Where a city or county planning commission already existed, it took on the duties of the airport zoning commission.

In 1967, the State Legislature authorized the creation of Airport Land Use Commissions (ALUC) at the county level. The original purpose of the ALUCs was to make recommendations regarding height restrictions on buildings and the use of land surrounding airports. The original law has been amended many times since and the role and responsibilities of the ALUCs has been expanded. Current legislation requires ALUCs to prepare comprehensive airport land use plans that are consistent with the airport master plans or airport layout plans, requires local general plans to be consistent with the airport land use plan, and requires the ALUC to participate in the development review process when development proposals are not consistent with the local general plan. The legislation also requires the California Department of Transportation, Division of Aeronautics to create a handbook to guide ALUCs in developing their plans and requires local agencies to use the handbook as a reference when assessing airport related noise and safety impacts. The guidebook entitled *California Airport Land Use Planning Handbook* is available via the Division of Aeronautics web site. The current issue of the handbook uses FAR Part 77 as the preferred method for controlling height, and adopts the California equivalent of federal standards for aircraft noise while allowing local jurisdictions to implement more stringent noise standards.

Beginning in 1992-1993 the State of California developed a geographic database for general aviation accidents. Neither the National Transportation Safety Board (NTSB) nor FAA routinely compiles data in this manner. The original database held about 400 data points and in 2001-2002 the State added more data points for a total of 873. The data collected extends back to 1982. The accident data is separated by size and type of aircraft, approach or departure, and phase of

operation. This data is then associated with the geographical location of the accident in terms of distance along the centerline from the runway end and distance perpendicular to the runway centerline. By examining the available data on types and locations of accidents in conjunction with information on airplane operational parameters, the State ascertained where accidents that impact the ground can theoretically be expected to occur most often. The study also examined how the results might vary with length of runway or weather conditions, as well as other parameters including whether or not objects, residences, or buildings were struck and the severity of the accident. The results were then used to develop different sets of accident distribution contours and from those a set of regularly shaped safety compatibility zones were created. The safety compatibility zones incorporate specific land use compatibility qualities including residential densities, and nonresidential intensities.

The safety compatibility zones are similar in concept to the AICUZ zones established for the Department of Defense (see the discussion under Section 2.1.1). However, California evolved the concept of "safety to persons in the air" (which refers to the FAR Part 77 and United States Standard for Terminal Instrument Procedures (TERPS) requirements for navigable air space) as being distinct from "safety to persons on the ground" (which refers to the safety zones and associated land use compatibility standards).

California law establishes a checks and balances approach with the ALUCs in that a local jurisdiction can override an ALUC decision if there are a sufficient percentage of votes on the local jurisdiction to do so. However, the local jurisdiction must make the same specific findings pertaining to the noise, safety and height issues that are the normal purview of the ALUCs. If the local jurisdiction taking this action is not the sponsor for the airport, state law extends immunity to the affected airports.

The State of California has also taken a number of other steps to ensure that state agencies charged with locating various state facilities do not violate the intent of the airport land use controls. For example, public grade schools and high schools cannot be located within 2 miles of an airport runway without review and approval by the California Department of Transportation; community college sites also require special approval if located closer than 2 miles from an airport runway.

California has also mandated that for properties that are located within an airport influence area as defined by the ALUC, real estate agents must provide notice to prospective buyers that an airport is in the vicinity.

There are also significant additional pieces of legislation in California that contribute to efforts to address incompatible land uses around airports. Among these are legislation that requires all cities and counties to adopt a general plan with specified minimum number of elements that must be included. Another key piece of supporting legislation is the California Environmental Quality Act (CEQA) which requires the disclosure of project impacts across a range of subjects including noise and safety impacts if the project is within 2 miles of an airport.

4.3 State of Georgia

One of the key goals in the Georgia Aviation System Plan is: "To provide a system of airports that remains flexible and capable of responding to future change while maintaining compatibility with surrounding communities". The methods used to maintain compatibility are based on traditional land use and zoning controls. This focuses the responsibility at the community level. To measure achievement of this goal one element of analysis and reporting in the State Aviation System Plan focuses on ensuring that appropriate land use and zoning controls are in affect.

Guidance to affected communities comes from a regional FAA publication. The FAA Southern Region Airports Division Office publishes the document *Land Use Compatibility and Airports*. A copy of this document is available via the Internet. The purpose of this guideline is to assist local units of government and land use planners who have an airport within their jurisdiction, or are affected by the impacts of airport/aircraft operations within their jurisdictions.

The State of Georgia provides incompatible land use protections through the airport design/airport master planning process. The State has predefined the controlling parameters for three airport designs, essentially setting the ultimate airport characteristics for a community. The parameters include design aircraft, runway length, and type of approach. For example, a Level II airport must accommodate Gulfstream I-III and Cessna Citation aircraft, minimum length runway of 5,000 feet with nonprecision approach. Each public use airport is assigned one of these designs based on population and other factors. The airport sponsor is not authorized to construct the ultimate airport but can continue to improve the airport in incremental stages against the full design when there is sufficient demand for each improvement. Some airports may never reach their ultimate design if the demand for services never materializes.

Defining the ultimate airport also serves to define the ultimate airport influence area giving the community a long-term and consistent perspective on airport impacts. The State of Georgia defines incompatible development based on the federal criterion for noise, wildlife hazards and height (see Section 2.1.1). By setting the ultimate design for an airport, the noise and height controls that are used in local planning and zoning are also set for the long-term. For example, aircraft noise can now be modeled based on runway capacity rather than a moving twenty-year forecast with ever changing contour lines.

4.4 State of Oregon

The State of Oregon can trace its efforts to address incompatible airport land use to the mid 1970s. The State has over 400 airports, 98 of which are public use airports. Of these 98 public use airports 3 percent are federally owned, 29 percent are owned by the State, 14 percent are owned by regional port authorities or other public entities, 39 percent are owned by the counties and cities and 15 percent are privately owned. Neither the State nor the port authorities have the ability to control local land uses.

Oregon's planning system is predicated on conformance with nineteen statewide planning goals which are to be achieved through local comprehensive planning. Requirements for meeting these goals are elaborated in applicable state statutes and administrative rules, and must be embodied in comprehensive plans adopted by each county and city. Each of these local plans must be acknowledged by the State Land Conservation and Development Commission (LCDC) as in fact conforming to the goals, statutes, and rules. Statewide Planning Goal 12 addresses transportation. Within Goal 12, the State has promulgated both a Transportation Planning Rule (TPR - Oregon Administrative Rules Chapter 660, Division 12) and an Airport Planning Rule (APR - Oregon Administrative Rules Chapter 660, Division 13). The APR provides many useful regulations to control development both on and off airport property.

Oregon legislation requires that every acre of the state be zoned. Since 1974, Oregon's Land Use Planning Act, embodied in Oregon Revised Statutes (ORS Chapter 197), has required all cities and counties to develop, adopt, and periodically review, comprehensive plans. Additionally each city and county must adopt the zoning and land-division ordinances needed to put the plan into effect. Every plan is approved by the State.

The Oregon Department of Aviation publishes the *Airport Land Use Compatibility Guidebook*; the most recent edition is January 2003. The purpose of this document is to provide a comprehensive source of information that can be used as a guide to preserve aviation facilities, and to provide for the safety of individuals near these airports through the use of compatible land uses.

Oregon generally relies on the federal criteria for identifying incompatible land uses. From a safety perspective these include the imaginary surfaces and other guidance from FAR Part 77, and potentially hazardous conditions pertaining to wildlife attractants from FAA Advisory Circular 150/5200-33B. For its *Guidebook*, the State developed a land use compatibility table for the FAR Part 77 imaginary surfaces, similar to that for noise (which was presented earlier in Table 1), but more general with regard to the land use types identified.

With regard to aircraft noise, the 65 dB DNL noise contour represents the federal standard, however the State of Oregon identifies the 55 dB DNL noise contour as the accepted standard (Oregon Administrative Rules, Chapter 340, Division 35). Based on these criteria, when aircraft noise above 55 dB DNL extends beyond the boundary of an airport it is considered a potential incompatibility problem, however specific mitigation measures are required only at levels above 65 dB DNL.

The use of airport overlay zoning is mandated by the Airport Planning Rule. The resultant local zoning ordinance is expected to reflect all the requirements associated with FAR Part 77 and FAA Advisory Circular 150/5200-33B. Persons developing within the overlay zone are required to dedicate an avigation easement. In an addition to avigation easements the state legislation provides for a soundproofing noise easement, and a hold harmless / fair disclosure statement.

4.5 State of Texas

The Texas Legislature created the Texas Airport Zoning Act (AZA), Chapter 241 of the Texas Local Government Code in 1987. This legislation created "airport hazard zoning" to protect the airport from adjacent properties and "airport compatibility land use zoning" to protect adjacent properties from the airport. The zoning that is created under the auspices of this legislation are both overlay zones – that is they sit on top of a community's normal zoning structure providing an additional limitation on the underlying zone. Municipalities can adopt one or both types of controls and they can be combined into a single regulation.

That part of this legislation that refers to 'airport hazard area zoning' mirrors similar laws enacted by other states in the late 1940s and early 1950s. Under this legislation, an airport hazard is determined by the proposed height of an object relative to the imaginary surface standards established in FAR Part 77.

That part of this legislation that refers to airport compatibility land use zoning establishes a set of overlay zones that correspond with noise contours developed for the airport during preparation of an airport master plan or as the result of a FAR Part 150 noise study. Compatibility is determined by the FAR Part 150 criteria, presented earlier in Table 1. Also with respect to airport compatibility land use zoning, the legislation defines the maximum limits of an area that can be zoned under these criteria. This area is referred to as the "controlled compatible land use area" and can extend 5 miles beyond each end of an eligible runway and 1.5 miles on each side of the extended runway centerline.

The AZA also permits cities and counties to zone around military installations using AICUZ noise exposure maps and accident potential zones (APZ).

The AZA also differs from comprehensive zoning in that it can be extraterritorial and multijurisdictional. The AZA permits two or more political subdivisions in the vicinity of an airport to form a joint airport zoning board. Compatible land use or hazard zoning regulations adopted by a joint airport zoning board are then effective in each of the jurisdictions represented on the board. Cities of 45,000 or more population having an airport within their territorial limits may unilaterally adopt compatible land use or hazard zoning regulations, which are effective in all jurisdictions covered by the overlay zones.

Under certain situations, the AZA also makes it possible for one political subdivision to effectively regulate land uses and heights of objects in other political subdivisions that are not able or not willing to adopt comprehensive zoning regulations favorable to the airport.

Although not specific to the AZA legislation, communities are encouraged through state guidelines to incorporate other actions such as the use of avigation easements, eminent domain, outright property acquisition, restrictive covenants, review of land development plats, condemnation procedures, subdivision regulations, the building codes, and the capital

improvements program. Airport land use compatibility plans may recommend various combinations of these techniques.

4.6 State of Washington

The foundation for protecting airports in the State of Washington is 1990 legislation focused on comprehensive planning and consistent development regulations. The 1990 Growth Management Act (GMA), which built upon earlier legislation in the State Environmental Policy Act (SEPA) and Shoreline Management Act (SMA), required counties above a stated population level or rate of increase (and cities within those counties) to adopt growth-management comprehensive plans and implement them through development regulations. As of October 2007, 27 of the 37 counties in the State of Washington where either required to, or chose to, plan under the GMA. The counties and cities within which are required to plan, or choose to plan, under the GMA are guided by 14 goals:

- Focus urban growth in urban areas
- Reduce sprawl
- Provide efficient transportation
- Encourage affordable housing
- Encourage sustainable economic development
- Protect property rights
- Process permits in a timely and fair manner
- Maintain and enhance natural resource-based industries
- Retain open space and habitat areas and develop recreation opportunities
- Protect the environment
- Encourage citizen participation and regional coordination
- Ensure adequate public facilities and services
- Preserve important historic resources
- Goals and Policies of the Shoreline Management Act

Specifically, with respect to airports, the GMA requires that comprehensive plans include a process for identifying and siting essential public facilities. Essential public facilities include those facilities that are typically difficult to site, such as airports, state education facilities and state or regional transportation facilities, state and local correctional facilities, solid waste handling facilities, and inpatient facilities including substance abuse facilities, mental health facilities, and group homes. No local comprehensive plan or development regulation may preclude the siting of essential public facilities.

To hear disputes arising from the adoption of these comprehensive plans and development regulations, the Legislature created three regional Growth Management Hearings Boards. Although the GMA permits direct review by the courts, the Growth Management Hearings Boards are authorized to "hear and determine" allegations a city, county, or state agency has not complied with the goals and requirements of the GMA, and related provisions of the SMA and

SEPA. Any person or organization can file a Petition for Review if they meet three basic requirements:

- The local legislative action must be within the Growth Management Hearings Board's subject matter jurisdiction
- The party must have standing
- The Petition for Review must be timely

Other supporting legislation reinforces local government abilities to address incompatible land uses. These are found in various chapters of the Revised Code of Washington (RCW) and are summarized below:

RCW Chapter 14.07 and 14.08, Municipal Airports Act - The act adopted in 1941 and 1945 provides for the acquisition and sponsorship of airports by Washington cities, towns, counties, port districts, and airport districts.

RCW Chapter 14.12, Airport Zoning - This chapter adopted in 1945 establishes definitions, criteria, and allows local jurisdictions to adopt zoning controls to protect critical airspace from buildings, structures or other airspace obstructions. This legislation defines "Airport hazard" to mean "any structure or tree or use of land which obstructs the airspace required for the flight of aircraft in landing or taking-off at an airport or is otherwise hazardous to such landing or taking-off of aircraft."

RCW Chapters 35.60.250, 35A.63.270, 36.70.547, and 36.70A.510, pertaining to General Aviation Airports - These sections were adopted in 1996 and require all cities and counties (also applies to city or counties not planning under GMA) to protect public-use airports from the siting of incompatible development, whether publicly-owned or privately-owned public use airports through its comprehensive plan and development regulations. The plans may only be adopted following formal consultation with airport owners and manager, private airport operators, general aviation pilots, ports, and the WSDOT Aviation Division. The law requires that comprehensive plans and regulations be filed with WSDOT Aviation and that each jurisdiction may obtain technical assistance from the WSDOT to develop plans consistent with State Law.

In 1991, the Washington State Department of Transportation Aviation Division (WSDOT-A) created an Airport Land Use Compatibility Program (ALUCP) based on the intent of the 1990 Growth Management Act, which empowers the state to offer technical assistance and policy advice to cities and counties. As required by the 1996 legislation, WSDOT-A created a guidebook to address incompatible land use in more detail. The resulting guidebook entitled *Airports and Compatible Land Use - Volume I,* was last revised in February 1999. WSDOT-A supports the guidebook and it's Airport Land Use Compatibility Program through an Internet web site that contains the legislative documentation, the guidebook, and relevant out-of-state materials, such as the State of California Department of Transportation (Caltrans), Division of Aeronautics document the *California Airport Land Use Planning Handbook.*

In June 2005, an audit of the ALUCP, which included an on-line survey and follow-up phone interviews, indicated that 70 percent of the respondents found the ALUCP medium or highly effective in meeting the intent of the GMA. The survey also showed:

- 84 percent reported that the ALUCP was medium or highly effective in meeting the FAA's height directives[3]
- 72 percent reported the ALUCP was medium or highly effective in meeting the FAA's safety directives[1]
- 65 percent reported that the ALUCP was medium or highly effective in meeting the FAA's noise directives[1]

The main recommendations of the 2005 audit of the ALUCP included: enhance coordination and increase FAA involvement; development of funding opportunities as alternatives to Airport Improvement Funds; create flexible land use criteria that recognizes customized overlays and customized guidelines for compatibility planning; modify existing aircraft accident safety zones using current State of California (Caltrans) data and allow flexibility based on topographical constraints and existing densities; and to update the WSDOT-A guidebook to address new issues and include techniques and tools for implementation.

4.7 State of Wisconsin

The State of Wisconsin efforts to control airport incompatible development are based on a strong comprehensive planning law enacted in 1999 together with an expanded airport height limit zoning law adopted in 1985. Wisconsin Statutes Chapter 66.1001, *Comprehensive Planning*, enacted in 1999 changed the previous law to require that all community land use decisions be based on an adopted comprehensive plan that made mandatory the inclusion of nine important elements, including transportation. Within the transportation element (Chapter 66.1001 (2) (c)) the law required the inclusion of airport master plans and a comparison of such plans to state and regional plans. This legislation provided a ten-year period (through 2010) for the various municipalities of the State to change their community plans.

The 1985 zoning law (Wisconsin Statutes Chapter 114.136, *Airport and spaceport approach protection*) appears to be one of the strongest laws reviewed with respect to airport approach protection. Of note in this legislation are the extra-territorial powers and the 3-mile limit. The law provides that within three miles of an airport boundary any county, city or village may:

> "protect the aerial approaches to such site by ordinance regulating, restricting and determining the use, location, height, number of stories and size of buildings and structures and objects of natural growth in the vicinity of such site and may divide the territory to be protected into several areas and impose different regulations and restrictions with respect to each area. The provisions of such ordinance shall be effective whether the site and the lands affected by such ordinance are located within or without

[3] The references here to FAA directives are the directives outlined in specific grant assurance language.

the limits of such county, city, village or town, and whether or not such buildings, structures and objects of natural growth are in existence on the effective date of the ordinance."

The State of Wisconsin, like most states, also allows advance property acquisition of air transportation facilities. Of interest to this discussion is the Land Loan Program. The Land Loan is a revolving fund, administered by the Bureau of Aeronautics (BOA), Wisconsin Department of Transportation (WisDOT), which loans money to airport sponsors to acquire land for airports. Loans of up to 80 percent of the estimated cost of acquiring land, at an annual interest rate of 4 percent, for five years, are available for acquiring land for airport projects or to assure compatible land uses around airports. To be eligible the land must be part of a planned airport improvement project (as shown on an approved Airport Land Layout Plan (ALP)), or land that is essential to future airport development or to the safety of aircraft using the airport. Once in public ownership the airport can lease the land for compatible uses such as agriculture. Land needed only for airport protection, not for future expansion, can be resold to the public with deed restrictions that would prohibit incompatible land uses.

4.8 Summary

Each of the States reviewed have addressed airport incompatible development in different ways, although land use planning and zoning continue to be the primary resources used to identify and implement controls over airport incompatible development. California, Washington and Oregon share many common characteristics in that each are moving to embrace the safety zone concepts originally developed by California. Since these safety zones are similar in concept to the Department of Defense (DOD) Air Installations Compatible Use Zones Program (AICUZ), and Nevada legislation supports land use compatibility with military installations through zoning (NRS Section 278.250 (2)(o)), the possibility exists to migrate the California safety zone concept to Nevada.

Another common legislative thread in California, Washington and Oregon, and including Wisconsin, is the integration between comprehensive community planning, environmental quality and efforts to control airport incompatible development. In this context incompatible land uses take on a much broader meaning and incompatible land uses around an airport becomes just another instance of incompatible development. What changes from one instance of an incompatible land use to another are the criteria used to identify and manage the incompatibility.

California requires the preparation of an airport land use plan by a separate airport land use commission, requires that an affected community's general plan be compatible with the ALUC plan, and requires the ALUC to prepare an environmental analysis of their proposed plan. The other three states require the airport master plan to be integrated into the community land use plan.

For many states the airport zoning laws created in the 1940s continue to guide height controls. The State of Texas zoning effort stands out by creating mandatory airport height and noise overlays. The State of Wisconsin however appears to have the better conceptual approach which they achieved by rewriting the legislation pertaining to airport approaches, establishing a specific three-mile limit for the application of such regulations, but providing the owner municipality extra-territorial powers, essentially controlling the zoning in another jurisdiction if it affects the airport.

The State of Georgia has also integrated its planning and zoning, but may be unique in its approach which appears to be based on setting airport design standards for what might be termed the "ultimate" airport. In defining the ultimate airport, noise and height controls applied through zoning can serve to limit the incremental changes that may occur every time an airport master plan is updated. Community planners benefit because they can see the total areas that need to be preserved or protected and know that those are not likely to change, short of some economic event that changes the airport's function.

Also observed from this research was that as the legislation becomes more complex and planning and zoning more integrated, state agencies have had to step in with guidebooks, manuals and training seminars.

Chapter 5

CONCLUSIONS AND ROADMAP

The purpose of this study was to provide the Nevada Department of Transportation (NDOT) a roadmap to protect the airports in the Nevada Airport System Plan from the effects of incompatible land use development. Under federal criteria incompatible land uses are defined when cumulative aircraft noise exceeds certain threshold limits and when a structure or other object is of such a height as to obstruct normal aviation operations. This document explored various aspects of the incompatible land use issue including what several other states have accomplished, as well as the range of remedies that are available generally and in legislation already promulgated by the State of Nevada. This document also explored how the 17 counties are managing their relationship to airports within their boundaries, including their adoption of protective measures through planning and zoning. Although the methodology limited data collection, the findings indicated that about half of the counties have enacted zoning laws that include references to an airport, but not necessarily all of the airports in a county are covered by the zoning.

5.1 Observations/Conclusions

The achievements of other states with regard to airport incompatible development provide a number of examples that the State of Nevada could follow. However, the research conducted for this document suggests that many communities, particularly smaller ones, do not want to, or are not prepared to, enact and enforce the zoning laws necessary to manage incompatible land uses. Although the methodology limited data collection, one of the findings indicated that only about half of the counties have enacted zoning laws that include references to an airport, but not all of the airports in a county are necessarily covered by the zoning. Several other observations influence the strategy recommendation at this time:

- From a non-legal perspective, existing planning and zoning enabling legislation in Nevada appears to be comparable to that available in other states with advanced land use compatibility programs. The implication of this is that the individual communities in the State already have the tools necessary to manage incompatible airport land uses.
- There are several examples of communities in Nevada taking advantage of existing legislation and enacting appropriate airport land use controls. Unfortunately, many of the examples pertain to situations in the largest communities which may not be appropriate as a solution for smaller communities.
- Over the next ten years at least 21 airports in the Nevada Airport System Plan could benefit from a program that manages airport incompatibility issues.

Based on the research a modest approach is recommended. A modest approach is defined as providing examples and guidance while encouraging recipient communities to enact appropriate planning and zoning controls.

5.2 Roadmap

The roadmap is based on pursuing three objectives over a 3 to 4 year period. Objective 1 seeks to implement height controls at all airports. Objective 2 seeks to change existing legislation to allow land use controls in areas to be defined as accident safety zones, which are similar in concept to the accident potential zones developed for military airports. Objective 3 seeks to add land use compatibility reporting to the Nevada Airport System Plan.

Objective 1 – Assemble and distribute a sample set of local ordinances, plans, and other information that can guide local governments in implementing airport height control ordinances. Existing Nevada legislation already supports such an ordinance and at least half or more of the 17 counties may have already adopted such ordinances in one form or another. The major tasks include, but are not limited to, the following:

- Task 1-1 – Identify and recruit an initial Working Group consisting of not more than five people representing local governments, airport management, pilots groups, municipal mangers and others that can provide review and oversight of this product from at least the local government perspective.

- Task 1-2 – Using information collected in the expanded Nevada Airport System Plan (see Objective 3), together with Federal Aviation Administration Advisory Circular (AC) 150/5190-4A, *A Model Zoning Ordinance to Limit Height of Objects Around Airports*, copy/create several examples of height and aircraft noise ordinances. At a minimum the samples should illustrate several approaches involving both planning and zoning, allowing the community to elect the remedy, or combination, they best want to employ.

- Task 1-3 – Assemble the information into a document that can be published over the web and a presentation that can be delivered by NDOT and Working Group at various speaking opportunities.

Objective 2 – Using DOD Accident Potential Zones as the underlying concept together with general aviation accident data already collected and evaluated by the State of California, develop a set of airport safety zones and associated land use compatibility criteria. Create the legislative amendment needed to implement these safety zones and work through the State Legislature to get the enabling legislation approved.

- Task 2-1 – Develop similar accident data points to those developed for California's safety zones for the purpose of their applicability to Nevada airports. If necessary, obtain additional accident data points to ensure a valid Nevada-relevant sample.

- Task 2-2 – Evaluate and certify the source information and perform the analyses to determine the shape of relevant safety zones.

- Task 2-3 - Develop a set of land use guidelines, based on the California experience, that represent the risks inherent in each of the accident safety zones.

- Task 2-4 Recruit a Working Group, including potential legislative sponsors, to provide guidance regarding implementation of the accident safety zones.

- Task 2-5 – Develop the legislative changes necessary to allow local governments to implement the accident safety zones through local zoning and planning measures, through the Working Group.

Objective 3 – Add features to the Nevada Airport System Plan so that it provides a reporting feature regarding progress in controlling land use around airports. Include the plan on the Internet.

- Task 3-1 – Create an on-line library of plans, ordinances, aerial photos and other data pertaining to the airports in the Nevada Airport System Plan and the counties sponsoring them. At a minimum, this information would include the various documents generated by NDOT including the Nevada Airport System Plan, aerial photographs, airport inspection reports, and other relevant items. In addition, the site would provide links to FAA documents and data sources for Nevada airports and community data including the airport master plan, airport layout plan (ALP), community master plan, local zoning ordinance and other information. Communities would be encouraged to store this information on their web sites and provide the link information to NDOT, but for communities without web sites, or for other reasons, NDOT may need to collect and store this information in order to make it available. NDOT may also consider links to other relevant information that is used to support NDOT decision making regarding airports or the Nevada Airport System Plan, such as demographic information available through the State Demographer, or land use compatibility data available from other states. This is considered a task that evolves as Objectives 1 and 2 are implemented and as local planners and decision makers make use of the available information.

- Task 3-2 – Update the information collected and developed in this Roadmap Study. Evaluate progress in achieving the three objectives. Update the information in the Nevada Airport System Plan as products developed under Objectives 1 and 2 are implemented. Use the additional research information to expand (if possible) and refine the summary information collected previously.

Chapter 6

PUBLICATIONS / SOURCES

6.1 Publications Cited

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