Determining Infrastructure Needs for Rural Mobility: Functions and Benefits of Rural Airports in Washington

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Contents

Executive Summary

As long as we remain remote, we remain suppressed as far as our potential.

—Co-chair, Okanogan Area Alliance 2005 Committee

Our airport was invisible until I needed it.

—Neo-natal Emergency Medical Airlift Patient

Time is tissue.

—Cardiologist, Angel Flight Volunteer

The rotating beacon at the airport is a sign of security and the airport makes Goldendale more attractive.

—Goldendale Social Worker

Conclusion

The benefits that airports bring to rural communities are many, varied, and critical. Rural airports improve the quality of life in rural communities. The individual benefits of rural airports range from improving the quality of health care, to supporting local businesses, providing critical emergency and disaster response, strengthening community, providing opportunities for recreation, military training, economic development, and much more. Airports are in several cases a symbol of hope for rural communities fighting for their economic life. It is difficult to quantify the value of these benefits, yet they are real, even if not always noticed, to the people who live and work in rural communities.

Having a constrained or diminished airport would decrease the quality of health care, decrease the odds of a viable economic future, reduce the ability of local, state and federal agencies to respond to disasters and emergencies, lower the viability of rural businesses, and lower the image these communities have of themselves.

Background

Washington's urban and rural communities are served by an airport system that provides mobility to Washington's citizens, visitors, and other traveling public. The strong performance by Washington's airports has been integral in the development and sustaining of the State's role in international trade. The economic benefits of major airports are well known and acknowledged; less well known are the benefits to the State and rural communities provided by rural airports.

The robust economic growth of the 1990's has not been experienced by all parts of the State's economy or people. Rural counties, historically dependent on resource-extractive industries such as forestry, mining, agriculture, and fishing, have witnessed lower income levels and increased unemployment. The decline of rural economies has direct consequences on the survival and preservation of the State's airport system and its attendant facilities. If the major airports are the arteries of the economic system, rural airports are the veins and capillaries necessary for a healthy and productive economic system.

The rural airport system and its users are caught on the horns of a dilemma. The need for local airport services has never been more critical, but the vitality of the rural Washington airport system and the capability to support that system does not mirror the vigor of the State economy. An understanding of the role played, functions performed, and benefits (e.g., mobility and access) generated by the system of rural airports is a critical element as decision makers, faced with competing demands, make choices about investment and support for the rural airports.

Study Objectives

This report identifies the wide range of benefits that rural communities receive because they have an airport. Study objectives included:

- Describe the economic environment within which rural communities operate.
- Understand why flights are made in order to understand how the community is served by aviation-related and other activities that use rural airports.

- Identify the benefits communities receive and how rural airports are integrated into the fabric of these communities.
- Investigate strategies for decision makers concerned about the vitality of rural airports.

Study Methodology

Qualitative Research

The primary data sources for this study were individuals located in one or more of the case study communities who live in, work in, have knowledge about, or use the airport. The data collected from the intensive interview and focus group process was augmented with a review of applicable literature, written responses provided by individuals in the case study communities, and whatever pertinent information could be found.

The validity of this approach is documented in qualitative research literature. The essence of qualitative research involves ethnography, essentially a cultural perspective. A combination of that tenet with a case study setting allows the researchers to expect differences (i.e., all benefits are not applicable to all airports), but look for commonalities or diversity and the reasons for it. The dynamic nature and design flexibility of qualitative research allows appropriate units of analysis to be determined as the study proceeds, because qualitative inquiry designs need not and cannot be completely specified in advance of field work. Creativity and flexibility in the fieldwork relies on observation, interviews, categorization, and documentation.

Case Studies

The case study rural communities were the Forks area, located in the northwest corner of Washington, the Omak area in Okanogan County in North Central Washington, and the Goldendale/Dallesport area in Klickitat County bordered by the Columbia River and Oregon in South Central Washington. The focus of the study was on the benefits that communities derive from rural airports and intentionally did not identify the specific benefits of each individual airport. By design and with the agreement of the Aviation Division of WSDOT, questions were

of such a nature as to preclude using the information to discriminate, compare, or contrast one airport with another.

Phone and personal interviews were made with initial community contacts, allowing a list of potential interviewees to be developed. Focus groups, individual interviews, and monitoring of city and county meetings provided data. Not one person or group declined to participate in the study.

Emerging Themes of Airport Activities

- **Economic Development and Airports – The Box That Must Be Checked**

The role of airports in economic development and improving the economic development in rural communities is pronounced. A community without an airport (the box on a siting firm's checklist is blank) will be eliminated by the majority of firms seeking a site to relocate or build a new facility. This may happen even before the community has a chance to sell their other attributes. Airports are also the focus of economic development activities in rural communities.

- **Health Care – Emergency Service**

Emergency medical air transport was mentioned early and often. For many trauma, cardiac, neonatal, and respiratory patients, time is critical. The transportation of patients from rural communities to urban hospitals is a critical service. All the hospitals in the case study communities were Trauma Level IV facilities that require transportation of patients to Level I and Level II hospitals, of which there are only seven in the State. Both for convenience and to assist in time-sensitive situations, aircraft bring medical products (e.g., prosthesis, blood, and tissue) and medical professionals (e.g., surgeons and dentists) to rural hospitals. This access provided by rural airports allows local hospitals and doctors to survive economically. Medstar, Airlift Northwest, Angel Flight, and other air transport service agencies rely on airports. The importance of having an airport for quality health care is much like having the "airport box checked" for economic development. Without an airport, the technology and highly trained medical professionals at the handful of medical centers located in urban centers are not readily available to rural residents.

- **Business and Commerce**

With increasing specialization affecting both American businesses and the lives of private citizens, air transport access to the expertise and markets found in urban areas takes on an increasing importance to rural communities. Rural airports were found to provide a wide range of support for local businesses including agriculture and forest products businesses. Use ranged from delivery of time-sensitive replacement parts, regular movement of personnel between headquarters and branch locations, to transportation for out-of-area expertise (e.g., engineers, lawyers, and architects). Further, Federal Express and UPS operations, aircraft maintenance and parts fabrication, fuel concessions, air taxi/charter operators, experimental plane parts and kit manufacturing, general aviation aircraft, and fixed base operations occur. Cattle buyers, lawyers, ranchers, apartment owners, real estate appraisers, and others use rural airports regularly in their business activities.

- **Public Safety, Disaster and Emergency Response**

Rural airports are used to support many of the activities of fire fighting operations, police agencies, and for natural disaster response. Red Cross relief flights, search and rescue, water/retardant drops, fire rehabilitation efforts, and Type I tanker lead aircraft/SEAT/Mosquito Fleet operations all operate out of local airports. Rural airports have also been used in times of floods, earthquakes, ice storms, and other natural disasters. Further, an additional benefit is the fact that the airport will be there if and when it is needed as an alternative to other modes of transportation. The importance to the residents of communities of the use of their airports during disasters or emergencies, while difficult to quantify, is a "hidden" asset that might not be noticed until it is critically needed.

- **Enriching Community Life**

Flights from rural airports touch almost every sector of life in their communities. Taken individually, each activity described below may seem inconsequential. But viewed as a whole, the airport does enhance the quality of life for rural residents. Among others, activities include: flying to family reunions, bringing children to divorced parents, showing a prospective pastor and physician over the area, shopping, and bringing potential buyers into the area. Rural airports

serve as "portals" to public policy activities, allowing rural residents access to Congress, State Legislatures and government agencies, while allowing local visits and meetings with out-of-area government administrators and representatives. Rural airports also host many community events—not just fly-ins, but also summer community festivals, car races, Scout jamborees, and so forth. Supporters of airports, pilots groups and groups such as Rotary and Jaycees serve as private citizen associations that help build, maintain, and strengthen American communities by supporting local airport activities and other on-airport community events. Model plane clubs, recreational flying, connectedness versus isolation feelings, and access to windsurfing, vacation houses, hunting and fishing, all enrich the community. While difficult to quantify, an overarching benefit of rural airports to their communities is that the quality of life is enhanced.

- **Benefits Are Complementary to Each Other**

Benefits derived from one usage of an airport can, when added to another usage, result in a broad menu of attributes available from the facility. The benefits to the community are derived not from the flights themselves, but from the purpose of the flights. Very few individuals take a scheduled airline flight simply for the joy of flying, as is sometimes the case with a general aviation aircraft. An airline flight is a means to some other end—to attend a business meeting, visit a vacation location, attend a funeral, assist after the crisis of a fire, and so on. The same conclusions are not readily drawn for general aviation flights. But rural residents readily identified the reasons flights were made, resulting in a list in this report of over 130 flight purposes, purposes that reach throughout the community and generate the benefits rural airports bring to their communities.

In summary, the benefits to rural communities include the following: (1) enhanced quality of life; (2) access to needed professional services; (3) improved quality of healthcare; (4) effective and timely response to disasters, emergencies, and fires; (5) support for local businesses, including agriculture and timber businesses; (6) improved ability to petition government; (7) community life enriched; (8) critical asset for economic development; and (9) an improved sense of well-being.

Final Perceptions

It is evident that the individual benefits provided by rural airports are often below the radar screen of both private citizens and public decision makers. Most general aviation flights are undocumented except in the personal logbooks of pilots. However, when the numerous benefits that rural airports provide are identified by decision makers, the critical mass of total benefits that emerges will generate support for rural airports.

The use of qualitative research analysis worked extremely well in this study. Personal observations and knowledge of rural community residents were combined into themes and strategies.

Airports are often signs of hope for communities fighting for survival or development. Loss of an airport and its varied multiple benefits can diminish the image these communities have of themselves.

Rural airports are fully integrated into the life of their communities. Citizens are touched in many ways not always evident, but always effective.

For policy makers and citizens concerned about the future of rural communities, the future of rural airports must be given attention. The results of this study support their role as an essential public facility.

The emerging themes derived from the flight purposes in the case study communities can be expected to be similar to the themes at most Washington rural airports and communities. The benefit framework developed in this study is appropriate for use by decision makers as they evaluate investments in their airports.

The general aviation community has a critical role to play in the investment debate. They can serve as an action agent by drawing attention to these benefits that reach beyond recreational flying, positively positioning these airports in the decision process for infrastructure investment decisions.

1. Introduction

Washington's urban and rural communities are served by a system of airports comprised of primary, commercial service, reliever, and general aviation airports. Airports, through the attendant aircraft that use them, provide mobility to Washington's citizens, visitors, and other traveling public. In addition to the business community, the aviation system supports health care, defense, emergency, disaster, public safety, and other essential services for the state and nation. The strong performance by Washington airports has been integral in the development and sustaining of the State's role in international trade.

The benefits of Washington's system of airports are well known and acknowledged. Although conventional wisdom often identifies many of the benefits of this system to the primary, commercial service, reliever, and urban general aviation airports, less well known are the benefits to the State and rural communities provided by rural airports. Of the 129 public access airports in Washington, most are quite small, based in rural and often remote locations.

The traditional methodology used to identify the contributions of airports to the State's economy focuses on economic analysis and misses many of the benefits rural airports bring to their communities. These benefits are often of an intangible nature and not readily apparent. Rural airports might seem "invisible" until an individual has a direct experience in their use. The benefits of rural airports reach beyond direct, indirect, and induced benefits into the very social fabric of their communities and regions. While the net benefits to the State may be less than those of their urban counterparts, their role and benefit to the quality of life in the rural communities they serve is of no less importance.

The robust economic growth of the 1990's has not been experienced by all parts of the State's economy or people. Rural counties, historically dependent on resource-extractive industries such as forestry, mining, agriculture, and fishing, have witnessed lower income levels and increased unemployment. This decline in rural economic activity has direct consequences on the survival and preservation of the State's airport system and its attendant facilities. If the major airports are

the arteries of the economic system, rural airports are the veins and capillaries necessary for a healthy and productive economic system.

The rural airport system and its users are caught on the horns of a dilemma. The need for local airport services has never been more critical, but the vitality of Washington's rural airport system does not mirror the vigor of the State economy. Diminished prosperity in rural Washington, coupled with a lack of understanding about the benefits that rural airports bring to their communities, threatens the support and viability of many airports.

Law classifies the airports in this study as “essential public facilities”. Many people question, “Why are they essential? What level of facility and infrastructure is needed?” The answers described in this report will allow balanced judging of the merits of preserving Washington's threatened rural airports, providing infrastructure for rural mobility, and devising and implementing sound and effective strategies to mitigate the problem of their potential demise.

The issue of the survival and preservation of Washington's rural airport system surfaces as an economic problem. It is critical to understand the role played, functions performed, and benefits generated (e.g., mobility and access) by the system of rural airports. Federal, state, and local decision makers, as they necessarily make hard allocation and zoning decisions in times of diminished budgets, need comprehensive information on all alternative projects and expenditures. Understanding the benefits and need for rural airports is the first step.

This study identified a wide range of benefits that rural communities receive because they have an airport. The benefits described in this report were derived from several sources, primarily from a close look at the three case study areas described below. Most of the information in this report is drawn from the experiences and knowledge of individuals in these communities. Interviewees included members of civic organizations, business owners (both aviation and non-aviation related), pilots, elected officials, economic development professionals, planning professionals, hospital administrators, social workers, other health service professionals, EMS professionals, airport managers, and fire fighting professionals.

Objectives

First objective: Describe the economic environment within which rural communities operate. This is important, as it is impossible to understand the benefits that rural communities draw from their airports without understanding the context in which these communities find themselves. *Second objective*: Improve understanding about why flights are made and how the community is served by aviation-related and other airport activities. This is critical, since most of the benefits to the community are derived from these activities. *Third objective*: Identify the benefits communities receive from having a local airport and describe how rural airports are integrated into the fabric of their communities. *Fourth objective*: Investigate strategies for decision makers and individuals concerned about the vitality of rural airports, drawn from the insights of how decisions are made in case study communities. A decision guide on how to include airport benefits in infrastructure decisions is drawn from the findings of this study and published as a standalone document. The decision guide represents the completion of the fourth objective.

Approach

Three case study communities were selected: (1) the Omak area in Okanogan County in Northcentral Washington, (2) the Forks area located in the northwest corner of Washington, and (3) the Goldendale/Dallesport area in Klickitat County bordered by the Columbia River and Oregon in Southcentral Washington.

The initial study design focused on a single airport in each community. During the initial interviews, local citizens described the benefits of all the airports in their area. The study design was revised to include all airports in each case study area. In the end, this strengthened the conclusions of the study. The data collection phase of the study ended in September 2001.

Interviewees were associated with four of the seven public airports in Okanogan County, two airports in Klickitat County, and two in the Forks area. Each participant provided important insights on the benefits that rural airports offer to their community. In very few instances were the activities associated with one airport either not available at the other airports, or a possibility that they might happen at those airports in the future.

Initially, the study team made one or two contacts in each community. In Forks, the initial contact was Kathy Cunningham, City of Forks Director of Economic Development; in the Dallesport/Goldendale area, Dana Peck, Klickitat County Economic Development Director, and Susan Kerr, Chair of the Klickitat County office of Washington State University Cooperative Extension; and in the Omak/Okanogan area, Lael Duncan, Co-Chair of the Alliance 2005 economic development committee and Jay Jenkins, Chair of Okanogan County Washington State University Cooperative Extension.

In cooperation with these contacts, a list of potential interviewees was developed. The initial list was expanded by extracting information from Chambers of Commerce, City, and County web pages. A study team member contacted each of the potential interviewees by phone to schedule a time to meet. Most calls were made without prior introduction to either the study or the study team. An early indication of how the case study community residents valued their airports was that the team had no difficulty securing willing participants. There was not a single declination to participate (i.e., a 100% positive response rate), and persons interviewed often suggested others in the community that they felt should be included in the study. By the closing date of the collection phase of this study, the list of willing potential interviewees was longer than the available time for interviews. In addition to individual interviews, members of the study team observed an Omak City Council meeting, an *Airport Master Plan* hearing in Forks, and conducted a short survey during an Okanogan Area Alliance 2005 Board of Directors meeting.

Interviewees represented a broad cross section of their communities: members of a community citizen's organization, business owners, pilots, a local newspaper editor, and an area economic development committee whose membership was over fifty percent from the private sector. Also interviewed were mayors, city council members, County Commissioners, City and County planners, City and County economic development personnel, paid and volunteer airport managers, a community college president, hospital administrators and financial officers, a social worker, the head of a community counseling program, an aviation EMS pilot, an aviation EMS program administrator, a retired cardiologist active in the Angel Flight organization, U.S. Forest Service personnel, Colville Federated Tribe economic development and fire fighting personnel, and a helicopter news crew, as well as individuals involved in businesses located on the airports.

Most participants were interviewed in individual settings: an office, conference room, pilots lounge, classroom, hangar, or workshop. Pilots in Omak, Goldendale, and Dallesport met in focus groups. A study team member conducted a group interview with the Okanogan Area Alliance 2005 Committee. Interviews ran from thirty minutes to two hours in length.

2. Rural Communities—Impact of Specializations

Through most of the 1980s, Washington experienced restructuring and dislocation, losing ground as a high-wage state. Communities dependent on resource-extractive industries suffered severe losses of high-paying jobs, resulting in drastically reduced family income. All case study communities were heavily dependent on some combination of forestry, agriculture, or fishing, all of which experienced significant economic declines after the early 1980's. From the late 1980s to present, Washington's economy regained some lost ground—except in many rural counties. Although Washington's economy outperformed the nation's from 1990 to present, this recovery has not included most rural counties.[1] Income and wage data confirms this.

For example, during the 1970's, per capita income for the case study areas grew at a far faster rate than either the State or nation. But in the 1980's, per capita income for case study communities either declined or was flat.[2] In the 1990's, the per capita income of most rural Washington counties increased, including the three case study communities, but at rates that again trailed both the State and national average growth rates.

Average wages throughout the State increased in the past several years. However, in most rural areas, wages are still lower in real (inflation-adjusted) terms than they were in 1980. Rural Washington not only lost significant ground during the 1980's, it did not keep up in the 1990's. The hopes for the future of Washington's economy—a solid base of high technology and telecommunications industries with the capacity to take advantage of expanding world trade—seem very distant to the citizens in rural areas.

The consolidation, concentration, and domination of the retail sector by large retail chains, the loss of businesses in rural communities, the ongoing restructuring in agriculture to fewer but larger farms and agribusinesses, the mergers and consolidation in the banking and financial industries, and the concentration of medical specialists and new medical technologies in urban centers are the reality of today's economic environment. These changes create additional challenges for rural communities as they seek to create a secure economic future.

The following section focuses on the health care system, but only as a proxy and one of many possible examples of how the concentration of professional and financial resources in urban areas creates challenges for rural communities.

Health Care Specialization

Rural health care systems lagged behind their urban counterparts all through the twentieth century. Since the 1930's, several federal initiatives attempted to improve the level of health care service in rural areas by increasing the number of rural physicians.[3] During the 1950's to 1960's, the level of care in rural hospitals was not significantly different from that of their urban counterparts. Lack of medical personnel was the biggest challenge. For the most part, the latest technology could be found in both rural and urban medical facilities. This is no longer true. In recent years, medical technology and specialists have concentrated in urban areas. This is due to a number of factors, not the least of which is the higher income and population levels that characterize urban centers. Urban and suburban areas are better able to support the latest technology that specialists need, as well as the specialists themselves.

The high cost of new medical technology, the demand for specialization, the economies of repeated procedures, and the need for a large patient base to pay for these factors concentrates high-level medical treatment facilities in or near urban centers. These factors, coupled with the difficulty that rural hospitals have recruiting and retaining personnel, creates a situation in which rural hospitals, while providing an excellent level of care within the framework of their equipment and personnel, must send many patients to urban hospitals. When possible, that specialized knowledge is imported by bringing the specialist to the rural area physically or virtually, using video-conferencing and other digital communication technologies.

The acute care rating system for hospitals (Trauma Levels I through V) reflects the concentration of specialists and new technologies Trauma Level ratings are based on a range of factors including personnel, equipment, facilities, and support systems. Patients who require specialized care need access to one of the State's seven Level I or II facilities. Patients in rural or small urban areas must be transported from local Level III, IV, and V hospitals to a higher-level trauma care service.[4]

Level I hospitals provide the highest level of definitive and comprehensive care for patients with complex injuries, including the most acute head injuries, burns, and illnesses. Washington has one *Level I* hospital, Harborview Medical Center, located in Seattle. An additional *Level I* facility in Portland, Oregon serves Southcentral and Southwest Washington.

Level II hospitals provide definitive care for complex and severe trauma patients. A broad range of specialists, comprehensive diagnostic capabilities, and support equipment are available. Washington has six *Level II* medical facilities, located in Vancouver, Bellingham, Spokane, Tacoma, Wenatchee, and Walla Walla. A *Level II* facility in Lewiston, Idaho serves Southeastern Washington.

Level III hospitals provide initial evaluation and stabilization (surgically, if appropriate) to trauma patients. Comprehensive medical and surgical inpatient services are available to patients who can be maintained in a stable or improving condition without specialized care. *Level III* facilities assess, resuscitate, stabilize, and initiate transfer (if necessary) to a higher-level trauma care service. Washington has twenty *Level III* facilities.

Level IV hospitals provide initial evaluation, stabilization, diagnostic capabilities, and transfer to a higher level of care. *Level IV* facilities may provide surgical and critical care services, as defined in the service's scope of trauma care. All of the hospitals in the case study areas are *Level IV* facilities.

Level V facilities provide initial evaluation, stabilization, and transfer to a higher level of care. The facility may be a rural hospital or medical clinic.

Tremendous advancements in medical care have been achieved with the application of the latest research, specialization, and improved (but costly) technology. Twenty years ago, the mortality rate for heart attack patients was higher than twenty percent in both rural and urban communities. The treatment did not differ much between rural or urban patients. Today, that mortality rate is down to about five percent. One of the keys to this improvement is the application of latest treatments in a rapid manner. Patients are quickly stabilized and moved to a medical center that has the appropriate specialists and equipment, found primarily in urban centers. As one cardiologist said, *"Time is tissue,"* meaning that the sooner treatment can be provided, the less damage there is to the heart. An important quality of life issue for rural residents becomes air transport access to these treatment possibilities.

Other Specializations

The section above focused on the health care system. But the health care system is only one of many areas characterized by the ever-increasing concentration of specializations in urban centers. While the trauma level rating system formally recognizes this concentration in the medical arena, most other professions have a less formal but no less concentrated level of specialties around and in urban centers.

For the most part, construction and environmental engineers, digital communication technologists, specialized lawyers, communications systems specialists, financial specialists, wastewater specialists and other essential specialists live and work in or near urban centers. Concentration of services is also prevalent in banking, investments, retail, and wholesale distribution systems, and increasingly in state and federal government. Often, it is not necessary that these services be physically located in rural communities. But access to these centers of specialization, as well as government, financial, and distribution centers, is necessary if rural communities are to develop an economic base that provides a secure future for their communities.

Many residents in Washington's rural communities dream of a brighter future. Increasingly, rural citizens understand the implications for their communities if the negative trends of the past

twenty years are not reversed. All three case study communities are actively pursuing strategies to improve their chances of future economic success. Access to urban financial, professional, medical and distribution centers via air transport plays a key role in each community's efforts.

3. Case Study Communities

While very different from each other, all three study areas have beautiful landscapes, abundant natural resources, outdoor recreational opportunities, and low population densities. The economic high point of each area occurred before the 1980's.

The study did not relate the benefits associated with airports to the characteristics of any specific airport. Many interviewees were concerned that this study would somehow justify state and federal airport grants to other airports, but not to theirs. This was not the intention of the study and it is not possible to use the information in this report to make these kinds of decisions. Findings are not correlated to airport specifications such as length, width, availability of weather reporting, or approaches.

Functions were different among airports. In every case, interviewees identified improvements that would increase the utility of that particular airport: for example, longer and/or wider runways, the addition of a precision instrument approach, an on-field weather reporting system, or additional fueling facilities. The study team did not record these observations. However, this does not argue that the utility of particular airports might increase with certain improvements. In the end, almost all of the benefits derived by the communities in this study, if not presently applicable, are potentially available to all communities.

The most critical characteristic of public access rural airports is that they represent real estate where aircraft landings and takeoffs do not require prior approval. Once lost for the support of flight activities, they would be extremely difficult to replace. Rural airports are land areas where flight operations are supported, and over which flight and landing activities are approved as established by both regulation and convention. Physical characteristics, area obstructions, and

any special provisions are published so that pilots can make decisions as to whether their particular aircraft can safely use the airport, given current weather conditions.

The Sheriff, the Governor, and federal officials can declare almost any facility to be available in an emergency. Since all of the airports in the study areas are under some sort of public ownership, they can be readily used without the extra step of a declaration of emergency as a base of flight operations in response to emergency, disaster, and national defense, public health, and safety functions.

Airports and their benefits are often associated with fixed-wing aircraft, yet this study confirmed that airports also extend the utility of helicopters. Pre-approved landing and takeoff rights afforded aircraft at public access airports is important for rotary winged aircraft. While they are able to land at many off-airport locations, they can also land and have their operations supported at any public access rural airport without worrying about prior approval. Airports usually provide lower weather minimums than off-airport helipads.

For a more detailed description of each airport in the study areas, refer to the *Federal Aviation Administration Airport/Facility Directory, The Washington Pilots Guide.* It is available through the Washington State Department of Transportation Aviation Division, or the Airports Division of the Northwest Mountains Division of the Federal Aviation Administration in Renton, Washington.

Omak, Okanogan County

Northcentral Washington's Okanogan County, located halfway between the metropolitan areas of Seattle and Spokane, encompasses more than 14,000 square miles of pristine natural beauty. Larger than several states, Okanogan County is bordered on the north by British Columbia, Canada, the Columbia River to the south, the Cascade Mountains to the west, and Ferry County to the east. The Okanogan Valley, which divides the County east from west, is the location of thousands of acres of apple orchards. Separated by the Cascade Mountains, Omak is a five-hour drive to Seattle in the summer, and can be over a six-hour drive in the winter. The Omak community is three hours from Spokane and ninety minutes from Wenatchee.

Okanogan County covers 5,281 square miles, the third largest county in the continental United States. Only thirty percent of the land within the County is in private ownership; the remainder is state and federal land. The Colville Indian Reservation, located in the southeast corner of the County, occupies approximately 700,000 acres and is an integral part of the County's heritage. The Colville Federated Tribes are an important partner in the economic development activities for this region.

The County population is 39,564. The City of Okanogan, with a population of 2,415, is the second largest city in the County and the County seat. Omak, the largest city in the County, has a population of 4,495. Omak and Okanogan share a common boundary. Other cities within the County are: Brewster, 2,040; Conconully, 190; Coulee Dam, 885; Elmer City, 310; Nespelem, 232; Oroville, 1,580; Pateros, 595; Riverside, 285; Tonasket, 1,025; Twisp, 990; and Winthrop, 365. The County has an unincorporated population of 24,157, while the incorporated population is 15,407. Population density is 7.5 persons per square mile.[5]

Agriculture and forestry are the major economic generators for the County and the foundation of the region's economy. Local, state, and federal governments are the next largest employers. Retail trade, services, and manufacturing are a few of the other major employers. Omak, the regional center for services and trade, is experiencing some growth, primarily in the retail sector, with large chain discount retailers moving in to capture the regional retail trade, as well as draw shoppers from Canada.

Methow Valley, lying to the west of Omak and located in the western portion of the County, is a popular destination for outdoor enthusiasts. It has hundreds of square miles of cross-country ski trails, as well as snowmobile parks, and opportunities for mountain biking, fishing, camping, and hiking. Methow Valley offers many tourist accommodations, weekend get-a-ways, and a four seasons destination resort. A four-hour drive in the summer, it can take over seven hours to drive from Seattle to Methow Valley in the winter when the North Cascades Highway is closed.

In 1999, average per capita income in Okanogan County was $20,068, compared to the State average of $29,783. Over the past ten years, County unemployment rates have been in the top ten

in Washington State. At the time of the interviews (ending in the Fall of 2001), unemployment was about nine percent. While it dropped in the preceding year, this is primarily due to a statistical phenomenon; the work force is smaller and fewer individuals are seeking work.

Since the 1980's, the Omak region's forest products industry has declined about eighty percent, capped recently with the closing of a large veneer plant. The dominant agriculture product is apples. This sector of agriculture did reasonably well until three years ago. Since that time, there has been a dramatic decline in income due to low prices caused by foreign competition in juice markets, overproduction, and shifting consumer tastes away from the Red Delicious variety, long the staple of the Washington apple industry. Two area packing warehouses have gone out of business in the past year, and about twenty percent of the apple acreage removed from production. Estimates on the number of area tree fruit producers who will go out of business within the next five years ranges from twenty to forty percent.

Okanogan County has seven public access airports. Built during WWII, Omak airport is the largest. Owned and operated by the City of Omak, it has a 4,654-foot runway and a non-precision GPS instrument approach. Federal Express operates out of the Omak airport and has a fuel contract with the City of Omak. During the fire season, the Bureau of Indian Affairs operates two Single Engine Air Tankers (SEAT—a single engine agricultural aerial applicator aircraft converted for fire suppressant and water bombing). There are two other aviation-related businesses on the field; an aircraft repair and maintenance shop, and parts fabrication for Cessna aircraft.

Individuals associated with the Okanogan, Twisp, and Tonasket airports also made significant contributions to this study. The Okanogan Legion Airport runway is 2,500 feet in length, the Twisp Municipal Airport runway is 2,690 feet long, and the Tonasket Municipal Airport runway is 3,000 feet in length. All are paved, owned by their respective cities, and have volunteer pilot groups that participate actively in maintenance and upkeep. Additional Okanogan County airports are the Methow Valley State Airport between Twisp and Winthrop, the Scott Airport at Oroville, a Port of Entry airport, and the Anderson Airport near Brewster.

Goldendale/Dallesport, Klickitat County

Klickitat County lies at the junction where the Columbia River Gorge cuts through the eastern slopes of the Cascade Mountains. Klickitat County is the southcentral county of the State of Washington, bounded on the south from east to west by the Columbia River, the division line between the states of Oregon and Washington; to the west by the Cascade Mountains; on the north by the Yakima Indian Reservation and the Simcoe Mountains; and to the east by Benton County and the dryland cropping area of the Horse Heaven Hills. The County encompasses 1,908 square miles (about the same size as the state of Delaware). The County is 84 miles wide and averages 23 miles north to south. The population is 19,161.[6]

Klickitat County is referred to as the place where *"the sunshine meets the rain."* It is a transition zone between the maritime climate of the Pacific Ocean and the arid interior plateau of Eastern Washington. The average annual rainfall declines rapidly as one travels from west to east. In the western part of the County, dense forests are fed by 40-plus inches of annual rainfall, while in the east, high desert plateaus receive only seven to nine inches. The area is one of spectacular scenic beauty. On a clear day, high snowcapped mountains, Mt. Adams to the northwest and Mt. Hood to the southwest often dominate the horizon. Klickitat County is one of the gateways to the Columbia River Gorge, one of the scenic wonders of the world.

Goldendale, the County seat, is centrally located in Klickitat County and has a population of 3,760. There are two other incorporated towns: White Salmon, 2,193; and Bingen, 672, both located on the Columbia River in the western part of the County. The City of Dalles, Oregon, population 8,500, lies directly across the Columbia River from Dallesport and is one of the retail centers frequented by Klickitat County residents. During the study, the City of The Dalles owned and operated the Dallesport Airport in Klickitat County. Shortly after, the City of Dalles formed a partnership of ownership with Klickitat County. Driving distances from Goldendale are 110 miles to Portland, Oregon, 70 miles through the Simcoe Mountains to Yakima, and 32 miles southwest to The Dalles, Oregon.

The economic base of Klickitat County is agriculture, wood products, tourism, and the production of aluminum. In 1999, the per capita income in Klickitat County was $19,815,

compared to the State average of $29,783. Klickitat County has experienced a major decline in the forest products industry since the early 1980's, from several thousand jobs to less than five hundred. In the early 1980's, a number of mills operated in the County. At present, there are only two mills in the surrounding five-county area, and one recently reduced its work force. Irrigated vineyards and orchards grow along the Columbia River, but the primary agriculture production is cattle and dryland grains, two sectors economically hard-hit in recent years.

The Klickitat County economy has become highly dependent upon two area aluminum smelters. The energy problems of the late winter and spring of 2001 caused a temporary shutdown of both facilities. At the time of the Goldendale interviews, the Klickitat County unemployment rate was at eighteen percent, and threatened to go up to thirty percent if the smelter shutdowns became permanent.

Klickitat County has three public access airports. One is a turf strip located about seven miles west of Goldendale. The other two airports, most often discussed by interviewees, are the Goldendale Airport and The Columbia Gorge Regional Airport (The Dalles Municipal) at Dallesport. The Goldendale Airport has one runway 3,490 feet in length. The Dallesport Airport is located 28 miles from Goldendale, directly across the river from The Dalles, Oregon. Built by the U.S. government as a military airport, the Dallesport Airport has three runways of 5,097 feet, 4,646 feet, and 4,406 feet in length. It is scheduled to have a precision instrument approach within the next year. The Dallesport Airport is the only airport in the case study areas with a FBO (Fixed Base Operator).

Forks, Clallam County

Forks is located on the Olympic Peninsula, the far northwest corner of Washington State. Like the other two case study areas, Forks is also an area of scenic beauty, with the rugged Pacific Coast on the west and the spectacular Olympic Mountains and rainforest to the east. The County seat is 55 miles away in Port Angeles. Forks is the most isolated of the three case study communities.

The Forks influence area stretches from Neah Bay, 49 road miles to the north, to Queets in Jefferson County some 40 miles to the south. The area is over ninety percent forested. Due to the ample rainfall, trees grow exceptionally well— a frustration to many area residents, as it seems incongruous with the decline of the area's forest products industry. The Quileute Indian Reservation at La Push is 10 miles from Forks. The Makah Indian Reservation is at Neah Bay, at the tip of the Olympic Peninsula.

The Forks influence area is bounded by the Pacific Ocean on the west, the Straits of Juan de Fuca to the north, and the Olympic Mountains and the Olympic National Park to the east. The Quinault Indian Reservation and Grays Harbor County provide the southern boundary. The climate is characterized by annual rainfall that averages from 100 inches along the coast, to 160-plus inches on the western slopes of the Olympic Mountains. The Forks area economy was one of the hardest hit in the northwest region of Washington State in the 1980's through the 1990's, caused by the loss of numerous high-paying jobs in the forest products industry. "Decimated" was the term used by several interviewees. Additional economic problems were created by the more "down" than "up" conditions of sport and commercial fishing out of LaPush, Neah Bay, and Sekiu.

The majority of Clallam County's 64,525 residents live in the central and eastern parts of the County from Port Angeles east to Sequim—areas not only separated by geography, but by attitudes and culture. The western portions of Clallam and Jefferson Counties, the Forks influence area, covers about 1,400 square miles with a population of about 13,500. The population of the City of Forks is 3,120.[7]

Main employers in the western area of Clallam County include: the Clallam Bay Corrections Center, 450; Forks Community Hospital, l 232; Quillayute Valley School District, 200; Olympic Corrections Center, 110; Portac, Inc. (wood and lumber products), 100; Washington State Department of Natural Resources, 105; Forks Thriftway (food, pharmacy, and hardware retail), 65; Allen Logging Company, 63; City of Forks, 36; Clallam County, 27; and the U.S. Forest Service, 19.

One of the constants in the area's economy is jobs associated with tourism. In 2000, Olympic National Park drew about 4.2 million visitors. But because of Fork's distance from Seattle, most visitors to the park pass through the north, east, or southern boundaries and do not explore the western reaches of the park. Most of the individuals employed in tourism-related jobs in the Forks area work for motels, restaurants, and small businesses.

Port Angeles, with 18,387 residents, is the closest city and is 55 miles away via a twisting two-lane road to the northeast. It is a 110-mile drive on a two-lane highway to the Hoquiam/Aberdeen area to the south, and another 50 miles farther to Olympia, the closest large metropolitan area. It is a three to four hour trip to Seattle on 117 miles of non-interstate highway, 10 miles of interstate, and a ferry across the Puget Sound. There is no rail or scheduled air service in the Forks area.

The Forks area has two public access airports. The Forks Municipal airport is located on the south edge of the City of Forks and has a 2,400-foot paved runway. The Coast Guard uses the airport as a refueling station for their helicopters. The airport is also used by emergency medical air transport helicopters that service the Forks Community Hospital. A helicopter service located on the airport contracts two Hughes 500 helicopters to area logging firms, a variety of other businesses, the National Park Service, and other state and federal agencies. According to City officials, a private citizen deeded the land for the airport to Forks. If the land is not used as an airport, it must be returned to hops production.

The Quillayute Airport is a former Naval Auxiliary Air Station located approximately 10 miles west of Forks. The Aviation Division of Washington State Department of Transportation deeded the facility to the City of Forks in late March of 1999. The airport has two concrete runways, each close to 5,000 feet long. Currently, only the east/west runway (runway 04/22) is open. It has a displaced threshold of approximately 1,000 feet. The airport has two large WWII hangar facilities, a NOAA weather station. A WACO biplane firm utilizes the hangars.

The City of Forks is finishing an *FAA Master Plan* on the Quillayute Airport that should be complete by the time this report is published. In the meantime, efforts are being made to clean up the airport property, removing vegetation close to runways and flight approaches, and stabilizing

buildings. It is the intention of the City of Forks to encourage general aviation use of the airport and when master planning efforts are completed, move toward developing improvements for both general aviation and aviation-related business.

4. Emerging Themes

A very clear set of themes about the functions performed by rural airports and the benefits accrued to their respective communities emerged from the interviews. The themes include economic development, health care and emergency medical services, support of business and commerce, recreation, community activities, enriched community life, and disaster response for fires, floods, snow and ice, and earthquakes. The themes support the strong conclusion that rural airports clearly improve the quality of life in rural communities.

During the development of the study outline, functions and benefits were defined separately. As the data collection progressed through interviews, focus groups, and analysis, the delineation between functions and benefits became nonproductive. The functions performed by rural airports are, indeed, the benefits to the community. It would be an artificial distinction to try to differentiate between them.

Economic Development

> *As long as we remain remote, we remain suppressed as far as our potential*.
> –Lael Duncan, Co-Chair of the Okanogan area, Alliance 2005 Committee

All three of the case study communities lost their base of family wage jobs due to the decline of the forest products, agriculture, and/or fishing sectors of their local economies. Virtually every person interviewed identified some negative aspect of the impact of having lost their community's economic base. For example, interviewees reported: *"Once we had twenty mills, but now there is only one,"*; *"The large veneer plant just closed,"*; and *"Two apple packing warehouses closed in the past year."* Residents identified when the last local car dealership left town, when the last retail-clothing store closed, and spoke of the efforts of state and federal

government to close the Coast Guard station and the area's Washington State Department of Social and Health Services office.

A unique description of past events came from a Forks official who said that during the 1970's, forestry was considered the *"Emperor"* and salmon was its *"Duke"*. In the 1980's, "*A group in black robes dethroned the Emperor and its Duke*." The implications of this type of loss was put in context by a Forks resident who said, *"The area had gone from a thriving logging and forestry economy to one of struggling for economic retention and survival."* Residents in each of the case study areas expressed, in various ways, that they know that loss of jobs is the reason that real (inflation-adjusted) per capita income was higher in 1980 than it is today.

The study team found a clear sense of purpose to improve the economic environment in each community. Each community is actively pursuing strategies to strengthen local businesses and attract new ones. The focus in each community is to attract businesses that provide higher paying family wage jobs.

The important role of airports in economic development surfaced early in the interview process. *"An airport is vital for our future*" was a thought expressed by a Forks resident, and repeated in various ways by virtually every person interviewed. It was obvious that rural airports are not only a site for potential development and for access to the outside world, but that they are also part of how each community views itself and part of how residents hope outsiders view their community.

The study team was impressed with the individuals leading each community's economic development efforts. Each community is taking a different approach, using a mix of public and private sector leadership. Each community identified airports as critical to achieve their economic development goals.

If a community has any hope of recruiting new businesses, airports must be part of the local infrastructure. Dana Peck, the Economic Development Director for Klickitat County, discovered the necessary nature of having an airport when, as an employee of a large regional energy supplier, he had several contacts with industrial siting firms who filled out checklists on local

communities. He related, "*Businesses, except for the smallest, when seeking to relocate most often retain an industrial siting firm to make a preliminary evaluation of the target communities."* The siting firm usually works "in the background" and the target community does not know that they are conducting an analysis. The checklist targets the community's assets, i.e., the physical plant, services, educational opportunities, political structure, infrastructure, and so forth. If a community is to make it past the first round for consideration, certain assets must be present. In almost every case, to make a firm's short-list, the airport "box" must be checked. The majority of firms who are seeking a site to relocate or build a new facility will not consider a community without an airport. The community is eliminated from the short-list even before they have a chance to sell their other attributes.

Omak/Okanogan Area

The Okanogan County – Partnership 2005, Workplan and Budget is the product of many public and private sector individuals working through a several-month planning process. The *Workplan* states the following:

> "Partnership 2005 envisions the citizens and communities of Okanogan County working together to bring economic prosperity to all its citizens. There will be a diversity of vital and growing businesses and industries. The growth will be gradual and controlled through proper planning, which protects the environment and rural atmosphere. Our families and communities are built on strong values and a positive self-image of the individual. We seek to facilitate the development of high quality public services that are provided at a reasonable cost. We believe the citizens of Okanogan County respect the diversity of cultural and recreational opportunities that abound in our region."[8]

The first set of Goals and Objectives in the *Workplan* lists "*Infrastructure*". The first objective is "*Develop the Omak Airport*". Former Omak Mayor Walt Smith stated, "*Necessary pieces of a community's infrastructure are water, sewer, land, and transportation. And an airport is a necessary part of the transportation infrastructure. It is vital to have an airport*." (Note: Partnership 2005 changed their name to Alliance 2005.)

The importance of access came up repeatedly. The acting Okanogan County Planner identified the importance of being "connected" when he commented, "*The airport connects us with metro*

areas." He expressed the perception of several Okanogan area residents that "*If you have an airport, you are connected*." Another area resident, when talking about the Okanogan Legion Airport, said, "*Airports are a window to the world. They are a portal for ideas, people, and communication*."

At a meeting of the Alliance 2005 Committee, the study team asked members to write down the functions of their airports. Some of the economic development-related functions they reported were:

- *Airports increase economic growth.*
- *Airports provide access to services, medicine, connecting national flights, and business travel.*
- *Airports provide tourism accessibility.*
- *Airports make recruitment of businesses easier. It's easier to get them here and keep them here.*
- *Airports present a modern face.*
- *Airports provide economic development opportunities.*
- *Airports are necessary for business recruitment.*
- *Airports enhance local businesses with their transportation needs.*

Goldendale/Dallesport Area

At the Dallesport Community Center, one of two members of the Dallesport Community Council began the interview with the statement, "*The airport is part of our dream to have a little town that will develop properly*." Dallesport is an unincorporated "village" that borders the Dallesport Airport. During the study, the airport was owned and operated solely by the City of The Dalles, Oregon. Although neither of the two council members had much experience with the airport, the interviews revealed how many of the residents in the case study communities felt about "their" airports.

Residents of Klickitat County and the City of Goldendale recognized the importance that airports play in economic development. The Klickitat County airports are not as central to their economic development goals as airports are to Forks and Omak, yet they are critically important for the area's future. Klickitat County Commissioner Ray Thayer pointed to the County's effort to

secure the $12.2 million wastewater project for Dallesport. Even though at that time the City of The Dalles was the sole owner of the airport, the wastewater project will serve the Dallesport Airport, as well as the community of Dallesport, and the Dallesport Industrial Park.

The City of Goldendale recently experienced how important an airport is to community development. Goldendale was chosen as the site for a gas-fired electric generating facility. While a number of factors were important, City of Goldendale Mayor Mark Sigfrinius and local economic development officials suggested that without the airport, it is highly unlikely Goldendale would have been chosen as the site for this facility. The energy plant's management regularly flies into the Goldendale airport to visit the generating plant site, now under construction. Goldendale is also updating their *Airport Master Plan*.

Forks Area

Forks economic development goals are to provide job diversity and replace lost jobs. Airport and telecommunications development are the major objectives. The editor of the area newspaper said, *"People are determined to have some kind of economic development to survive*." In the past two years, the community secured a high-speed digital backbone, with the redundancy that is important for reliability. The "digital backbone story" is a remarkable story of cooperation, with government, education, health care, and private sector telecommunication providers coming together to achieve an objective that many people thought impossible. One area resident described achieving the digital telecommunications backbone as *"The story of the little town that could."*

The Forks Municipal Airport sits at the very edge of Forks and plays a critical role in the community. The airport has a locally owned on-site helicopter company, and is a refueling station for Coast Guard helicopters. It serves as the heliport for medical evacuation helicopters serving Forks Community Hospital. The airport is also used for other businesses and recreational general aviation, detailed later in this report.

Due to the surrounding terrain, proximity to Forks, and lack of available land, the airport has limited expansion and development possibilities. Forks community leaders realized that there was an alternative airport with far greater potential for business and commerce—the Quillayute

Airport, 10 miles west of Forks. Community leaders described the Quillayute Airport, a former WWII naval training facility owned by the State of Washington, as an "*extraordinary community asset being allowed to deteriorate.*" Even though City officials were not sure that the community could afford to take over ownership of the airport, they felt that the Quillayute Airport was an asset that they could not allow to deteriorate. The realization was, "*Things aren't like they were in the past. If we are to keep up with modern technology, we need the Quillayute Airport*."

The City of Forks negotiated with the State of Washington, and with the agreement of the Federal Aviation Administration, obtained title to the airport in 1999. Since that time, Forks has aggressively pursued a development strategy for the Quillayute Airport, making it a key component for economic development in the area. To fully utilize the airport's potential, the City of Forks is developing a master plan and securing the Clallam County zoning ordinances necessary to protect the safety zones. Potential capacity is a facility with hangars, two 5,000-foot runways with very open approaches, and plenty of land for aviation-related businesses.

Area residents have many dreams of how the Quillayute Airport will support a growing local economy. Nedra Reed, long-time resident and City Council Member stated, *"The airport is a symbol of hope for our future, a star to which we are hitching our wagon*." Forks City Mayor Phil Arbeiter closed his interview with the statement, *"The airport is one of our lifelines to keep us alive*."

Additional Observations on Economic Development

Other observations on the importance of airports to economic development were:

- *If you don't have an airport, you're done.* —Omak.
- *Our only access to the outside world is over a winding two-lane road, which has over 60 old bridges. Without an airport, we can be easily cut off. No one will want to locate here without transportation alternatives.* —Forks
- *We are a little less remote with an airplane.* —Forks
- *An airport is critical if we are to have a world-class health care system.* —Forks
- *The airport is our hope for access to the outside world.* —Omak
- *Without access, there is little hope for our future.* —Goldendale
- *Transportation is a big issue in getting business*. —Omak

- *We perceive aviation as a major player in our future.* —Forks
- *Time is the issue; without good facilities, we are a long drive at the end of a long flight.* —Forks
- *Access is the key issue—accessibility to our area.* —Omak
- *No way are we going to survive in the future without an airport.* —Forks

Health Care

> *Our airport was invisible until I needed it.*
>
> —Kristy L.D. Longanecker, Okanogan area U.S. Forest Service employee whose life and that of her unborn baby were saved by an emergency flight to a Spokane hospital.

Emergency Medical Services

Emergency medical air transport was mentioned early and often during the interviews. Early in the scheduling process, a team member called the Okanogan U.S. Forest Service office to ask for an interview with the air operations officer. Kristy Longanecker, a USFS Information Specialist, answered the phone. When we explained the purpose of our study, she wanted to make sure we understood the importance of rural airports to non-pilots. In 1989, Kristy developed very serious complications during the seventh month of her pregnancy. Kristy lived in the Twisp/Winthrop area; the neonatal specialists were in Spokane. She needed treatment quickly. It was a winter night, with snow and icy road conditions. Under the best of conditions, the ground trip would have been a 3.5-hour drive. Fortunately, a fixed-wing aircraft was able to land in Omak, transporting Kristy to Spokane in time to save her life and that of her unborn child.

Kristy wanted the study team to understand that her experience was not the only one where emergency medical air transport saved lives. She spoke of how emergency medical air transport had been critical to several other area families. Kristy said that prior to her medical air transport to Spokane, she was barely aware that the airport existed. Her lack of awareness is understandable. If someone does not live within the flight pattern of a rural airport or does not have a special interest in airplanes, it is possible to miss most of the airport's activities. The

perception that “not much happens at rural airports” is typical of the impression in rural communities.

For many trauma, cardiac, neonatal, and respiratory patients, time is critical. Emergency medical service employees talk of the “Golden Hour”, the first hour after a heart attack, serious head injury, or burn when advanced treatment can save a life and/or prevent long-term damage. As this report described earlier, Harborview Medical Center in Seattle is the only Level I facility in Washington. Patients with the most serious illnesses and injuries must be transported to Harborview.

An interviewee in Forks told the study team about her husband who had a cardiac event that required treatment in Seattle. It happened on a night when the weather conditions were so bad that air transport was not feasible. Her husband was transported to Seattle via ground transport, a trip that took over four hours on icy roads. As a result of the delay in treatment, her husband suffered permanent damage to his heart that might have been avoided if air transport had been available.

The health care benefits provided by rural airports to rural communities goes beyond the air transport of trauma, cardiac, and neonatal patients. Mike Billing, Administrator of the Mid Valley Hospital in Omak, related the following story:

> “An Omak surgeon was performing hip surgery and had opened up the hip of a patient when it was realized that the damage to the hip was far worse than the diagnosis indicated. After consultation with specialists in Spokane, it was decided that a new prosthesis, just released to the market, was needed. A prosthesis was located in Spokane along with a technician who was trained to install it. Bone for transplant was located in Pullman. A charter aircraft picked up the prosthesis and technician in Spokane, flew to Pullman to pick up the bone, and then flew to Omak. Five or six hours after the operation had started, the surgery was successfully completed at far less risk to the patient than if the hip were sewn up and the surgery had to have been postponed to a later date. Without the rural airports at Pullman and Omak, this would not have been possible.”

In times of blood shortages, aircraft brought blood to Omak, Forks, and Goldendale. Fixed-wing aircraft have flown in bone and tissue to these communities. An entry in the Omak Pilots Lounge guest book identified the reason for one flight as "tissue". To develop a dialysis center, the Omak Mid Valley hospital flew in lawyers with specific medical contract experience, as well as dialysis specialists. Representatives of a medical equipment company flew into Omak and took several hospital employees to their home office to inspect medical equipment. An emergency room physician used an airplane to commute each weekend from Montana to Goldendale. Alternating each week between two locations, a dentist maintains practices on the west side of the Cascade Mountains and in the Twisp/Winthrop area. The dentist commutes between the two locations in his airplane. A psychologist commuted to Goldendale in his aircraft.

Medical specialists have flown to study area hospitals to consult or assist in operations. Harvested organs were transported from the Omak Airport. The movie *A Heart for Olivia* depicted one these events. Individuals needing transplants flew to urban hospitals for surgery. Pilots in the Goldendale and Omak areas spoke of volunteering their aircraft to fly community residents to visit relatives who, for one reason or another, were patients at distant hospitals. A Goldendale pilot flew to Montana to bring home a neighbor who had an automobile accident while on vacation.

Hospitals Face Challenges and Look to the Future

Mr. Billing (Omak Mid Valley Hospital Administrator) described the health industry as "maturing". The health care system has evolved to establish large medical centers in urban areas, and smaller branches in rural areas. The chasm between rural and urban medical facilities is growing. The chasm will continue to expand along with the rapid advancements in medical technology. Hospital personnel were interviewed in Forks and Omak. They are very proud of their accomplishments to modernize their hospitals. Staff is working hard to secure even higher levels of treatment for their citizens. The Goldendale Hospital recently put a bond vote to the public to add an acute care center. The bond passed with a seventy percent majority.

All three case study communities have had difficulty recruiting and retaining staff. They are unable to compete with the salary levels offered in urban areas. Hospital recruiters are changing

the way they recruit, focusing on the high quality of life that rural communities offer. Recruiters are having some success in this approach.

Mid Valley Hospital in Omak, Forks Community Hospital, and Goldendale Hospital have installed or are installing CT scanning machines. Hospital administrators at Omak and Forks spoke of the importance, both now and in the future, of access to the expertise and technology at large urban medical centers. Both hospitals have high-speed digital connections with special diagnostic studios so that specialists at urban medical centers can assist with real-time diagnosis. Staff at both hospitals expressed how important the airport was to their future.

Rural Hospitals Form Partnerships with Urban Counterparts

Some rural hospitals are a subsidiary of an urban medical system (corporate model). Some are part of an alliance (closer to a cooperative model). Other rural hospitals join a network of hospitals, physicians, and other providers. Each network member remains an independent business, but all members work closely together to provide medical services.[9] In all three health care delivery models, access to urban medical centers is critical. The Forks Community Hospital is an independent not-for-profit financial entity, while the Omak Mid Valley Hospital has a formal relationship with a Spokane health care system. Forks residents spoke with pride about their Community Hospital and how hard the community worked to support it. Community residents realize how important "world class" health care is to their citizens.

"Digital connection" is not a replacement for "air connection"—they are both important. In the past, Forks patients had to be ground-transported 56 miles over a winding two-lane road to Port Angeles, and then airlifted to Seattle, losing critical time. Once again, a study participant related a negative example to show why air transport is so important. This past winter, a patient had to be ground-transported all the way to Aberdeen, 110 miles to the south, because the road to Port Angeles was snowed in. An airlift was not possible due to weather conditions. (Forks has no approved instrument approach.)

During the twelve months preceding the study, there were at least sixty-six other medical airlifts from Forks Municipal Airport to Harborview, Children's, and Virginia Mason Hospitals. (The study team did not ask hospital personnel to do an in-depth analysis of their records). Thirty-one

patients had ground transfers to Olympic Memorial in Port Angeles. Some of these ground transfers would not have been necessary if Forks had an instrument approach. Staff at the Omak Mid Valley Hospital estimated that fifty fixed-wing medical airlifts originated from the Omak Airport in the past year. Both Omak City airport personnel and pilots thought that this estimate was low. Mid Valley has a heliport, but the airport extends emergency medical air transport by allowing the use of fixed-wing aircraft when helicopters are not available or when longer distances are required.

MedStar's fixed-wing aircraft use the 3,000-foot runway at Tonasket Airport. A Tonasket nurse estimated that about twenty-five patients a year were airlifted. Tonasket pilots spoke of MedStar's twin-engine turbo-prop King Air aircraft landing and then backing the full length of the runway to pick up patients. In each case study community, interviewees expressed a strong interest to improve instrument approaches. They knew that the investment would improve emergency medical airlift service to their community.

Local pilots and airport personnel identified specific times when the Dallesport and Goldendale airports were used for medical air transport. Hospitals in The Dalles and Goldendale have heliports, and the majority of their airlifts are with rotary wing aircraft. However, airports are used in poor weather conditions and when a fixed-wing aircraft is required.

All hospital and medical air transport personnel interviewees said that when air transport is used, it is almost always a matter of life-and-death. Personnel explained how the quality of life in each community was better because of the availability of air transport, and that the quality of life would deteriorate if the airport shut down. Mike Billing, Mid Valley Hospital Administrator in Omak, closed out the interview with the statement, "*The airport is part of the safety net for our community. The airport puts a piece of rope in the safety net that we need if we live here. It is an invisible lifeline*."

As this report stated earlier, all of the hospitals in the case study communities are Trauma Level IV facilities. At the time of this study's interviews, The Omak hospital was in the process of evaluation to classify it as a Trauma Level III hospital.

The medical transport system is a well-developed system supported by hospitals, state health officials, emergency medical service agencies, for-profit ambulance companies, volunteer EMS units, fire departments, and emergency medical air transport companies providing aircraft and flight medical crews. Standardized procedures for transporting critically ill and severely injured patients are clearly understood by everyone in the system. Air transport patients receive the highest level of treatment possible. Staff for a typical air medical transport includes a pilot and two extensively trained personnel with critical care trauma experience. These personnel could be two registered nurses, or one registered nurse and a registered respiratory therapist, and/or a neonatal/pediatric care specialist. A pediatric nurse is required for transport of patients fourteen years old or less.

Access to Medical Specialties and Procedures

Emergency medical air transport service is provided by fixed-wing and rotary wing aircraft. Northwest MedStar is a nonprofit critical care transport service that operates throughout the Pacific Northwest, the United States, and Canada. Their operation is about sixty-six percent helicopter flights and twenty-eight percent fixed-wing flights, with the remaining six percent ground transport. About sixty percent of their flights are for cardiac patients, with the remaining for injury trauma victims, neonatal emergencies, and respiratory patients. Eighty percent of MedStar's flights transport patients between facilities, and twenty percent of their flights are "on-scene" responses. MedStar bases two helicopters and two fixed-wing turbo props in Spokane, and one helicopter in Moses Lake. MedStar serves the Omak/Okanogan case study area with both rotorwing and fixed-wing aircraft.

AirLift Northwest, another service providing emergency air transport service in Washington, has four IFR equipped helicopters, one each based at Bellingham, Arlington, Boeing Field in Seattle, and Puyallup. They have Lear jets located in Juneau, Alaska and Boeing Field, and a turbo-prop fixed-wing aircraft in Wenatchee. Airlift Northwest serves Forks with rotorwing service. Their fixed-wing aircraft are available throughout Eastern Washington for transport over the Cascade Mountain Range to Harborview and Children's Hospitals. Over forty percent of AirLift Northwest flights are "on-scene" responses. Most of the other flights are inter-facility transports.

Other Medical Transport Services Use Rural Airports

Angel Flight is a service to patients and their families that complements emergency medical air transport services. Angel Flight West, based in Santa Monica, California, is a nonprofit charitable organization designed to facilitate access to health care by arranging free air transportation in private aircraft. Angel Flight links volunteer private pilots with people whose health care problems require air transport to and from medical facilities throughout eleven Western states. They also provide transportation to camps designed for children with special medical needs, fly prearranged flights of organs, blood, and tissue to transplant recipients, as well as provide air transport for many other compelling human needs.[10]

Angel Flight transports patients who are: (1) stable, (2) can fly in a non-pressurized aircraft, (3) can sit up for the duration of the flight, and (4) can travel without attending medical personnel. Angel Flight also transports the families of patients who are staying at distant hospitals or other distant medical facilities. They will fly from any airport to any destination. Angel Flight often returns patients home who were airlifted by one of the emergency medical airlift companies. There is no charge to the patients and their families for the flights. There are two hundred members in the Washington Wing of Angel Flight West, with forty pilots in Eastern Washington. In their first year (1998), the Washington Wing flew fifty missions. They flew 186 missions in 1999 and 200 missions in 2000.

In all three case study communities, hospital personnel and other interviewees mentioned Angel Flight. One of the important contributions of Angel Flight is to provide air transport for patients needing ongoing treatment or rehabilitation services, such as cancer treatments or burn rehabilitation. The increase in the number of Angel Flight missions is expected to continue. They are one additional way that rural residents can access the specialized technology and treatment available at urban medical centers.

The importance of having an airport for quality health care is much like having the airport "box" checked for economic development siting evaluations. Without an airport, the technology and highly trained medical professionals at the medical centers located in urban centers are not readily available to rural residents. Having an airport available to access the specialized

treatment and personnel at these centers is a necessary requirement for maintaining quality health care in rural areas.

Business and Commerce

Many Uses for Airports

Each of the case study community airports has been used extensively for business reasons. The most visible use is the agricultural aerial application businesses that use the Goldendale, Dallesport, and Omak airports. The secondary economic benefits derived from the agricultural production they support are well documented.

Almost every Omak interviewee mentioned Federal Express's five-days-a-week operation. Nearly every business in the community uses the small package delivery service. UPS has contract flights that serve Omak, as does an air transport service that provides high-value package service. Omak Airport has an on-site aircraft maintenance business and an aircraft parts fabrication business.

The City of Omak runs the fuel concession at the airport and sells about 30,000 gallons of Jet A and 10,000 gallons of 100LL annually. Part 135 air taxi charters operate at Twisp and Okanogan Legion Field.

At Quillayute near Forks, there is a 1929 WACO experimental plane parts and kit manufacturer. A helicopter business located at the Forks Municipal Airport operates two turbine helicopters for logging, search and rescue, wildlife surveying, and other purposes. The helicopter firm also sells Jet A fuel and is the main fuel depot for the Coast Guard helicopters located at La Push.

General aviation aircraft are based at each of the case study community airports. There is a demand for additional hangar space at Dallesport, Goldendale, Omak, Okanogan, Twisp, and Tonasket. There is an FBO (Fixed Base Operator) at Dallesport who sells fuel, provides flight instruction, and also fabricates and sells composite helicopter parts. In 2000, fuel sales at Dallesport was estimated to be about 30,000 gallons of Jet A and 30,000 gallons of 100LL. The operator of the Dallesport FBO has a personal research and development project, to design a

quiet airplane that can operate out of congested airports with no more noise at the airport perimeter than a car on a nearby road.

Aircraft operating from airports in the study areas are used for a wide range of non-airport based business purposes. A cattle buyer flies weekly to Dallesport for the cattle sales. Outlying farmers and ranchers fly into "town" to shop, pick up parts, and visit with their accountant, lender, and lawyer. Local aircraft are used to fly to purchase equipment, do field and crop inspections, search for cattle, and attend farm auctions.

A Portland-based owner of a Goldendale apartment complex flies in his maintenance personnel to service the complex. Local real estate firms fly prospective customers to view properties. Real estate appraisers use local aircraft. Cancelled checks are picked up and transported to urban bank processing centers. An auto parts store owner uses his plane to fly to business meetings, to check out other stores, and to occasionally fill a parts order. The owner used his plane to fly into Dallesport when negotiating the purchase of the auto parts store. Without the airport, he would not have located his business in this area.

Aircraft operating from study area airports are used in power line and pipeline inspections. Firms exploring sites for wind energy projects used the Goldendale and Dallesport airports extensively. Prospective developers and business purchasers regularly use the airports. Fish and Wildlife Department employees contract or charter aircraft to fly in and out of Forks 300 days a year. They count birds, salmon, elk, and other animals. Ten- to twelve-seat planes out of the Seattle area use Forks and Quillayute to drop off and pick up fishing and hunting parties. The King 5 News helicopter from Seattle landed at Forks while the study team was there. The news team covered a boating accident off the coast some twelve miles away. News teams use public access rural airports because they can land without worrying about prior approval.

Transport of Time-Sensitive Parts

The volunteer Twisp Municipal Airport Manager owns and operates a welding business. One of his customers had a contract to provide and maintain the port-a-potties at a U.S. Forest Service fire fighters' base camp in Wenatchee. During an especially tough fire in the summer of 2001, 5,200 persons used the camp. The pump engine on the pump-out-truck quit working. A

replacement pump engine was found in Spokane. The welding business owner arranged to have the engine delivered to Felts Field in Spokane. The owner flew his Cessna 182 to Felts Field, picked up the pump, flew into Wenatchee, and replaced the pump on the truck in time to maintain uninterrupted service on the port-a-potties.

This is just one example of the numerous cases where aircraft delivered time-sensitive parts to study communities. Parts were delivered for logging businesses, lumber mills, farm businesses, machine shops, auto parts stores, local fabricating businesses, hospitals, and local hardware stores.

Transport of Specialized Expertise

Architects have flown in to the study areas to consult on building projects. Several interviewees spoke of engineers coming by plane to review construction projects, prepare bids, and to consult with local officials. As related in the health care section, consultants have flown in to work on hospital contracts, design dialysis units, and to work with hospital administrators on equipment purchases. Large retail chains fly personnel in and out: Wal-Mart and Target are two examples. Les Schwab personnel regularly use airports in the study communities. Lawyers fly in for trials and for pretrial or mediation sessions.

During the siting of a large landfill project in Klickitat County, environmental staff, engineers, management, and public officials—virtually every professional needed for the project—arrived and departed from one of the local airports. A gas-fired energy plant was under construction during the time the study team visited Goldendale. Several interviewees spoke of the repeated flights made by employees of the construction and management firm before and during construction. While visiting Goldendale in June 2001, the study team observed a large single engine Pilatus turbo-prop at the Goldendale Airport flown in by management of the energy firm. A local citizens group seeking to site a prison flew a charter aircraft to visit prisons in Olympia.

While waiting for a focus group to convene, a study team member browsed through the guest book in the pilots lounge at the Omak airport. The majority of pilots using a particular airport do not sign the guest log; therefore, this clearly understates the use of an airport. Out of 103 entries in an eighteen-month period, fifty-two flights were business-related. Other rural airport business-

related operations identified by study participants included movie shoots, making commercials, air taxi services, and other aviation-related activities such as flight training, instrument training, glider operations, photo mapping, skydiving, and currency training.

A Goldendale resident said that his community needed to become more interconnected with larger economic areas. A teacher in Forks talked at length about the importance of access to urban areas. She described an instance when a closed road halted work on an addition for the high school because the UPS truck could not get through. With increasing specialization affecting both American businesses and the lives of private citizens, access to the expertise in urban areas takes on increasing importance. The study team found ample evidence to support this conclusion. By the end of the study, the study team discovered that the interconnection between rural airports and business activities was stronger than what any individual participant suggested.

Public Safety, Disaster, and Emergency Response

Rural airports in the study areas are used to support fire fighting operations, as a base for SEAT (single engine air tanker) operations (water and retardant drops); flood assessment and as a base of operations for flood relief; to support search and rescue; and as a "port of entry" for Red Cross relief flights. Police agencies use airports to support public safety operations.

Fire Suppression

The role for rural airports in support of public safety, disaster, and emergency responses is changing. The U.S. Forest Service conducted a *National Air Tanker Study* that called for consolidating Forest Service Type 1 air tanker operations in the Moses Lake and Bend areas. Type 1 air tankers are large multi-engine aircraft with the capacity to haul 1,800 gallons or more of water or retardant. The Type 1 air tankers and their base of support located at Wenatchee and Omak were relocated to Moses Lake, an event identified by several Omak area interviewees as one of the recent blows to their economy.

About the same time this consolidation was taking place, as an experiment, the U.S. Bureau of Land Management brought six SEATs into the Pacific Northwest and located one at Omak. They have been widely used in the Southwest. The converted agricultural planes carry up to 799

gallons of water or retardant. The introduction of SEAT planes changed the circumstances under which aerial drops are used. In the past, large aircraft dropped water and retardant only after fire fighters were on the ground. Now, sometimes SEAT aircraft are dispatched before fire fighters reach the fire.

During the first two seasons that SEAT aircraft were used in the Pacific Northwest, only one was located at Omak. The results were so good with the smaller aircraft and their faster response, that a second smaller SEAT was contracted for the 2001 fire season. The two SEATs at Omak are under contract to the Bureau of Indian Affairs and are supported by the Colville Federated Tribes.

Dave Nee, Assistant Fire Manager for Colville Federated Tribes, described how the SEATs improve the ability to control fires. Fire control officers are able to quickly dispatch the SEATs as soon as a fire is reported. In many cases, the SEATs are able to knock the fire down so that ground crews can more easily contain the fire when they arrive. Dave Nee, who has been in the forest and range fire fighting business for over fifteen years, commented that the SEAT was a major advance in the technology of fire fighting.

It is possible that more SEATs will be located at other rural airports in the future. The SEATs operational radius is about sixty miles, although they are occasionally dispatched on longer missions. They need a runway length of at least 3,200 feet. They also need a water supply. One afternoon when the study team was conducting interviews in Omak, SEATs flew nineteen missions to a fire on the Colville Indian Reservation. A study team member observed that if we had not scheduled interviews with the SEAT crew and had not looked for aircraft activity, we would have missed these flights. If we had noticed them, we would not have understood their mission, even though they flew within a mile of downtown Omak thirty-eight times.

The study team asked Dave Nee, Dexter Nicholson, James Albertson, and Liz Dick, all Colville Tribe SEAT support personnel (with over forty years of fire control experience among them), about the improvements in fire control. There was no hesitation in their responses: better training for fire crews. Years ago, when a fire was discovered, a local truck stopped and picked up any available body to help fight the fire. Now, individuals are not allowed on a fire without extensive

training. This change in policy has increased the importance of rural airports in fire control. A limited number of highly experienced crews fight the toughest fires throughout the West. The crews are transported to fires by aircraft that use rural airports.

The U.S. Forest Service fire control leadership and administrative apparatus moves from location to location using the "Mosquito Fleet". The Mosquito Fleet uses a variety of aircraft, from Cessna 182's to Lear jets. For smaller fires, the fleet may consist of only a few aircraft. For a larger fire, there may be a several aircraft. The Mosquito Fleet has used airports at Omak, Twisp, Okanogan, Goldendale, Dallesport, and Forks. The lead aircraft for the Type 1 air tankers, a smaller aircraft, often a twin engine Beech Baron, operate out of rural airports that are closer to the fire than the bases in Moses Lake and Redmond, Oregon. Single engine aircraft are used for fire spotting. Interviewees in Twisp and Goldendale observed the use of their airports for several of the fire fighting activities identified above.

Washington State DNR (Department of Natural Resources) is responsible for fire control on State lands. The study team was unable to interview DNR personnel because our interview period coincided with a bad fire season. Each time a team member contacted DNR, personnel with first-hand information on air operations were involved in an active fire. Residents in Forks, Goldendale, Dallesport, and the Omak region all spoke of witnessing fire control aircraft under contract to DNR.

Because of the importance of aircraft to fire fighting efforts, rural airports become operation bases for many fire fighting functions. In addition to providing an access point to insert fire crews and bring administrative leadership to a fire, rural airports act as the base for helicopters that fly water to fires, as well as provide other types of support. The helicopter "base camps" are set up at the airport closest to the fire. Base camp support includes fuel trucks, spare parts, a maintenance crew, and campers or travel trailers used as portable crew quarters. Goldendale interviewees described several instances when their airports were used as base camps.

Floods, Earthquakes, Ice Storms, and Other Natural Disasters

Both Dallesport and Goldendale study participants cited an example of how important airports are during a natural disaster. For one month in 1996, floods and mudslides closed Columbia

Gorge roads between The Dalles and Portland. The Gorge is the major east - west commercial ground route between Portland, Oregon and points east. It is also the primary artery for Goldendale, Dallesport, and The Dalles to specialized health care, distribution warehouses, and other facilities located in the Portland area. During the road closure, the Dallesport and Goldendale airports were used for a wide variety of air operations. Red Cross staff flew out of these airports to make aerial assessments of the flood damage. Army Blackhawk helicopters shuttled blood and tissue from Portland. Governors from Oregon and Washington, as well as other state and federal officials, flew into Dallesport and Goldendale to make their assessments. Parts and medicines were flown in.

It is not only the experience of actually using an airport during a natural disaster or emergency that provides a benefit to a community. An additional benefit is the reassurance that an airport will be available during future emergencies. Using a winding two-lane highway, Forks is 56 miles from Port Angeles. This road has been blocked for up to a week at a time due to snow, ice, or slides. Over fifty percent of Forks study participants spoke of the problems of isolation when they are cut off from urban centers. Their experiences, while not catastrophic, raised fears that road closures and isolation not only impacts access to critical supplies and materials, but also affects the community's ability to attract new businesses.

Several interviewees were worried that a large earthquake might damage many of the old bridges on the roads to Port Angeles and the Seattle area. The need to have an alternative mode of transportation in times of disaster is another driver for their determination to improve the Quillayute Airport by providing an instrument approach. Neither the Forks nor the Quillayute airport have an approved instrument approach so that flights can get through in most weather conditions.

Law enforcement agencies were not available for interviews. Nevertheless, study participants identified a number of police agency activities that they had participated in or had observed. Goldendale and Tonasket aircraft owners spoke of volunteering to assist the local sheriff in search and rescue missions, as well as tracking down fugitives. Goldendale and Tonasket pilots spoke of observing uniformed members of the sheriff's department using aircraft, but were not aware of the specific purposes of those flights.

Police and sheriff patrols use the Tonasket Airport as a regional training site for high-speed driving and evasive maneuvers. The Oregon State Patrol flies regularly into Dallesport, and has initiated search and rescue and disaster operations from the airport. The Washington State Patrol delivered blood to Omak. Based on the information gathered in this study, the study team found that public safety, disaster, and emergency response uses of rural airports are far more frequent than any single observer reported.

The Coast Guard uses the Forks Municipal Airport as a refueling station for rescue helicopters operating out of La Push. While the study team was in Forks, there was a search underway for occupants of a fishing boat abandoned on the rocks near La Push. The study team saw the Coast Guard helicopters refuel at the airport several times.

A helicopter company located on the Forks Airport is under contract to the U.S. Forest Service and U.S. Parks Service for search and rescue operations in Olympic National Park and surrounding national forests. The week before the study team's visit, they rescued an injured hiker from a very dangerous location.

Public Safety and Disaster Relief

The use of aircraft in emergency and disaster operations is often taken for granted. Every American who watches television news has viewed films of helicopters rescuing flood-stranded persons. Aircraft dropping retardant on fires is stock footage for every news telecast covering a brush or forest fire story. Less visible to the general public are the deliveries of blood, tissue, pharmaceuticals, critical parts, and transport of state and federal emergency officials to disaster sites. The majority of residents in nearby communities do not witness the arrival of leadership and administrative personnel flown in to direct fire control operations. Rural airports are the critical ingredients in most rural relief and reconstruction operations. The importance of airports during natural disasters and emergencies, while difficult to quantify, is a "hidden" asset that may go unrecognized until the community needs it.

Enriching Community Life

The rotating beacon at the airport is a sign of security and the airport makes Goldendale more attractive.

—Deborah Heart, Retention Specialist, Welfare to Work, Center for Administering Rehabilitation and Employment Services, Goldendale

Airports in the study areas enrich daily community life in many different ways. A casual observer might occasionally see an airplane take off or land, but the purpose of the flight is not readily apparent. The study team discovered that these flights touch almost every sector of life in their communities. Taken individually, each of the activities described in this section may seem inconsequential. But viewed as a whole, they paint a picture of how the activities associated with rural airport enhance the lives of people living and working in these communities.

Several of the interviewees in Goldendale and in the Omak area reported using their aircraft to fly to family reunions, bring family members to a local family reunion, and to visit distant family members. In one case, the only way an eighty-year-old parent could make it to a family reunion was if the travel time could be shortened by using an aircraft. Another plane owner flies his grandchildren between divorced parents, making it possible for the children to spend time with each of their parents.

As reported previously, one Goldendale plane owner volunteered to fly to Montana and bring home a neighbor who was injured in a car accident. It was also in Goldendale that a local pilot used his plane to provide overview flights for a prospective pastor and physician. Interviewees reported numerous flights to shop at urban centers, including trips to purchase furniture. Several interviewees told of flying family members and friends to airports where scheduled airline service was available. Area farmers use their aircraft to "visit" town to pick up parts, do the weekly banking, and shop for groceries. One pilot uses his plane to fly regularly to a religious meeting held about 150 miles away. Local businesses use aircraft to attend distant business meetings, pick up parts, and in one case, fly in potential buyers for their business.

Portals to Public Policy

One interviewee called the rural airports "portals" to public policy activities. He told of flying friends and associates to federal hearings on a variety of issues. To petition Congress, he and others flew to airports with scheduled airline service to Washington, D.C. Several interviewees mentioned that Governors (including Dixie Lee Ray and Gary Locke) flew into their communities using the local airports. The day before the study team visited Goldendale, Senator Maria Cantwell flew in for an emergency meeting with area leaders about the energy issues causing difficulties for the aluminum plants. Because of the limited time available in the Senator's schedule, the meeting would not have been possible without the airport. Representative Doc Hastings also landed at Goldendale to visit the area. Other interviewees told of area lawyers and judges utilizing locally based aircraft to attend bar, state judiciary, and law refresher courses. Several other interviewees told of flying to Olympia when the Legislature was in session. Local pilots reported volunteering to take local city and county officials to meetings.

Building Communities

Local airports host community events. In recent years, Tonasket, Twisp, Forks, Dallesport, and Quillayute airports hosted summer community festivals. At some airports, classic car and antique aircraft shows are often combined with a fly-in. Air shows are usually combined with fly-ins as well. Tonasket Airport holds a Father's Day Fly-In with a pancake feed, an event attended by eighty percent of the local community. In Forks, the Lions Club sponsors an annual Salmon Bake and Fly-In, an event mentioned by most Forks interviewees. Dallesport alternates its annual fly-in with Hood River, Oregon. In addition to large numbers of local residents, fly-ins often draw visitors from a several hundred-mile radius. Plane owners often plan extended weekends around the fly-ins in their region. Non-flying residents in Dallesport spoke with pride about the community event hosted at the Dallesport Airport. They called it an "Open House" although the pilots called it a fly-in. In each of the case communities, more non-flyers attend fly-ins than flyers.

John McKnight is a nationally known and respected community development consultant and professor at Northwestern University. Dr. McKnight's focus is on building communities. He traced the importance of private citizen "associations" in building American communities during the 1800's, as well as their continued importance to communities today. Mr. McKnight identifies

strong communities with strong associations of individuals drawn together by a common purpose. His strategy is to identify the assets in a community and build on those assets. This has become a model for the United Way and numerous other organizations interested in community development.

Pilots groups are an example of one kind of association that strengthens communities. Pilot groups at Tonasket, Twisp, and Okanogan Legion airports provide most of the maintenance and upkeep for their airports. They organize positive activities for community participation, such as fly-ins. Every year, the Tonasket pilots group hosts the "Big World of Flight Education" event for local seventh grade students. Local chapters of the Experimental Aircraft Association regularly provide introductory flights to youth in the Dallesport and Omak/Okanogan areas. While the relationship between airport owners and pilot associations may not be as formal as it is at large urban airports, the pilot associations in all case study communities actively support the local airport and other community events.

While pilots undertake airport maintenance in their own self-interest, the benefit to the community is that maintenance is a minimal expense to the public treasury. In some cases, the pilot association has an informal relationship with the city council. At Okanogan Legion Airport, the pilots association formed a nonprofit organization and formalized their relationship to the airport through a contract. The Tonasket pilots group provides scholarships for area high school students who want to learn to fly. Pilots groups have been called upon to assist local law enforcement authorities in search and rescue missions, to look for fugitives, and occasionally transport a member of the Sheriff's office to meetings.

A non-flying interviewee related how the Jaycees organized volunteer labor and solicited donations to build the Goldendale Airport. Although this happened seventeen years ago, the Jaycee member recalled it as an important community-building event. For many rural residents, airports provide an improved sense of how they feel about their community. This was a common thread in many of the interviews.

Some of the comments were:

- *Having an airport validates that our community is capable of growing and sustaining and lends credibility that we are a grounded community.* —Forks.
- *Airports provide a feeling of connectedness versus isolation.* —Omak.
- *An airport is an essential public facility. Our lack of alternate routes makes it a part of our basic infrastructure necessary for the health and safety of our citizens.* —Forks.

Model airplane clubs fly their model aircraft at rural airports. Local pilots give scenic flights to neighbors and out of town visitors. Entries in the Dallesport airport guest book showed that several planes were following the Lewis and Clark Trail. Business jets from Dallas, Texas and New York landed at Dallesport to pick up puppies from a local breeder. Interviewees told of psychologists, emergency room physicians, and dentists commuting to work in aircraft. Harrison Ford, who has used his own aircraft in movies, signed the guest book at the Omak Airport and wrote, "*Just looking around"*.

Recreational Activities

Airports are used by area pilots for recreational flying, flight training, and maintaining flight proficiency. Omak and Dallesport airports have been used as a base for aerobatic flight training. Both airports are often used by pilots maintaining their instrument flight proficiency. Interviewees in Klickitat County said that rural airports, both public and private, have been used repeatedly as emergency landing sites for planes forced to land due to icing or bad weather in the Columbia River Gorge. Student pilots often land at rural airports while completing their cross-country requirements.

Rural airports support various recreational activities. One Dallesport resident flies a private jet to windsurf in The Dalles/Hood River area and ski in Sun Valley. Airport personnel at Dallesport told of several families who fly in to Dallesport en route to vacation homes, and others who fly in to windsurf on the Columbia River. As related earlier, groups of fishers and hunters fly into Forks and Quillayute to take advantage of the world-class fly-fishing and hunting in those areas. Long before joining the study team, one team member flew into Forks and stayed a week at a

bed-and-breakfast, touring the area on bicycle. In Omak and Twisp, study participants reported that flights bring hikers and backpackers to their area.

Rural airports enrich the quality of life for rural communities in small and subtle ways. But the activities identified in this section, while not as dramatic as emergency medical flights or response to disasters, are important to the standard of living and quality of life in rural communities. Further, groups who organize to support airports are one more asset important to strong communities.

5. Derived Benefits – Purposes of Flights

Benefits from rural airports and the aircraft that use them are not just derived from the act of flying. The benefits rural airports bring to their communities are primarily derived from the *purpose* of the flights and from the availability of flights in the future. Most of the derived benefits are overlooked for very natural reasons. The policy focus on general aviation airports and of the flying public is most often on the act of flying, the condition of runways, the types of airplanes that use the airport, noise and safety issues, and airport upkeep costs. The focus on aviation-related issues is especially true for smaller airports, in part because of a lack of understanding by the general public about general aviation aircraft and why they are used. One elected official made this point when he described remarks he occasionally receives from non-flyers. Comments often suggest that the airport is a place where "*Flyboys go out there to play*."

The reason that the derived benefits of rural airports stay below the threshold (or radar screen) of recognition is facilitated by the fact that most discussions by pilots, their primary interest, is on flying, their airplanes, and the need for airport or hangar space. Additionally, most flight activities at rural airports are not observed or do not make an impression on residents due to their infrequent or diffuse nature. If a person is not looking outside and within a mile or so of the airport when a plane is landing or taking off, most flights go completely unnoticed. Since most rural airports do not have individuals present on an around-the-clock basis, most operations go unnoticed and are undocumented.

Very few individuals take an airline flight simply for the joy of flying, as is sometimes the case with a general aviation aircraft. The airline flight is a means to some other end—to attend a business meeting, visit a vacation location, attend a funeral, and so forth. The many reasons people take airline flights are well known, drawn from all the reasons that individuals need to move from one location to another. In the language of transportation economics, this is referred to as the "derived demand for transportation".

The benefits that rural airports bring to their communities are similarly derived from the reasons flights are made or will be made in the future. During the early stages of this study, the study team received a narrow range of responses to questions about functions and benefits of rural airports. Individuals responded to the questions we asked, but we were not asking the right questions. The study team did not ask for the *reasons* flights took place. The original questions focused on the "transport/airport function", rather than on the *demand* for transport. Applying standard qualitative research methodology, the study team altered the study design to "begin with the end in mind". It is the *outcome* of the flights that generates most of the benefits that rural communities draw from their airport.

The study team added interview questions, asking participants to identify the reasons why aircraft used their airport. The new approach shifted the focus away from airplanes and flights, and gave a broader and more accurate view of the benefits that rural airports bring to their communities. The study team spoke to many plane owners who fly simply for the joy of it. The joy of flying is such a strong theme of why people learn to fly that frequent comments on the joy of flying can obscure the underlying benefits that many of these flights bring.

Extent of Airport Activities Impressive

The study team documented how activities at each airport affect the entire community. Through interviews and focus groups, the study team identified a wide range of reasons of why flights take place. Cumulatively, these reasons confirm that rural airports impact almost every sector of the community and enrich the quality of life across communities.

The list that follows is a compilation of responses from study participants. It lists the purposes for flights that they identified. This list is certainly not comprehensive. While the number of interviewees was sufficient to draw strong conclusions about the benefits of rural airports, not all area pilots and not all case study residents were interviewed.

Purposes of Flights - A Listing

Agriculture and Timber

- Agricultural spraying
- Field and crop inspections
- Purchase farm equipment
- Searches for cattle
- Attend farm auctions
- Attend weekly cattle auctions
- Travel from farm to town for parts, banking, and groceries
- Timber harvest (helicopters transport cedar bolts)
- Forest inspections

Aviation

- Aerobatic flight practice
- Air charter operations
- Aircraft maintenance
- Glider operations
- Pick up point for charter flights
- Pilot training
- Skydiving
- Photo mapping
- Instrument approach practice
- Flight training
- Flight proficiency practice
- Attend air shows

- Attend fly-ins

Business and Commerce Support

- Banking
- Apartment maintenance personnel
- Professionals flown in for construction projects:
  - Architects
  - Environmental engineers
  - Civil engineers
- Attend business meetings
- Lawyers specializing in contract negotiations
- News gathering teams
- Management and employees for businesses including:
  - Power plants
  - Landfills
  - Large retail chains
  - Independently owned retail businesses
  - Tire stores
  - Timber products industry
  - Tourism businesses
  - Construction products business
  - Auto parts business
  - Machine tool business
  - Logging firms
- Inspect possible replacement equipment
- Inspect other stores in a chain that have new floor layouts and customer service options
- Visit other manufacturing facilities
- Insurance company adjustors and inspectors
- Time-sensitive parts (Numerous incidents were referenced.) Partial list:
  - Logging equipment parts
  - Machine tools and replacement parts

- Farm equipment parts
- Port-a-potty pump engine
- Manufacturing equipment
- Medical equipment

- Power line and pipeline inspections
- Real estate appraisals
- Real estate viewing
- Small package services
  - FedEx
  - UPS
  - Special high-value service
- Transport of cancelled checks
- Bring fishing and hunting parties to local guides
- Tourist visits
- Movie shoots and filming commercials

Business Recruitment

- Local prison recruitment team visit other prisons
- Prison development team visit to Olympia to seek support
- Prospect for wind energy sites
- Seek location of landfill site
- Discover sites for vineyards
- Bring prospective business buyer
- Business siting team flew in to evaluate community

Emergency Response, Disaster Relief, and Fire Control

- Temporary base for lead aircraft for large aerial tankers
- Bring fire control administrators to fire site
- Ferry fire fighters in and out of area
- Helicopters carry water to fires
- Fire spotting

- Red Cross staff view flood and other disaster damage
- Maintain essential services during road closures
- Emergency landings, a place to wait out poor weather
- Refueling base for:
  - Fire fighting aircraft
  - Coast Guard
  - Medical airlifts
  - Search and rescue aircraft
- Search and rescue missions by:
  - Commercial helicopters under contract
  - State police aircraft
  - Air National Guard aircraft
  - Private pilot volunteers
- Single Engine Air Tanker fire fighting
- Refueling stops for large aerial tankers ferrying between fires

Government and Public Policy Activities

- Transport in and out to trials (both lawyers and private citizens)
- Transport city and county officials
- Monitor use of streams and recreation areas
- Visits by state and federal agency administrators
- Wildlife surveys
- Timber disease and insect damage surveys
- Visits by Governors and Members of Congress
- Travel to energy hearings and listening sessions
- Other issue-related state and federal hearings
- Initial leg of travel to Washington, D.C. to petition Congress
- Flights to Olympia to petition State Legislature

Health Care

- Attend medical education conferences

- Commute to rural hospital (emergency room physician)
- Emergency medical airlifts (Numerous flights and reasons were cited.)
- Bring in specialized medical equipment and pharmaceuticals
- Deliver blood, tissue, and bone
- Consultants for hospital equipment installation, financing, and hospital design
- Movement of organs harvested from local donors
- Transport of local residents needing organ transplants
- Specialists, e.g., cardiologists and prosthesis technician
- Angel Flight - transport for patients needing treatment in urban centers
- Angel Flight - return patients home after medevac to urban treatment center

Public Safety, Law Enforcement, and National Defense

- Searches for criminal suspects
- State police highway patrol
- Military training
- Emergency services training (flight-related and high-speed driving for police)
- Search and rescue missions

Enrich Quality of Life

- Commute to work
- Scenic flights
- Flights to Father's Day Fly-In and other annual fly-ins (Note: All fly-ins are attended by non-flyers, including a broad spectrum of the community.)
- Fly in and out for family reunions and family visits (One example of many identified: Flew eighty-year old father to a family reunion.)
- Transport of children between divorced parents
- Attend religious meeting
- Follow the Lewis and Clark Trail
- Prospective pastors and physicians view the area
- Bring home accident victims
- Purchase furniture and other items

- Introductory flights for youth
- Model airplane flight site
- Personal air transportation as a choice over surface transportation
- Puppy pick-up from local breeder using business class jets (from New York and Dallas)
- Transport passengers to airports with scheduled airline service

Recreation

- Charters to skiing and windsurfing areas
- Charters to vacation homes
- Hunting and fishing parties flown in and out
- Recreational flying
- Use of owner owned aircraft for flights to vacation homes
- Hikers or backpackers flown in and out

6. Generated Benefits

The qualitative methodology used in this study allowed the themes to emerge from the data collection (i.e., the interviews and focus groups) rather than identify the issues or hypothesis and theory before the data collection begins. The themes identified in this report (See Emerging Themes, page 24) emerged from the interviews in the case study communities. The generated benefits listed below are primarily drawn from the flight purposes, enhanced, in some instances, with information drawn from outside the communities. But in every case, these benefits are specifically applicable to one or more of the case study communities and probably applicable to most rural communities in Washington State as well.

Enhanced Quality of Life

Flights originating or terminating at rural public access airports in Washington State represent a broad range of activities. The list is surprisingly complete in the way it touches almost every sinew of rural community life. Flights utilizing rural airports serve the recreation, family, community, economic development, business and commerce, law enforcement, national defense,

emergency and disaster response, medical and basic life support, policy access and development, and other vital interests of rural communities. While difficult to quantify, an overarching benefit of rural airports is that the quality of life in rural communities is enhanced.

Access to Specialized Professional Services

"Access" is a critical benefit provided to rural communities by their airports. One of the themes that emerged from this study arose from the increasingly specialized nature and concentration of modern business, commerce, medicine, law, and government in urban areas. In today's economic environment, rural communities cannot stay isolated and still hope to survive. To maintain economic viability, rural communities must maintain access to urban centers for banking, commerce, law, engineering, medicine, government, and other specializations. As explained earlier in this report, many businesses will not consider moving to a community if it does not have an airport.

Several forms of access are important. High-speed Internet and communications access are critical. Air access is important to attend hearings, for contractual negotiations, solving engineering problems, etc., and for securing a part or piece of equipment needed for local economic activities. Time is often our scarcest commodity, and air transport is critical.

Improved Quality of Health Care

Improved quality of health care is a benefit to rural residents made possible by rural airports. Air ambulance service from rural airports to urban medical centers has become routine. In each case study community, the study team found that the number of medical emergency flights was much higher than the estimate that any individual study participant reported. The routine nature of these flights should not obscure the fact that the flights are often a matter of life-and-death for the patients.

To many observers, the increased use of helicopters in medical airlift service seems to argue against the importance of an airport with a runway. The study team did not find this opinion among airlift service operators. Airlift service operators said that they would like improvements

at many of the rural airports in order to better accommodate their fixed-wing aircraft, including adding instrument approach equipment. Not having an airport provides a serious impediment to quality medical care for rural residents. The trend of specializations concentrating in urban centers is expected to continue.

Effective Response to Disasters, Emergencies, and Fire Control

Rural airports are key facilities for disaster and emergency response. Every airport in the study area has been used, some on a regular basis, for support of local, state, and federal emergency response or fire control activities.

Both fixed-wing and rotary wing aircraft play key roles in these activities. The need for airports for fixed-wing aircraft is self-evident. Airports are also critical in the use of helicopters for disaster and emergency response. Airports are places where flight and landing procedures and activities are known and approved, and where parking areas for support vehicles and emergency personnel are available. At public access rural airports, no permission is necessary to immediately use the airport for these activities.

Support for Local Businesses

The support of local business is greater than what it appears to be on the surface. Aircraft used for businesses-related activities is one of the most common uses of rural airports. While study participants thought that business flight activities are most often for agricultural and logging purposes, this was not the predominant business use for rural airports in the study communities. These activities were important, but not the most frequent.

An aircraft is used when time is critical. Time can be critical in many different situations. For example, when a piece of equipment breaks down at a manufacturing plant, the entire operation might be suspended. The more “down time” at a plant, the less revenue accrues. Airplanes using rural airports regularly bring time-critical parts to local businesses. Several small package

services use the Omak airport. Eventually, virtually every resident and business in the area will either receive a package or send a package with one of these services.

Effective use of time for specialized urban professionals is another critical issue facilitated by the use of aircraft. Many consultants, including engineers, architects, medical specialists, and lawyers, are located some distance away from rural communities.

Improved Ability to Petition Government

The ability of rural residents to participate in critical policy forums is another benefit of rural airports. Unfortunately, most hearings and listening sessions are not held near rural communities. Local residents in the case study communities have flown to federal and state hearings and listening sessions on energy, wildlife, water, and judiciary matters. Rural residents have used their airport as a "portal" to visit Washington State Legislature in Olympia, and to visit Congress in Washington, D.C. Governors, Senators, Representatives, and state and federal administrators have flown into rural communities to collect information, tour disasters, and view critical projects. Without the ability to land near the community, most of these visits would not take place. Time is a critical commodity for elected officials, as well as for federal and state agency administrators.

Community Life Enriched

Another benefit of rural airports is that their associated activities enrich daily community life in many different ways. A few examples are: using locally based aircraft for family reunions, transport children between divorced parents, show pastoral candidates and physicians the community, provide scenic flights, bring an injured neighbor back from a distant car accident, and provide rides for area children. Airplanes are used for recreation (the "joy of flying"), and to take local residents and visitors to recreation sites. Rural airports support a wide range of aviation-related activities, from basic pilot training to maintaining instrument flight proficiency

Airports make their communities stronger. Having an airport as a focus of a community activity is a plus for that community. In several of the case study airports, volunteer pilots maintain the

airport and often function in an official capacity, without pay, as airport manager and maintenance crew.

Critical Asset for Economic Development

Rural airports are a critical asset for economic development. In most rural communities, the probability of economic growth without an airport is very low. Many firms, when looking for an expansion or relocation site, require an airport. Rural airports provide both a focus and a support for economic development activities. Many rural airports offer reasonably priced space for business expansion, in addition to the space necessary for runways, taxiways, and related facilities. Rural airports also provide access to urban centers where banking, consultants, suppliers, and a myriad of other necessary professional services and distribution centers are located.

Improved Sense of Well-Being

A surprising benefit of rural airports is the improved sense of well-being that they bring to the residents of rural communities. This benefit first surfaced during an interview with a non-flying individual in Goldendale who, while discussing the airport, spoke of how "*The rotating beacon at the airport is a sign of security and the airport makes Goldendale more attractive."* Residents in Forks and the Omak area expressed similar sentiments. As one person in Omak said, "*Our airport is a sign that we are a progressive community; we are up-to-date*."

In Forks, the Quillayute Airport is the focus of hope for the future of their community. The role of the airport as a symbol of hope was expressed by several Forks interviewees, but was most clearly stated by Nedra Reed, a Forks City Council member who said, "*The airport is a symbol of hope for our future, a star to which we are hitching our wagon*."

Appendix A: Study Methodology

Qualitative Systems

The primary data sources for this study were individuals who lived and/or worked in the case study communities. Other data sources were individuals outside of the communities who were familiar with case study area airport activities and/or used those airports. Data collected from the interview and focus group process was augmented with a review of applicable literature, written responses provided by individuals in the study communities, and where ever pertinent information was found. For example, an indication of the uses for the Omak Airport was gleaned from the visitor registry in the pilots lounge. The themes presented in this report became apparent upon reviewing the first-hand experience and knowledge expressed by the interviewees.

The validity of this approach is documented in qualitative research literature. The essence of qualitative research involves ethnography, essentially a cultural perspective. Ethnography is based on the theme that in every human group that is together for a period of time, a culture evolves. A combination of this tenet with a case study setting allowed the researcher to expect differences (i.e., all benefits are not applicable to all airports), but look for commonalties or diversity and the reasons for it. Using the strategic investigative framework gives a framework for research action and a basic direction of inquiry, allowing determination of patterns while allowing category systems to be developed. Specific qualitative approaches were to: (1) interview interested or potentially interested parties associated with rural airports or public investments, (2) interview and/or observe the local groups that made resource decisions about the rural airports, and (3) meet with focus groups who were willing to discuss the airport. The dynamic nature and design flexibility of qualitative research allows appropriate units of analysis to be determined as the study proceeds because qualitative inquiry designs cannot be completely specified in advance of fieldwork. Creativity and flexibility in the fieldwork relies on observation, interviews, categorization, and documentation.

The traditional research approach, logical positivism, uses quantitative and experimental methods to test hypothetical-deductive generalizations. Phenomenological inquiries, on the other hand, use a qualitative and naturalistic approach to inductively and holistically understand human experience in the context of specific settings. The theory, i.e., “themes” in the case of this study, are derived from the data collected, as opposed to setting out an hypothesis and then testing it with the available data.

Patton developed an alternative and appealing approach, referred to simply as "pragmatism", with methodological appropriateness as the primary criterion for judging methodological quality. This was the thesis underlying the qualitative approach chosen for this study—understanding the quantitative, but reaching beyond to the non-quantifiable but useful. The holistic perspective, part of pragmatism, allows the airport system benefits, or individual airport benefits to be greater than the sum of its parts. The inductive component allows an individual person, community, or subsets of communities to be used. Individual experiences serve to evaluate mobility (time savings), accessibility (connectivity for business, services, and retail finances), and accident cost savings in a broad context, perhaps in abstract, simply "quality of life". These experiences are not just individual but are multi-layered social dynamics of "community": passengers, freight, citizens, private sector, local government, social agencies, economic development agencies, and others.[11]

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