CHAPTER 9

WIRELESS TELECOMMUNICATIONS PLAN FOR CENTRAL YAVAPAI COUNTY

Background

In 1995 the Federal Communications Commission (FCC) began a series of radio spectrum auctions, granting licenses for the creation of new wireless communications services. Six (6) licenses were granted to serve Yavapai County for personal communications services (PCS), augmenting the two existing cellular telephone licenses. Then, in 1996, Congress passed the Telecommunications Act (Act) to promote competition in the wireline and wireless telecommunications industries. In addition to opening up the local telephone monopoly business to newcomers, the Act also prohibited local governments from forbidding the placement of antennae necessary to implement the new wireless services. The Act did, however, allow local governments latitude in regulating the placement of wireless telecommunications towers. These actions prompted most of the government entities participating in the Central Yavapai County Regional Association of Governments to begin discussion of a cooperative antenna siting program. Early in the summer of 1997 a wireless task force (Task Force) was formed, comprised of representatives from Yavapai County, the Town of Chino Valley, the Town of Prescott Valley, and the City of Prescott (the Cooperating Agencies).

The Cooperating Agencies issued a Request for Proposals from telecommunications consulting firms with experience in wireless communications to assist them in developing a Wireless Telecommunications Plan (Plan). The successful proposer, ALLYNX, Inc., worked with the Task Force to develop the Plan and to draft a model ordinance covering the placement of new wireless telecommunications sites. The work of the consultant and the Task Force was greatly assisted by a knowledgeable citizen and a representative from the Arizona Department of Public Safety who provided input from their unique perspectives.

The Plan covers that part of Yavapai County bounded on the east by I-17 between SR 69 and SR 169, proceeding northwestward along SR 69 and SR 89 to Chino Valley (Plan Area). It includes the City of Prescott, the Towns of Prescott Valley and Chino Valley, the communities of Cordes Lakes, Mayer, Poland Junction, Humboldt, Dewey, and Prescott Country Club, and adjacent unincorporated areas of Yavapai County. (See Figure 1)

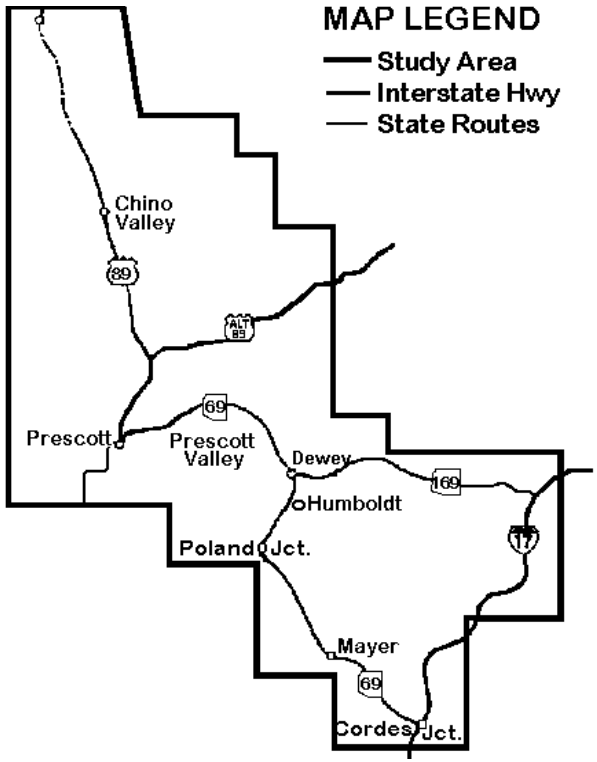

Figure 1

Overview of Wireless Services

Wireless telecommunications services ("cellular-type services") are unlike commercial "broadcast" radio and television services. Rather than having one large, powerful transmitting antenna that can be located many miles from the receivers, cellular-type services rely on multiple, low-power transmission/reception antennae that must be located close to the users. The area that can be covered by one antenna site, called a "cell," depends on a number of variables, including the height and power of the transmitters, the number of simultaneous users, and the terrain to be covered. These smaller cells allow the reuse of radio channels in non-neighboring cells.

Generally speaking, the higher the antenna, the larger the cell will be when all else is held constant. (See Figure 2) Thus, service providers typically look for antenna mounting points that are generally more elevated than the surrounding area to be covered. These higher mounting points may be buildings, existing poles and light standards, signs, water towers, etc. In mountainous areas the rise in natural elevation up a hillside can be used to compensate for other types of verticality and lower mounting points can be used when they are situated on higher ground. When there are no available existing points of height, the service providers construct poles or towers on which to place their antennae.

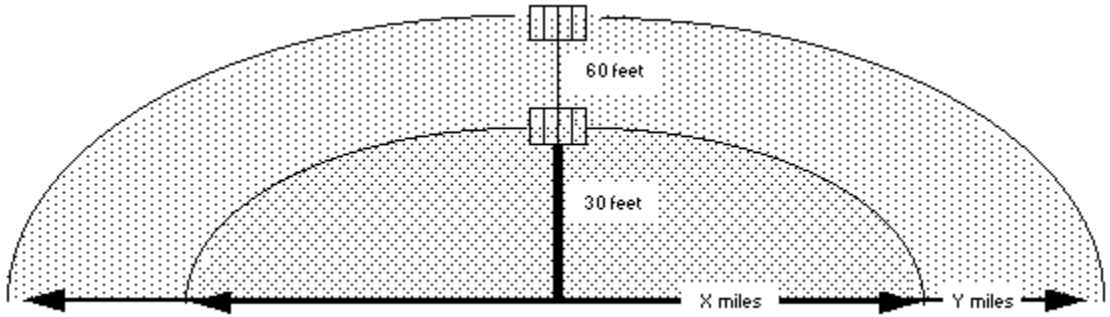

Figure 2

Existing cellular services are currently provided within the Plan Area by two (2) businesses using a number of wireless telecommunications facilities. Downtown Prescott hosts cellular sites operated by AirTouch and CellularONE. However, most of the Plan Area is served by cell sites placed on Mingus Mountain, Bill Williams Mountain, Mount Francis, and Badger ("P") Mountain.

In addition to existing service providers, there are numerous other potential providers licensed to operate wireless telecommunications systems in Yavapai County. They utilize a variety of wireless technologies to provide a wide selection of services. Most of the wireless companies are still in the planning stages for their Yavapai County network buildout, which makes the implementation of this Plan now a timely exercise. Table 1 lists the providers and their license type. Note that licenses are either for traditional cellular service, new personal communication services (PCS), specialized mobile radio dispatch-type services (SMR), and the wireless telecommunications services which have not been defined to date (WCS). In the near future, there may also be licenses for local multi-point distribution services (LMDS).

Licensee	License Type
A&B Electronics	SMR
AirTouch Cellular	Cellular
AT&T Wireless Services	PCS
BAL/Rivgam	WCS
CellularONE	Cellular
Coloma Wireless	WCS
Cordell Engineering	SMR
Creative Airtime Services	SMR
FCI 9000	SMR
Fleet Talk	SMR
GeoTek Communications	SMR
Metricom	WCS
NEXTEL Communications	SMR
Paging Network of America	SMR
Pro-Tec Mobile Communications	SMR
RAM Mobile Data	SMR
SGI Communications	SMR
Sprint PCS	PCS
U S WEST Wireless	PCS
WebTel Wireless	PCS
Western Wireless	PCS

Table 1 -- Licensees and License Type

New service providers wish to construct their antenna sites at the lowest cost and in the shortest time frame possible, thereby getting their system "on-the-air" as quickly and inexpensively as practical. Other interested parties, including speculative tower builders, power companies, long distance companies, and dispatch service operators may also wish to build wireless telecommunications facilities throughout the County. In the future, as the FCC auctions more radio frequency spectrum, additional companies offering new wireless voice, data, and video services will be interested in building systems in Yavapai County. This will increase the number of antenna sites. Estimates of the number of sites necessary to put all licensed PCS carriers on the air in the Plan Area range from a low of six (6) rather large towers to a high of twenty-four (24) or more smaller towers.

Local Government Responsibilities

Local governments have a justifiable concern in protecting the aesthetics of their jurisdictions, the value of their constituents' property, and the health and welfare of their citizens. All these areas of concern were considered by the Task Force in the development of this Plan.

Although prohibited by the Act from denying service providers the right to build their facilities, local governments may control the placement of facilities so long as all providers are treated equally. Of note, the Act only requires local governments to allow licensed wireless service providers the right to construct facilities; other tower builders do not have the same protection.

In developing this Plan, the Task Force determined that it was in the public interest to have wireless telecommunications facilities placed on properties controlled by the Cooperating Agencies to the greatest extent possible. There are several advantages to such a policy: first, such locations provide wireless services providers quick access to locations that cover both commercial and residential areas with minimal impact on those areas. Secondly, such a policy provides the Cooperating Agencies much greater control over the aesthetics and use of wireless telecommunications facilities through their lessor-lessee relationships with the service providers. Finally, the Cooperating Agencies receive rents from the use of the land, thus providing important public revenues.

Process

Development of this Plan involved three primary elements: (1) determination of siting criteria, (2) development of a site inventory, and (3) correlation of the Plan with the model ordinance being developed. These elements were refined during a series of meetings, discussions, and site visits between November 1997 and May 1998.

Ordinance Development

A new model ordinance was developed to govern the design parameters and placement of commercial wireless telecommunications facilities in the Plan Area. Although it is anticipated that the model ordinance will be modified somewhat to fit the format and unique needs of each jurisdiction, the Cooperating Agencies have agreed to adopt the ordinance in as uniform a manner as possible in order to lessen the likelihood that service providers will "land shop" for antenna sites based on more lenient zoning restrictions in one jurisdiction versus another. This will hopefully prevent any of the Cooperating Agencies from being subjected to such things as a wireless facility being built across the street that would be prohibited in their jurisdiction due to jurisdictional boundaries. (Note, however, that, because the Yavapai Prescott Indian Tribe did not join in this cooperative process, future development of wireless telecommunications facilities on Tribal land may not conform to this Plan.)

The model ordinance does not prohibit the placement of wireless telecommunications facilities in the Plan Area. Rather, it seeks to decrease the proliferation of such sites to the greatest extent possible. For example, where some wireless telecommunications regulations merely encourage collocation of antennae, this ordinance commits service providers to an actual plan of collocation by

conditioning permission to build upon their willingness to allow subsequent carriers to collocate. Thus, if the initial builder is approached by a subsequent applicant for collocation, does not allow collocation within a specified time frame, and is unable or unwilling to provide a reason for not allowing the requested collocation, then that initial builder forfeits its right to the existing site. (Note that this collocation requirement will be reiterated in any lease agreements between the Cooperating Agencies and service providers.)

The model ordinance also governs the appearance and performance of wireless telecommunications facilities by listing performance criteria for issuing Special Use Permits to build them. It also requires each applicant to certify that all of its wireless facilities within twenty-five (25) miles of any new site comply with FCC regulations concerning radio frequency emissions.

Finally, the model ordinance includes requirements that the last operator of a wireless telecommunications facility ensure the removal of all towers, antennae, equipment, and shelter buildings from a site when it is no longer in use as a wireless telecommunications facility. Sites must then be returned to their original state, including re-vegetating land that had not been developed prior to construction of the facilities.

Determination of Siting Criteria

In making the determination in this Plan that public properties should be given priority as sites for wireless telecommunications facilities, the Task Force identified the following benefits:

- Most adequate service coverage for the Plan Area with minimal visual impact
- More likely collocation of public safety/public service facilities through lease negotiations
- Better control of wireless facility aesthetics through lease negotiations
- More ability to ensure delivery of in-kind services through lease negotiations; and
- Opportunity to generate public revenues through the collection of rents

On the other hand, the Task Force did note some disadvantages to locating wireless telecommunications facility sites on public property, including:

- Complaints from private landowners who believe the government is competing with them for the rents to be realized from these sites; and
- The belief that the antennae at such sites emit excessive radio frequency (RF) radiation which could be harmful to the public's health

In considering the potential disadvantages, the Task Force determined that governments have the right, if not the obligation, to manage public land to their greatest advantage. To their knowledge, no municipality has lost the argument that leasing public land for wireless

telecommunications facilities would be in the public's best interest. Also, the Task Force's review of the radiation issue indicated that a health concern has not been established, even though numerous studies have been conducted. For example, the State of Vermont conducted research on the issue and did not reach a definitive conclusion. Industry sponsored research has concluded that no problem exists with emissions from wireless telecommunications facilities. The FCC has promulgated regulations for total RF emissions from cellular-type antennae, and all wireless service providers are required to certify that the RF emissions from their facilities are below allowable levels. Thus, after balancing the benefits against the disadvantages, the Task Force concluded that the benefits of locating wireless telecommunications facilities on public property outweigh any disadvantages.

However, the Task Force understood that technical limitations might, in some cases, require the use of private property for the placement of wireless telecommunications facilities. Therefore, it agreed that certain industrial and commercial zones may be acceptable for locating wireless telecommunications facilities in the absence of technically acceptable public sites. Thus, in order of preference, the acceptable wireless telecommunications facility sites under the Plan were determined to be:

- Properties controlled by the Cooperating Agencies identified in Appendix A
- Other publicly-controlled lands (e.g. Central Yavapai Fire District stations, secondary school and college athletic fields, ADOT locations, other highway and road maintenance yards, etc.)
- Industrial areas; and
- Commercial areas

Then, in order to address the justifiable concerns of the Cooperating Agencies about protecting the aesthetics of their jurisdictions, the value of their constituents' property, and the welfare of their citizens, the Cooperating Agencies further established the following limitations on new wireless telecommunications facilities in any location:

- No new facilities within three hundred (300) feet of any residences, including single- and multi-family residences and residential facilities such as group homes and nursing homes
- No new facilities atop Glassford Hill, Thumb Butte, Badger ("P") Mountain, or other promontories associated with Badger Mountain[1]
- No new facilities in the Granite Dells area
- No new facilities within unique or scenic areas/sites identified in community general plans
- No new facilities in any area that would block mountain views, particularly where a tower would block or mar the view of Glassford Hill or Thumb Butte from any direction; and
- No new facilities within any of the Prescott historic districts

[1] Mountains included in that area located between State Route 69 and Forest Service land in Section 36, Township 14 North, Range 2 West, and in Section 1, Township 13 North, Range 2 West.

Finally, the Task Force agreed that, in the event applicants insist on placing wireless telecommunications facilities on properties other than those listed in Appendix A, a Special Use Permit would be required.

Property Inventory

Task Force representatives for the City of Prescott, the Town of Chino Valley, and the Town of Prescott Valley have indicated a desire to lease municipal sites to cellular-type services providers. Therefore, the Consultant reviewed each site which these jurisdictions indicated they were interested in leasing in order to obtain data pertinent to the placement of wireless telecommunications facilities thereon. The Consultant looked for both positive and negative factors to identify the optimal sites and to eliminate those locations unfit for facility placement. To be considered valuable as a wireless telecommunications facility site, the property had to meet three (3) basic criteria:

- Sufficient land space available for the required equipment
- Reasonable closeness to electric and telephone utility service; and
- Reasonable subscriber traffic coverage from the site

Negative factors were also reviewed for each candidate property to determine the relative worth of the different sites. Negative conditions included:

- Existence of limiting coverage factors, such as overhead transmission lines, line-of-sight blockage, etc.
- Whether there were other, equally or more useful sites in close proximity to the site; and
- Whether the site was located unreasonably close to residences

If sites met all three (3) criteria for placement and had fewer negative factors than positive factors, they were rated "Very Good." If sites met all of the criteria and had equal or fewer positive than negative factors, they were rated "Good." If sites were unsuitable, based on any of the three (3) criteria listed above, they were rated "Poor." Appendix A contains a list of all sites that were reviewed and their ranking.

Communications Tower Application Process

The model ordinance requires applicants desiring to construct new wireless telecommunications facilities to submit a variety of documents that show their plans. The purpose of this documentation is to provide the jurisdictions with sufficient information to determine if new facilities will be in the public interest, and to ensure that proposed facilities meet the aesthetic standards set out in the ordinance.

Documents to be filed include:

- A site inventory, including:
  - number of wireless telecommunications facilities currently in use
  - number of facilities in the application process, or under construction
  - number of facilities in use or under construction within one (1) mile of the jurisdictional boundaries
- A map which clearly shows all properties within three hundred (300) feet of the proposed facility, all adjacent roads, and a means of access to the site
- Descriptions of the proposed exterior elevation, landscaping, method of fencing, tower coloration, materials, illumination, and camouflage; and
- The setback distances from:
  - the nearest residential unit
  - residentially zoned properties within three hundred (300) feet of the facility
  - the separation from other facilities listed in the inventory

For sites that require Special Use Permits, Planning and Zoning Commissions will review the applications, hold public hearings, and render decisions after taking into account the proposed height of facilities, their proximity to other uses, historic sites, landmarks, vehicle traffic routes, medical facilities, topographical features, utilities, suitability of alternative sites, and public comments. The wireless telecommunications ordinances of each jurisdiction prescribe the specific application and permitting processes that will be followed.

Appendix A

Sites Ranked "Very Good"

Site Name / Address	Site City	Reasons for Ranking
Chino Valley City Complex 1020 W. Palomino Rd	Chino Valley	(+) Good Chino Valley / Hwy 89 coverage (+) Small tower already exists
Chino Wells Water Tank[1] 251 N. Hwy 89	Chino Valley	(+) Good Chino Valley / Hwy 89 coverage (+) Set back from roadway with good verticality
Cliff Rose Water Tank	Prescott	(+) Good 360° coverage (+) Good coverage of Hwy 89 (+) Above residential area, not in it
Haisley Water Tank	Prescott	(+) Good city coverage (+) Above residential area, not in it
Indian Hills Water Tanks	Prescott	(+) Good 360° coverage including CC (+) Above residential area, not in it
Prescott Airport 6500 McCurdy Dr.	Prescott	(+) Good coverage of Hwy 89, airport (+) No existing cell/PCS antennas
Cathedral Pines Water Tank	Prescott	(+) Good city coverage (+) Above residential area, not in it
Senator Hwy Reservoir 402 S. Mt. Vernon St.	Prescott	(+) Good coverage of downtown
North Water Storage Tank	Prescott Valley	(+) N of Glassford Hill, overlooks PV to SE on 89A (+) Good coverage of 89A and new development
Prescott Valley City Hall 7501 E. Civic Circle Dr.	Prescott Valley	(+) Will have 80' tall spire when completed (+) High elevation in town, good PV coverage

[1] Owned and operated by the City of Prescott, although located in Chino Valley

Sites Ranked "Good"

Site Name / Address	Site City	Reasons for Ranking
Community Center Park 1500 N 1 E	Chino Valley	(+) Good Chino Valley / Hwy 89 coverage (+ / -) No existing lighting standards
City Maintenance Yard 440 N. Mt. Vernon	Prescott	(+) Located in industrial area (-) Radio antenna to N.
Hassayampa Water Tank	Prescott	(+) Good coverage of W. Prescott & CC (-) Closer alternative sites to high traffic areas (-) Small site in residential area
Intersection of Mt. Vernon and Gurley St.	Prescott	(+) Good city center coverage for mini-site (-) May lack sufficient ground area for equip
Prescott City Hall 201 S. Cortez	Prescott	(+) Overlooks downtown (-) Limited ground space for equipment
Prescott North Reservoir 1821 N Willow Creek Rd	Prescott	(+) Two existing towers (-) May be a comm'l FM station on one tower
Robinson Water Tank S. Canyon Dr.	Prescott	(+) Good coverage of downtown Prescott (-) Located in residential area
Cable TV Tower Spouse & Parent St.	Prescott Valley	(+) Microwave tower for cable TV already exists (-) Located in a residential area
Glassford Hill Water Tanks	Prescott Valley	(+) Direction coverage of PV to N, E, S
Community Center 9360 Manzanita Circle	Prescott Valley	(+) Good height for covering east end of PV (-) Located in a residential area
Ridgeline Water Tank	Prescott Valley	(+) Good coverage of SR 69 (-) Located adjacent to residential area
Water Treatment Plant 1100 E. Treatment Rd.	Prescott Valley	(-) Treatment plant is at low elevation (+) High land exists in the plant boundaries

Sites Ranked "Good" (Cont.)

Site Name / Address	Site City	Reasons for Ranking
West End Water Tank SR 69 at Prescott E Hwy	Prescott Valley	(+) Good coverage of SR 69 and west PV

Sites Ranked "Poor"

Site Name / Address	Site City	Reasons for Ranking
Cedarwood Water Tank	Prescott	(-) Limited coverage of city (-) Located in residential area, next to houses
Circle "K" Water Tank	Prescott	(-) Located in residential area
Forest Trails Water Tank	Prescott	(-) Located in residential area
Hokaygon Water Tank	Prescott	(-) Closer alternative sites to high traffic areas
Longview Water Tank	Prescott	(-) Limited coverage of western valley (-) Located in residential area
Prescott Canyon Water Tank	Prescott	(-) Limited coverage of SR 69 & Hwy 89 (-) Located in residential area
Prescott City Library	Prescott	(-) No rooftop/ground area for equipment
Prescott Fire Station #1 333 White Spar Rd	Prescott	(-) Small hill between FS and downtown (-) Adjacent to APS substation
Prescott Fire Station #2 1700 Iron Springs Rd	Prescott	(-) Surrounded by mountains (-) Limited coverage
Prescott Fire Station #4 2747 Smoketree Lane	Prescott	(-) No coverage to S, E, N (-) Limited coverage to W
Prescott Fire Station #5 315 Lee Blvd	Prescott	(-) Mountains to N, E, W (-) Limited coverage of SR 69 to S.
Juniper Water Tank	Prescott	(-) Limited to residential coverage by terrain (-) Very small site located in residential area
Ranch 1 Water Tank	Prescott	(-) Limited to residential coverage by terrain (-) Located in residential area
Ranch 2 Water Tank	Prescott	(-) Limited to residential coverage by terrain (-) Located in residential area

Sites Ranked "Poor" (Cont.)

Site Name / Address	Site City	Reasons for Ranking
Tank Road Water Tank	Prescott	(-) Closer alternative sites to high traffic areas
Thumb Butte Water Tank	Prescott	(-) Small, rocky site with limited coverage of W. Prescott
Upper Rancho Vista Water Tank	Prescott	(-) Closer alternative sites to high traffic areas
Village Water Tank	Prescott	(-) Closer alternative sites to high traffic areas
Yavapai Hills Water Tank	Prescott	(-) Limited coverage of SR 69 (-) Located in residential area
Antelope Park 6435 N. Cattletrack Dr.	Prescott Valley	(-) Adjacent to Coyote Springs Elem. Sch. (-) Residential areas to E, W
George Anderson Park 9500 E. Superstition Dr.	Prescott Valley	(-) Small unimproved park located in residential area
Mountain Valley Park 8250 E. Nace Lane	Prescott Valley	(-) Located in residential area (-) Elementary school to NE
Prescott Valley Public Works 8434 E. Long Mesa Dr.	Prescott Valley	(-) Low spot in town, on the north side (-) AM Broadcast tower 200 yrds to North
Sunflower Park 7240 E. Sunflower Lane	Prescott Valley	(-) Small unimproved park located in residential area
Tonto Park North 4700 N. Tonto Way	Prescott Valley	(-) Small unimproved park located in residential area
Tonto Park South 4050 N. Tonto Way	Prescott Valley	(-) Small unimproved park located in residential area