Developing an Enhanced Wireless Facilities Tracking System for Pinellas County

Pinellas Planning Council

DEVELOPING AN ENHANCED WIRELESS FACILITIES TRACKING SYSTEM FOR PINELLAS COUNTY

Prepared by the Pinellas Planning Council and CityScape Consultants, Inc.

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ACTION PLAN

A. Introduction

In conjunction with CityScape Consultants, Inc., the Pinellas Planning Council has been studying wireless facilities management in Pinellas County. During the course of the study, local government and private sector representatives have indicated a need for more accurate tracking of existing and future facilities. While there is a centralized countywide database to track these facilities, enhancement of the current system is needed to improve the accuracy of the information. In addition, a more comprehensive collection of data is needed to support local government initiatives that have not previously been pursued, such as generating additional public revenues (see Appendix A).

B. Background

In 1996, the federal government amended Section 704 of the federal Telecommunications Act and clearly established local government zoning authority over the deployment of wireless telecommunication facilities within their jurisdictions, subject to specific guidelines. It was at this time that the Pinellas County Planning Department developed a tracking method to collect and record information concerning the approval of new facilities. To facilitate the process, a standard form requesting information was created and sent to the twenty-five local governments in Pinellas County. The goal was for local planners or other appropriate personnel to complete the forms and return them to the Planning Department on a quarterly basis for review and entry into a centralized database.

The response to the requests for information has been moderate, but not consistent or timely. In actual practice, most data are only submitted to the county annually in response to reminder notices. Some communities have returned the forms with vague information, while others have never returned any data about permits filed for new facilities.

C. Reasons to Collect the Data

It is difficult to ascertain the current deployment patterns and benefits to local policies without an accurate countywide database of existing facility locations. The principal reasons to maintain such as database are:

- To manage the deployment of future wireless infrastructure in order to prevent negative visual impact;

- To enforce, and monitor the effectiveness of, local ordinance requirements;
- To improve the capability of the local government and industry to respond to any emergency-related issues;
- To track new and existing antenna and ground equipment installations accurately for taxing purposes;
- To aid in developing a marketing plan to lease publicly-owned sites for the placement of wireless facilities, for those local governments wishing to pursue such a policy;
- To track compliance with public property leases;
- To provide accurate and timely data to wireless service providers to meet the needs of the community; and
- To make information available to local government and industry representatives for various other analyses.

Policy and ordinance recommendations concerning these topics have been addressed in the *Countywide Model Wireless Telecommunications Ordinance* created by the Pinellas Planning Council and CityScape. However, the effectiveness of the goals and objectives of this (or any other) ordinance can only be measured by the adopting community if new infrastructure installations are tracked, observed, and compared to the intent of the development standards.

D. Industry Trends

A number of technological and social trends are currently influencing the wireless industry, and will cause service providers to construct new facilities and upgrade existing ones at higher levels of activity than has been seen in recent years:

- *The shift from analog to digital technology:* In 2003, the Federal Communications Commission (FCC) announced that it would permit a five-year plan to phase out the use of analog compatibility requirements for cellular phones. However, the FCC's action still allows providers the option to continue analog services as needed to meet customer needs. About 85% of all wireless subscribers are already using digital technology, and wireless users generally replace their phones every eighteen months. Thus, the five-year phase out period is more than ample time to migrate the remaining analog users to digital service, which also has the added benefit of increasing a cell site's caller capacity.

- *The expansion of text messaging services:* Wireless carriers have recently begun participating in a program that allows customers to communicate through text messaging with customers of other carriers. Customers can now send and receive text messages from virtually anywhere, anytime in the world. The technology has proven

to be very successful worldwide, with more than 1 billion messages sent per day. In Europe, 15% of wireless carriers' revenue in 2003 came from text messaging. Today, every digital phone that is sold in the United States has text messaging capability. The growth of this service will undoubtedly lead to a greater demand for wireless facility installations due to the additional spectrum required by text messaging.

- *The expansion of wireless Internet services:* A new class of wireless services is known as "Wi-Fi," in which consumers can connect to the Internet without a standard wired modem. Wi-Fi networks provide fixed locations where anyone with a laptop computer and a wireless access card can reach the Internet. These services are being increasingly provided in public locations such as college campuses and libraries, as well as commercial establishments such as coffee houses, often for a fee. Continuation of this trend will require many new antennas to be deployed in areas where these services are provided. (For further discussion of this topic, see Appendix A.)

- *Future generations of wireless technology:* Third, fourth, and fifth generations of wireless deployment will accompany the next phases of technology and place greater demands on network capacity. With voice, text, video, and other data all competing for spectrum space, providers will need to maximize their allocations by creating more compact antennas and placing equipment locations at closer intervals. The result will be a significant increase in the number of facilities in virtually every community.

E. Data to be Collected

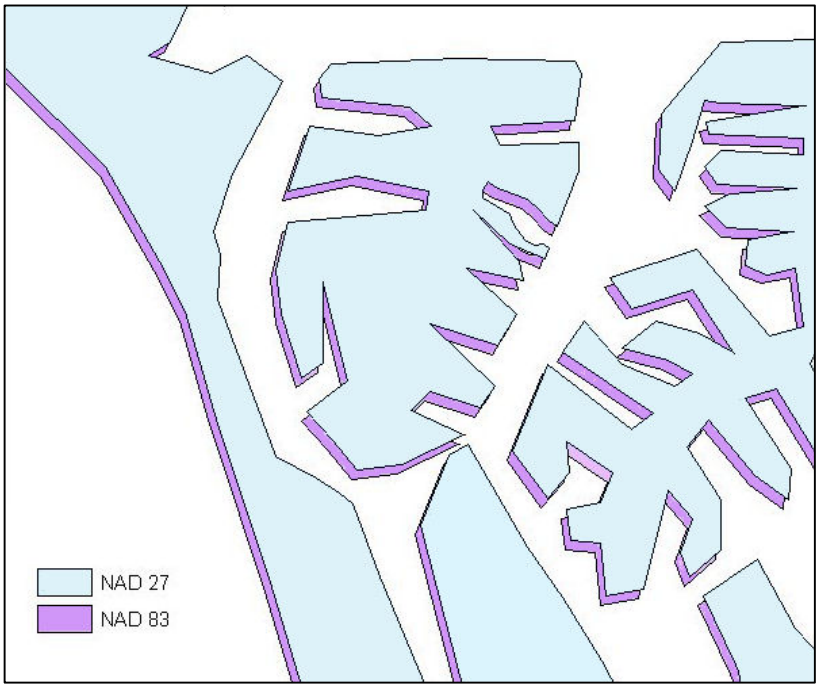
The data collected thus far by the Pinellas County Planning Department has largely been derived from building permit information provided by local governments. However, the process is dependent on receiving timely, accurate, and complete data from all jurisdictions, which does not always occur. The information provided varies widely, both in quantity and quality.

To help address these deficiencies, FCC and Federal Aviation Administration (FAA) online databases have been used as supplemental information sources. Unfortunately, most of the data collected by these agencies are limited to antenna support structures exceeding 199 feet in height, or located within certain designated areas of airports and landing strips. The agencies do not verify the data on a site-by-site basis, meaning that if the location or height of the facility is reported incorrectly, the error usually goes undetected. Therefore, they cannot be relied upon as primary information sources.

Another difficulty pertains to the variety of formats in which facilities are mapped. In the countywide database, locations are assigned according to site address, parcel identification number, or latitude and longitude, depending on the information provided. But mapping software programs provide many different models, called *coordinate*

systems, which can cause the reported locations of facilities to vary significantly. For example, most wireless industry organizations locate their facilities based on a system called North American Datum (NAD) 83. The FCC has recently switched from an older system, NAD 27, to the newer NAD 83. Both the Pinellas County Planning Department and the FAA, meanwhile, continue to use NAD 27. Depending on the mapping software being used, differences between the two systems can cause the reported locations of objects to differ by as many as 200 meters. (See Figure 1 for illustration.)

Figure 1
Detail of the Treasure Island Coastline
Using Two Different Coordinate Systems



If the coordinate systems used by the applicants, federal agencies, and local governments do not match, and the necessary conversions are not made prior to mapping the data, facilities may appear in the wrong locations. Fieldwork conducted by PPC staff during the course of this study suggests that this type of error has occurred locally in at least a few cases.

The Pinellas County Planning Department has obtained substantial data from local governments, and to a lesser extent from the FCC and FAA. However, given the above issues, the accuracy of this information should be verified. The countywide database would also benefit from the addition of a number of data fields, as shown in Table 1.

Table 1
Wireless Facility Data Recommended
for the Countywide Database

Data Currently Collected	Recommended Additional Data
• City and state • Facility address • Name and address of facility owner • Name and address of property owner • Facility height • Facility elevation (Above Ground Level [AGL] and facility height combined) • Subdivision block data • Latitude and longitude • X and Y coordinates • Data source • Site location number • Date the initial data were entered into the system • Date(s) when data were amended (if applicable)	• Pinellas County parcel identification number • Zoning category • Land use designation • Site acreage • Coordinate system (preferably NAD 83) • Names and addresses of providers/tenants located on facility • Name and address of site manager (if applicable) • Local planning agency within the jurisdiction to contact about the zoning process • Local building permit agency within the jurisdiction to contact about the permitting process • Web site addresses for local government, facility owner(s), tenant(s), and site manager (if applicable) • Web site address for online municipal code (if applicable) • Major Trading Area and Basic Trading Area (FCC designations used to determine service areas for wireless licenses) • Equipment data • Location of utility meters • Map and directions to site • Pictures of site *If on public land:* • Site plan/plot plan/structural plans • Plan for additional phases (if applicable) • State Historic Preservation Office (SHPO) documents • Recording or memorandum of lease

Where documents or photos are indicated to be included, these would consist of electronic scans stored in the database. Web site addresses would contain hypertext links to the actual web sites, and maps of the site locations could consist of links to an online mapping service that would be regularly updated. With all of the information stored electronically, the database will serve as a flexible and information-rich resource. The existing and recommended data described in the table, when combined together, will be extremely useful in facilitating the management of existing and new wireless facilities.

F. Data Collection Process

Before the data collection process begins, it will be necessary to complete the following tasks:

- Designate responsible staff for each step in the data collection process;
- Finalize the list of data fields that will be added to the database;
- Determine the geographic coordinate system that will be used for all mapped data; and
- Determine the software platform(s) that will be used to store and access the data.

The basic software recommended by CityScape is the Excel spreadsheet program, which is already used by most Pinellas County departments and the PPC. Coordination with the Pinellas County Information Systems Department will also be needed to incorporate the data into county's Geographic Information System (GIS).

Data collection itself will be a two-step process. First, a current listing of the locations of existing support structures, colocations, and antenna attachments is needed to establish baseline data. Second, to maintain an accurate database, ongoing coordination with the industry and local governments will be required.

For the first step, CityScape recommends requesting the specifics on the locations of existing facilities from all known wireless service providers and tower companies. Their experience has shown that the wireless industry supports accurate local government tracking of facilities, and is generally willing to provide the needed data. Appendix B includes a sample letter and information form to be used for such requests. The Pinellas Planning Council, in coordination with the Pinellas County Planning Department, will be the agency responsible for distributing the requests and collecting the responses in this step of the process.

For the second step, the information form will also be distributed to local governments with a request that it be incorporated into the application requirements for new wireless facilities, and the completed forms submitted to the Pinellas County Planning Department

on a regular basis to be entered into the countywide database. The PPC will remain involved with this ongoing process as determined appropriate.
It is also recommended by CityScape that PPC and/or Pinellas County Planning Department staff verify the accuracy of the data by physically surveying the facility sites. Conducting quality control checks of the information collected, and making corrections to the data based on the findings of the fieldwork, is an important aspect of maintaining an accurate database.

In practice, verifying every site will be difficult to accomplish with limited staff in a county with several hundred such installations. The PPC and Pinellas County Planning Department will coordinate in visiting a sample of the sites submitted by wireless industry representatives to determine the quality of the data. Verification of ongoing data collection will primarily rely on the efforts of local government staff during their jurisdictions' normal application processes. Coordination will also be sought with the Pinellas County Property Appraiser's Office, whose staff conducts site visits of facilities during routine tax assessments.

G. Use of the Collected Data

The enhanced countywide tracking system is a planning tool designed to complement public policy. Use of a single information form on a countywide basis will encourage local governments to collect a comprehensive set of data that might not otherwise be gathered during the permitting process. Because the applicants themselves will complete the form, little further investment in staff time will be needed. The database compiled from this information will serve a number of uses:

- Local planning staff will be able to respond to inquiries from the industry and community quickly and accurately;
- Subsequent applications for colocations or installations at nearby sites can be easily compared to the existing information;
- The site inventory, maps, and directions identifying the location of the sites will aid local government representatives or private individuals who wish to make site visits;
- Local governments will more easily be able to conduct site analysis and other types of research for long-term wireless facilities planning;
- The Property Appraiser's Office will have access to an accurate database for tax assessment purposes (please see Appendix A for further discussion of this issue);
- Entities such as police and fire departments, utility companies, the Florida Department of Transportation, the Coast Guard, and federal agencies will have easy access to information regarding local communications facilities;

- The wireless industry will find it easier to locate prospective sites for colocations and antenna attachments on existing facilities, encouraging use of these techniques; and
- Other private-sector interests wishing to install wireless equipment for improving communications or business practices will have access to needed information.

H. Conclusion

In order for local governments to effectively plan for and guide the deployment of wireless facilities in their communities, it is essential to have an accurate and comprehensive system for tracking their locations. Such a system would support regulation and taxing efforts, and assist those communities wishing to partner with wireless providers to increase public revenues. It would also benefit the wireless industry by providing information to assist with the siting of new facilities.

To meet these goals, this report recommends enhancement of the current countywide tracking system maintained by the Pinellas County Planning Department. This system has served the county adequately for several years, but in order to keep up with the evolving needs of wireless facilities management, it should be broadened into a more comprehensive, timely, and accessible database. The recommended enhancements are not anticipated to be significantly costly or time-consuming to implement. They will, however, require the commitment of the PPC, the Pinellas County Planning Department, and local governments to work in cooperation with one another and with the private sector on an ongoing basis.

APPENDIX A

Using Wireless Facilities Management to Generate Additional Public Revenues

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A. Introduction

This appendix discusses a number of ways that local governments can generate additional revenues through wireless facilities management. Each of the methods described below assumes that the jurisdiction will have a comprehensive wireless facilities ordinance in place, as well as an accurate and effective way to track such facilities once they are installed. Both the *Countywide Model Wireless Telecommunications Ordinance* created by the PPC and CityScape and the enhanced tracking system proposed in this document were created with these goals in mind.

B. Marketing Public Properties

Leasing public assets (e.g., appropriate plots of land, rooftops, water tanks, public safety communications towers, rights-of-way, and other community-owned facilities) has been discussed throughout the wireless facilities study as part of the solution for controlling the type and location of wireless telecommunications infrastructure, as well as enhancing the fiscal status of local governments choosing to employ this option.

The utilization of public property for future location of wireless infrastructure is incorporated into the exemplary development standards contained in the *Countywide Model Wireless Telecommunications Ordinance*. In addition, a *Countywide Model Lease for Wireless Telecommunications Installations* and accompanying documents have been prepared specifically to guide local governments through the leasing process.

At workshops held during the development of the model ordinance, representatives of wireless service providers and tower companies expressed an interest in leasing public properties for the purposes of constructing infrastructure to provide improved services for their customers. Thus far, however, local governments in Pinellas County have entered into only a few such agreements.

It is recommended that interested local governments establish a marketing plan to actively advertise and market publicly-owned properties to the wireless industry. The enhanced tracking system proposed in this document is designed to complement this process. An accurate geographic database can provide local governments the means to identify areas of the county where infrastructure coverage is lacking, or conversely, areas where multiple new facilities have been installed in response to market demand. Nearby public sites appropriate for leasing to wireless service providers can then be identified and marketed.

C. Property Tax Assessment

Many types of wireless telecommunications equipment, including new antenna support structures, antenna attachments onto buildings and water tanks, and colocations onto existing antenna support structures, are subject to property taxation and should be assessed accordingly. Nationwide, it is common for some affected departments within local governments to be unaware of new antenna and ground equipment installations in their communities. Maintaining an accurate database of new and existing antenna and ground equipment installations is critical for optimal data management for taxing purposes.

It is difficult to obtain an accurate picture of wireless infrastructure in Pinellas County under the current system, due to the fact that tracking of facilities for permitting and tax assessment is fragmented. The Pinellas County Property Appraiser's Office (PAO) uses permit information provided by local governments to locate and assess the facilities. This information is frequently incomplete, and the PAO must periodically send letters to the jurisdictions requesting updated information. Should assessors come across any unpermitted facilities, they are recorded and taxed, but local governments are not notified of their existence. PAO records can only be accessed by departmental staff, and are separate from the official countywide database maintained by the Pinellas County Planning Department. Coordination between the two departments takes place only informally on an annual or biannual basis.

While local government representatives interviewed for this study have reported that there are no major problems with either untaxed or unpermitted facilities, the difficulty in verifying these statements points to the fact that better coordination of wireless facility tracking is needed. A centralized database that consolidates the information already being collected, and which is made available to all parties, would allow jurisdictions to state with confidence that every facility has been counted.

D. Wireless Internet Services

A growing number of local governments are investing in wireless Internet services, turning downtowns, tourism districts, or even entire cities into Wi-Fi zones. This may be accomplished either by deploying and maintaining the equipment using public staff, or more commonly, by partnering with private-sector providers. Many communities offer Wi-Fi services at no cost to the community, in an attempt to attract new businesses, residents, and visitors. However, some local governments charge for the service as a source of public revenue.

Nationally, there are numerous examples of local governments who have embarked on deploying such systems. Denver, Philadelphia, and San Francisco have begun to provide

citywide high-speed wireless Internet coverage. Locally, both St. Petersburg and Tampa have committed to developing Wi-Fi networks for their downtowns.

A local government can, individually or in partnership with other governments, contract with a private wireless services provider to offer Wi-Fi access. The contract can take the form of a blanket lease agreement for a set monetary value allowing the Wi-Fi provider to install the needed access points on any publicly-owned parcel. Alternatively, it can consist of a blanket lease agreement in which the Wi-Fi provider pays a service fee to the local government in return for installing equipment in the right-of-way or on publicly-owned properties. If the local government desires additional guidance through the process, consultant firms such as CityScape can be retained to assist with negotiations.

Each Wi-Fi antenna has a limited service area, requiring many to be deployed throughout the community. The small, usually box-shaped antennas can be mounted unobtrusively on light poles and traffic signal poles within the right-of-way. Residents are typically charged a set fee per month, competitively priced with other local Internet providers. The fees for the service can be combined with water or other utility services for which the local government bills residents each month, or be billed separately for a small additional fee.

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APPENDIX B

Sample Letter and Information Form for Wireless Industry Representatives

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<<Date>>

<<Address>>

Dear <<Name>>,

The Pinellas Planning Council (PPC) and Pinellas County Planning Department are happy to announce the launching of a new initiative to develop a comprehensive countywide database of wireless telecommunications infrastructure information. The county government has been collecting such data since the late 1990s, but the information on many facilities is incomplete or in need of updating.

Data collected from the wireless industry will be used as a planning tool to complement public policy. Using the collected data and scanned documents, local planning staff members will be able to respond to inquiries from the industry and community quickly and accurately. The site inventory, maps, and directions identifying the location of the sites will aid staff and appointed and elected officials when touring a site prior to a public hearing. This same data will assist the wireless telecommunications industry in locating colocation and antenna attachment opportunities on existing facilities. The data will also serve as a cross-reference for verifying information on permit applications for new wireless infrastructure, and will save time when applicants require a site evaluation.

The goals of the initiative will only be achieved through your cooperation and willingness to assist in the collection of the data. Attached please find the *Wireless Telecommunications Data Information Form*, which we are requesting that you complete for each facility your company owns within the boundaries of Pinellas County. We understand that some wireless service providers or tower owners may own a significant number of facilities, and that providing this data may seem a daunting task. But the benefits of the database will be far-reaching for both the industry and for local governments, and we will be happy to help establish timetables for the data collection to meet the specific needs of your organization.

In the future, a completed *Wireless Telecommunications Data Information Form* will need to accompany each application for new wireless telecommunications infrastructure installations. The form will be distributed to local governments for inclusion in their application packages.

If you or another representative of your organization has any questions about this project, please contact us at (727)464-8250. We will be happy to further discuss our goals and objectives, establish a timeline for data collection, or make an appointment to speak with

you in person. Thank you in advance for your time and willingness to work with the PPC and Pinellas County Planning Department on this project. We look forward to working with you to develop this valuable resource.

Sincerely,

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WIRELESS TELECOMMUNICATION DATA INFORMATION FORM					
PPC Contact_____			Phone Number_____		
Please return to: The Pinellas Planning Council, 600 Cleveland Street, Suite 850, Clearwater, Florida, 33755-4160					
Date of Submittal_____			Projected Installation Date_____		
SITE INFORMATION					
Type of Wireless Facility_____			Pinellas County Parcel I.D. No._____		
Name of Property Owner_____			Subdivision Block and Lot_____		
Address of Facility_____					
City_____		State_____		ZIP_____	
Latitude (NAD 83)___	Longitude (NAD 83)___	Above Ground Level (AGL)___		Elevation of Structure___	
CUSTOMER INFORMATION					
Licensed Entity Name_____		Service Type (PCS, SMR, etc.)_____			
Contact Info	**Contact Name**	**Telephone**	**Fax**	**Web Site**	
Facility Owner(s)					
Real Estate/Site Acquisition Mgr.					
5Site Management Firm					
Local Planning & Zoning Agency					
Local Building Permit Agency					
GROUND SPACE					
Location of Equipment: Indoor Cabinets __ Outdoor Shelter or Base Transceiver Station (BTS) __					
# of Equipment Shelters/BTS Cabinets____		Equipment Shelter/Cabinet/ BTS Dimensions (in feet)_____			
Leased Ground Space Dimensions (in feet) _____					
ANTENNA SPACE AND EQUIPMENT					
Types of Antennas	**Antenna #1**	**Antenna #2**	**Antenna #3**	**Antenna #4**	**Other**
Antenna quantity					
Types of antennas or dish					
Antenna dimensions					
Antenna mount height					
Antenna radiation center AGL					
OTHER SITE DATA					
Zoning of Site_____			Acreage of Site_____		
Land Use of Site_____			Square Footage of Total Leased Area_____		
Types of Antennas	**Antenna #1**	**Antenna #2**	**Antenna #3**	**Antenna #4**	**Other**
Letter from State Historic Preservation Office (SHPO)					
Environmental Assessment Documents					
Site Plan					
Plot Plan					
Structural Plans					
Pictures of Site					