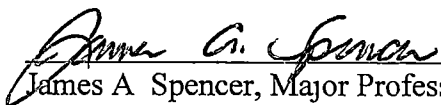
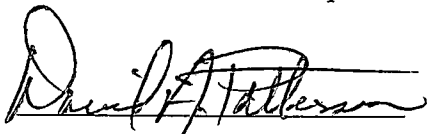


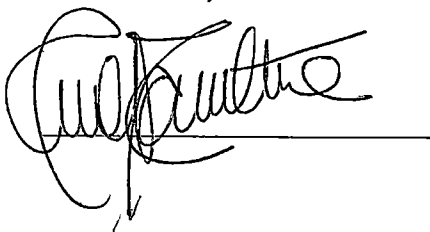
To the Graduate Council:

I am submitting herewith a thesis written by Wendell D Hardin entitled "The Telecommunications Act of 1996 And Its Impact On Local Land-Use Ordinances " I have examined the final copy for form and content and recommend that it be accepted in partial fulfillment of the requirements for the Master of Science in Planning, with a major in Planning


James A Spencer, Major Professor

We have read this thesis
and recommend its acceptance





Accepted for the Council


Associate Vice Chancellor and
Dean of the Graduate School

The Telecommunication Act of 1996
And
Its impact on Local Land-Use Ordinances

A Thesis presented
For the
Master of Science Degree
The University of Tennessee, Knoxville

Wendell D. Hardin
August, 2000

DEDICATION

This work is dedicated to my father and mother, Cecil M. and Laura E. Hardin. They each left my life too early and will long be remembered for their ability to touch people's lives in their own special way. They provided continuing love and instilled in me the confidence to go out and live life to it's fullest.

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ABSTRACT

This study investigates the passage of the Telecom Act of 1996 and its effects on local land-use ordinances. Many communities were not fully prepared to handle the numerous amount of communication tower requests that this piece of legislation was to bestow upon them.

This study is largely descriptive in nature, employing a case study approach in order to document the recent developments of local communities and their reactions to the proliferation of cellular towers within their jurisdictions.

North Carolina was one such State that was quickly consumed with cellular tower applications once the Telecom Act was signed into law. So it is, that the Counties chosen in this study come from the State of North Carolina.

The methods of data collection for this project consist of four types, 1) materials available on-line (Internet), 2) published articles, reports and community ordinances, 3) Interviews with County representatives, and 4) development of case studies. Case studies in this project will examine the history of each county and the Telecom Act's impact on the communities

The result of this study should indicate how a local community's reaction to the Telecom Act of 1996 and their action/inaction has led to an improvement in land-use controls or simply, minor adjustments that have done little in the way of controlling the siting of cellular towers within their jurisdiction.

Table of Contents

CHAPTER 1: INTRODUCTION	1
Wireless Facilities Defined	2
Towers, why so many?	2
Telecommunications Act of 1996	4
The Tools of Zoning	5
Health Concerns	7
Common Provisions	8
Outside local control	11
Preparing for the future	12
CHAPTER 2: Land Planners and their Issues	13
Defining the cellular tower	13
Zoning	14
Use (Primary/Ancillary)	16
Landscaping, Fencing, and Lighting	17
New ordinances and their policies	19
Conclusion	22
CHAPTER 3: SAFETY AND THE LOCAL PLANNER	23
History of Electromagnetic Fields	25
Electromagnetic Energy and Cellular Towers	26
Cellular Standards	28
Cancer – A real risk?	29
Hearing Aids and the Digital World	32
Pacemakers – Are they affected too?	34
Structural integrity and safety	35
Conclusion	36
CHAPTER 4: FEDERAL AND LOCAL LEGISLATION AND LOCAL PLANNERS	38
Federal Communications Commission	38
Licenses	39
Performance Standards	39
Safety Standards	40
Federal Aviation Administration	41
Federal Policy Issues	41
Tower Zoning Moratoria: Today's Hot Topic	44
Where does the general public fit in?	46
The Local Level	46
Conclusion	52

CHAPTER 5: METHODOLOGY	53
CHAPTER 6: ANALYSIS OF LOCAL ORDINANCES AND THE IMPACT OF THE TELECOM ACT OF 1996	58
Guilford County, North Carolina	60
Mecklenburg County, North Carolina	67
Durham County, North Carolina	76
Wake County, North Carolina	90
Land Use regulations and how they compare	101
CHAPTER 7: STUDY EVALUATIONS AND CONCLUSIONS	103
LIST OF REFERENCES	110
APPENDIX	118
VITA	142

List of Figures

Figure 3-1: Exposure from Various RF Sources.....	28
Figure 6-1: Guilford County Scoring.....	61
Figure 6-2: Mecklenburg County Scoring.....	69
Figure 6-3: Durham County Scoring.....	78
Figure 6-4: Wake County Scoring.....	92

List of Tables

Table 6-1: Comparison of Land Use Regulations Concerning Wireless Facilities in Selected North Carolina Jurisdictions.....	102
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Chapter 1: Introduction

On February 8, 1996 President Clinton signed into law a new Telecommunications Act. This act created a response by private industry that caught both local and regional planning agencies off guard. The new issue for many planning agencies became the siting of wireless communications towers. The need arose for many local governments to examine their zoning ordinances and respond in a way that would properly deal with the siting of wireless communications facilities, while not discriminating against or among the wireless companies in their requests to locate within local jurisdictions.

What was unforeseen was the boom in wireless devices (i.e., cellular phones, pagers, two-way radios, and other mobile communication devices) from 1996 to now. Local governments are experiencing more applications for the siting of towers, transmitters, and other communications facilities in direct correspondence to the 1996 Telecommunications Act. This has become a timely issue in zoning and the practice of local planning, as the location of communication towers has brought about public concerns over property values, aesthetics, and safety.

The Telecom Act of 1996 and the ever changing technology within the wireless industry found many planners unequipped to handle the increased zoning applications for tower siting. The new wave of tower applications found planners not well versed in the issue of communication towers due to the relative newness of the issue. This paper is educational in nature while at the same time

analyzing how selected communities have dealt with siting issues. By communicating the fundamentals of wireless telecommunications, developing a framework for planners to amend or develop their local zoning ordinances, and anticipating tower abandonment (when technology moves to lower towers or the elimination of towers all together) in the future, planners will be prepared to effectively deal with wireless facility requirements and the concerns of their shareholders.

Wireless Facilities Defined

In order to understand how to regulate wireless communications facilities it would be helpful to first define **wireless communication facilities**. The purpose of wireless facilities is to solely support the growth of new Personal Communication System (PCS) communications along with the growth of all cellular, radio, and pager businesses. These facilities are the crux of what wireless communicators rely on for delivering their signals to their customers. For this paper, the definition of **Wireless Communications Facility** will be Any towers, poles, antennas, buildings, or other structure intended for use in connection with the transmission or receipt of radio or selected spectrum-based transmissions/receptions.

Towers, why so many?

There are many reasons for the need of so many towers but the underlying reason is best explained by reviewing Ameritech's Web page, "How a Cellular Phone Works, 1996). *A cellular system allows your telephone to move*

untethered across a town or across the United States. When a cell phone user talks on his phone, it transmits radio waves to the local tower, which connects with the local phone network that serves your home and office or another cellular phone. Cellular technology uses individual radio frequencies again and again, through a city or county, to serve a large number of people. Instead of having a few radio channels that everyone must share, like a CB radio, cellular channels are “reused” simultaneously in nearby areas without callers having to share the conversations.

The process begins by carving the service area into small areas, called cells. A cell can range anywhere from one mile in diameter to 20 miles in diameter, depending on the terrain and capacity needs of the system. Each cell gets a radio transmitter/receiver, which is connected, through the cellular company’s switching center to the local network. By lowering the transmitter’s power, the range of the radio frequencies can be shaped to fit a single cell. Those same frequencies can be used in another cell not far away, with little chance of causing any interference.

When the phone begins to leave a cell, the network senses that the signal is becoming weak and hands the call over to the next closest tower that has a stronger signal. This is known as a handoff. The carrier will bill the user based on how long the phone call lasts, also known as airtime. Two different rate periods are commonly used: peak and off-peak. A cellular user pays a flat service charge, which may include a set amount of airtime and then a certain amount per minute over that amount. If a cell phone customer travels beyond

the home cellular geographical area and makes a call on his or her cell-phone, another carrier will provide the service at a premium rate known as a roaming fee. (1)

Due to the way cellular technology works, there is a need for cellular antennas within each local cell. Where there is no existing building or structure with the required height within a local cell area, a tower will be required for service. One reason so many towers are needed is the fact that the technology utilized in cellular radio is much different from that utilized in TV and radio stations. The latter use high power frequencies that are intended to be available over a large land area (hundreds of miles), while cellular phone power outputs range in the low end of transmitted power. Because of the low power output of cellular phones and pagers, they are only able to transmit over a small land area (1-20 miles in diameter). (2) A second reason for cellular tower application increase is the growing number of companies since the introduction of the Telecommunications Act of 1996

Telecommunications Act of 1996

The objectives of the act were to promote competition among communications companies, and to spur private investment and open access to information networks through the creation of a more flexible regulatory environment. There are widespread implications for local governments as "regulators, users and providers of telecommunications services" (Crowell, 1996) (3) Much of the debate taking place in Congress involved lobbyists dealing with

the management of public right-of-ways, local zoning authority over the siting of wireless communications facilities, cable franchising and rate regulation, taxing authority and access (Crowell, 1996). (4) The main focus of this project will be local zoning.

The concern of many local zoning officials was whether or not the then-existing FCC preemption of local zoning authority would be extended to include providers of cellular communications and Direct Broadcast Satellite (DBS) dishes that are found in many communities today. The projections for cellular tower construction were, and still are, a concern. The number of cellular towers in the United States is expected to jump from 18,000 in 1996 to more than 100,000 by the year 2000. (5) Many citizens argue that the aesthetic impact of such towers, antennas, and dishes lowers their property values. There are also some concerns about the electromagnetic emissions from towers and antennas, and whether or not they are safe for location near residential areas.

The Tools of Zoning

While complete denial of cellular towers is impossible, planners are left only with the tools of their trade to address this most pressing issue. These tools, setbacks, height limitations, landscaping, and screening, can go a long way in meeting the needs of citizen concerns of aesthetics and the worries of lower property values

Setbacks can address the idea that moving the tower further from the affected property would allow for more safety as well as lessen an aesthetic

impact. The safety concerns that setbacks allow for are, "fall zones". These fall zones vary by jurisdiction and normally lie somewhere between 20 percent of tower height up to 100 percent of tower height at the extreme end. Many towers are designed to collapse upon themselves, in the event of failure. (6)

Landscaping and screening can be utilized to a great extent to screen and conceal towers and their associated buildings. A review of local ordinances show how far local jurisdictions go when detailing the vegetation to be used in concealing a transmission tower. Some communities go as far as proposing that a cellular tower take on the characteristics of trees. One such jurisdiction is Jefferson Parish, Louisiana. (5) The following are examples from that parish's ordinance:

- 1) The entire facility must be aesthetically and architecturally compatible with its environment. The use of residentially compatible materials such as wood, brick, or stucco is required for associated support buildings, which shall be designed to architecturally, match the exterior of residential structures within the neighborhood. In no case will metal exteriors be allowed for accessory buildings.
- 2) The tower itself must be of such design and treated with an architectural material so that it is camouflaged to resemble a woody tree with a single trunk and branches on its upper part (7)

Health Concerns

While the fear of cellular towers falling has become a heightened issue with the public, there seems to be one that the public fears far more, electromagnetic fields (EMF). Behind aesthetics, EMF has become the second largest concern/opposition communities have when fighting cellular tower siting. Radiation comes in two forms, ionizing and non-ionizing. (8) Cellular operators utilize the latter, which is considered to be less powerful while transmitting. Cellular systems operate in the 800-900 megahertz frequency range while PCS operator function in the 1900-1999 megahertz range. While there are no federal guidelines for what is a safe level of radio-frequency-emitted radiation, there seems to be no urgency to set them. To date, no scientific study has proven a correlation to cancer and non-ionizing radiation that is emitted from cellular communication facilities.

In addition to EMF emissions in the neighborhoods, other concerns have also risen. The latest two are how cellular phones affect pacemakers, and the impact on hearing aid users. The cellular industry has gone as far as funding a scientific advisory group to study the next generation of cell-phones and their impact on pacemakers. (9) The advisory group's main focus has been directed at new digital cellular phones, rather than the most commonly used today, the analog model. Digital pocket-phones will be the wave of the future as the industry turns to digitizing their networks and the concept of personal communications services takes hold. (10)

Hearing aids are not a new topic of concern. When the European countries introduced the new digital technology ahead of the United States, they ventured into the issue of digital interference head-on. Many studies have been undertaken and will be examined in greater detail later, but now it seems US and European experts agree this is not a public health or safety issue, but rather an issue of interference management.

While these issues of EMF seem far beyond a planner's realm, it should be remembered that if a planner is going to deal with a public that educates itself concerning safety issues, so too, should the planner.

Common Provisions

Beyond safety issues, political drawbacks, and aesthetics, there are still the land use considerations of siting a cellular tower. The tower must be dealt with in the same manner as any structure seeking approval in the public arena. Equipment buildings, lot sizes, parking, structural integrity, site inspections, and application requirements are just a few of the issues local planners must consider. Beyond the normal land use issues, co-location and site abandonment become keys in developing land use ordinances that require a very high level of detail.

Many cellular towers come with either small structures for equipment or stand alone storage facilities for transmitting equipment. These structures usually fall within the requirement of meeting setback standards for the lot size and zoning district in which they reside. Depending on whether these structures

are considered primary or secondary within the lot they occupy, the setbacks may be minimum; however, if treated as a principal building on a new subdivided lot, setbacks may increase considerably.

When one thinks of cellular tower sites, one only knows that repairmen and maintenance trunks will not be far behind. While communities have commonly included parking facilities in their development ordinances, few think of them when reviewing site plans for tower sites. The communities that have addressed this issue usually incorporate parking requirements into their tower ordinance as a part of the communication facility plan.

Structural integrity is very important when it comes to convincing the public that the towers are safe. Many communities are requiring that an engineer certify cellular towers according to either the Telecommunication Industry Association or the Electronic Industries Association. (11) Inspections of the towers have yet to produce a guideline that could be used by all planning agencies.

Application requirements vary from municipality to municipality and can range from little to no zoning restrictions to an extensive permitting process that may require multiple hearings and public reviews. A community may go too far with its' application requirements and make the permitting process impossible. This, in turn can lead to costly litigation

Co-location has become the latest buzzword for communities dealing with the proliferation of towers. It now appears that co-location could be the industry's strength in penetrating urban areas that were once thought unpenetrable

Planners utilizing co-location find it to be an effective tool in lowering the number of towers being sited in their jurisdiction. The lower numbers are not caused by a denial of permits, but rather the cooperation of competing companies building sites together or one company modifying an existing tower to occupy a competitor. Before planners think that co-location is the answer to their siting issues, they should be aware that cellular technology does not always allow competitors to coexist on a tower due to system requirements. It must be remembered that each cellular system is not a copy of its' competitors. If the site offered for co-location fails to fall within the engineering specifications of the company asked to co-locate, then a new tower may need to be built. An answer to the failure of co-locating on other towers can be supplemented by co-locating antennas upon existing structures such as a church steeple or attaching to the side of a building that may meet the height requirements of a particular cellular company. (12)

How soon will a cellular/PCS company abandon a cell site and tower? The community planner should take this into consideration. Many times the design of a cellular system requires the realignment of some of the cell sites. Is the cellular company responsible for removing the tower and associated equipment? If so, how long before they must remove it? Who pays for the removal? These are real costs to a community and should be factored in when designing an ordinance that will address the complete impact of a tower siting.

Outside Local Control

The Federal Communications Commission (FCC) and the Federal Aviation Administration (FAA) are the outside bodies that are involved in overseeing construction, siting and performance of cellular towers. A non-governmental body involved in setting the limits of exposure to radio frequency (RF) is the American National Standards Institute (ANSI). ANSI is not only concerned with cellular sites, but also with all transmission devices and facilities that deal with RF limits. (13)

Matters of physical safety have compelled the FCC and FAA to institute stringent controls on construction, tower markings, and the lighting of cellular towers in proximity of airports or in line of runways or flight paths of aircraft. The FAA requires extensive review of site plans before ever approving construction of cellular towers. Maintaining the visibility standards of the FAA requires that towers be painted in alternating colors of aviation orange and aviation white. Inspections are done on a regular basis to observe if fading is occurring. The FAA requires any tower over two hundred feet to be equipped with warning lights and an emergency backup power system. Companies found not complying with these standards are faced with stiff fines. (14)

Beyond construction and performance standards the FCC finds itself in the position of promoting to a certain extent, the development of cellular systems through its auctioning of radio spectrums. As mentioned in the beginning of this chapter, the FCC has been previously petitioned to offer PCS licensees a exemption from local control. However, not all PCS/Cellular providers promote

this position of the Cellular Telecommunication Industry Association (CTIA).

Recently, Pacific Bell's Phillip Millenbach, AICP, stated the following concerning PacBell's position on exemption, "We think it's in our long term best interests to work with local communities we serve and not try to circumvent their authority".

(15) So far, that exemption has not been granted.

Preparing for the Future

While the PCS/Cellular carriers prepare for the siting controversies by going to outside experts in the field of land use planning, it is time for the local planner to understand the consequences of their actions in drafting new ordinances that regulate cellular towers.

The third-party firms that the industry hires will be basing their siting concerns on topographic efficiency, accessibility of roads, electrical power, access to leasable land, telephone interconnect, preexisting screening potential, compatibility to adjacent land uses, existing zoning, and a site that offers the largest area of transmission quality.

Meeting the needs of the PCS/Cellular carriers is where the challenge lies. The local planner will be required by his community to preserve the aesthetic integrity, property values, health and safety concerns of citizen groups, and at the same time, provide for a business friendly environment. If the local government can handle these and all associated issues, federal intervention can be avoided. It will not be an easy task, but therein lies the challenge.

Chapter 2: Land Planners and their Issues

When reviewing various land use ordinances it is easy to find the common tools of enforcement utilized to deal with the explosion of cellular towers and the requests to place them throughout the community. The zoning tools most commonly used are districts, uses allowed, minimum required lot size, required setbacks, height restrictions, landscaping, lighting, parking, co-location, abandonment, permits by rights/standards, and site plan review. The key to interpreting these tools is understanding their definitions. But before looking at how various municipalities define their tools, how do different communities define cellular towers? To get a contrast of how communities define cellular towers, we will use Charlotte/Mecklenburg County, North Carolina and Buncombe County, North Carolina's definitions to observe the contrast in how municipalities view cellular towers.

Defining the Cellular Tower

Charlotte/Mecklenburg County's definition expands beyond just the tower to include various aspects of a wireless communication facility as mentioned in chapter one of this study. The Charlotte/Mecklenburg ordinance defines the facility as, "Cellular telephone transmission facilities including, but not limited to towers, masts, antenna and related antenna support structures..."(16) Buncombe County's definition of cellular towers falls under the definition of '**Communication Towers**'. The ordinance

states, "Communication tower, means a tower or other structure that supports one or more antennae utilized for radio or television broadcasting or for two-way radio or television communication, but does not include any structure or device that is less than ten (10') feet in height as measured from the base". (17) The definitions sound quite similar but one ordinance clearly utilizes the term cellular, while the other defines a grouping of varying tower types. This is not necessarily bad, since the smaller municipality, Buncombe County may not have the resources to single out specific tower types in separate ordinances for enforcement purposes. The size of the jurisdiction will play an important role in their definition of what a cellular/communication tower will be.

Zoning

Zoning districts are another way of restricting the placement of wireless communication facilities. Many communities have chosen to totally restrict cellular towers from residential districts. Some jurisdictions even restrict the distance a tower can be from a residential lot. An example of this is Guilford County, North Carolina. A section of Guilford's ordinance states the following:

- 1) In the GO-M, GO-H, HB, CP, LI, HI, and PI districts the tower shall be a minimum of one hundred (100') feet from any residential zoned property. (18)

However, there are communities that allow cellular towers within residential districts. One such community is Charlotte, North Carolina. The Charlotte

ordinance, while allowing towers in residential districts, can be quite difficult to interpret. One example of this can be found in Charlotte's development ordinance, Chapter 12, Section 8. It states as follows:

8) Cellular telephone transmission facilities including, but not limited to towers, masts, antenna and related antenna support structures are permitted above (or below) the height limit in any district. Cellular telephone transmission facilities may be constructed up to a height of 40 feet in any zoning district, and need only to comply with the underlying zoning district's separation standards concerning setback, side and rear yard. Lots and buildings thereon must conform to the minimum area, height and yard requirements for the district in which they are located unless otherwise indicated by subdivision (a) below. If the facility is above 40 feet in height and is located on a lot in or adjacent to residential district, the facility must comply with subsection (7) above. The maximum required separation for cellular telephone transmission facilities from any adjoining property line in any zoning district shall be 200 feet. The facility plant and/or any related support building shall be allowed in accordance with the provisions of Section 12.504.

a) Cellular telephone transmission facilities are permitted above (or below) the height limit in any zoning districts as an ancillary or secondary use on a site where another use is already established as the principal use of the property, such as a school, church, multi-family residential complex, shopping center, office building, commercial or other similar use. In this case, the cellular facility shall not be required, regardless of the underlying zoning, to separately comply with the normal district standards dealing with lot area, height and yard requirements as well as frontage on a public street and subdivision regulations so long as the principal use complies with such requirements for the underlying district nor shall the facility be required to comply with requirements of the tree ordinance. For lots in or adjoining a residential district, cellular facilities may be constructed over 40 feet in height provided that the minimum setback, side and rear yards adjoining the residential zoned property are increased by one foot for each foot of facility height in excess of 40 feet, up to a maximum required separation of 200 feet. Separation from adjoining non-residentially zoned property shall be controlled by the adjoining property's minimum separation standards concerning setbacks, side and rear yards, as appropriate. For example, if the cellular facility is located upon

residentially zoned property and is 100 feet in height, and the adjoining property to the rear is zoned O-2, the rear yard separation would be 40 feet. (19)

In addition to subsection (a) there also exists subsection (b) and (c), showing that zoning documents can become quite cumbersome. While Charlotte's development ordinance is very detailed, it is a clear example of just how individually different communities regulate the placement of cellular towers

Use (primary/ancillary)

The term 'use' seems to be used quite often in various interpretations that only those aware of a current development guide of a particular community would understand. If an area is zoned for commercial development, then the 'use' is related to how that area is zoned. This is one application of how communities recognize 'use'. Another is whether the property has a prior use on it, better known as a primary or original use. When a community develops the guidelines for the initial use of a property there is usually set standards for how that property is divided based on use. In Charlotte/Mecklenburg County, North Carolina a minimum lot size of 8000 sq. ft. is required. (20) If a cellular operator wishes to place a tower upon a property where another use exists and the tower is considered a secondary/ancillary use, then the minimum lot size is waived. However, other development standards such as height, setback, and accessibility are still requirements that must be met. If the current ordinance does not allow for secondary uses upon a property, then the lot will have to be

subdivided again and only if the lot size is large enough will the applicant be successful in subdividing the lot.

One example of how a community defines a secondary use is found in Article IV, Definitions of the Zoning Code of Rock Hill, South Carolina. A secondary use in the Rock Hill code is known as an 'accessory' use and is defined as follows:

Accessory: As applied to a use of structure, means customarily subordinate or incidental to, and on the premises of such use of structure. As applied to accessory uses and structure, the words "on the premises of" mean on the same lot or contiguous lot in the same ownership. (21)

Depending on how the regulating community sees primary and secondary uses, it can determine whether or not its' community will allow tower placement within the existing zoning districts and how that placement will dot the landscape.

Landscaping, Fencing, and Lighting

Many ordinances address the issue of visual impact depending upon the intensity of the use and the zone in which that use lies. The tool often used to address visual aspects by many communities is that of "bufferyards".

Bufferyards would include how an area is landscaped, fenced, and in many instances, lighted. While the main concern may be aesthetics, safety is also implied with the use of bufferyard requirements. Bufferyards are not explicitly used with communication towers. Generally, there is a set of standards, which the municipality will utilize. One example of this, Spartanburg County, South

Carolina, outlines their requirements for bufferyards in section 3 of their Development Standards Ordinance. The opening paragraph is stated as follows:

3.20 Bufferyards

An improved bufferyard is a portion of a yard, which contains fences, walls, berms, and plantings located along the perimeter of a parcel of land to lessen the impact of noise, land use intensity, and light on adjoining property. The area used in the bufferyard must be a portion of the property under development and may be a portion of the rear or side yard requirements of this Article. Bufferyards are inclusive of applicable setbacks. The yards' depth shown in Illustrations 3.2 are the minimum required. No development including accessory buildings, parking lots or drives may be located in the improved bufferyard. (22)

Spartanburg County goes on to provide explicit detail in what materials would be utilized within the bufferyard. While many communities provide this detail, Spartanburg County goes one step further to even explain what level of maintenance should be provided within the bufferyard. Section 3.20.8 is stated as follows:

3.20.8 Bufferyard Maintenance

Maintenance of the required bufferyard shall be the responsibility of the property owner and all such yards shall be maintained so as to assure continued buffering. Dead trees shall be removed; debris and litter shall be cleaned; and plantings, berms, fences, and walls shall be maintained at all times. Where walls and fences are utilized, owners should give due consideration to allowing enough distance between structure and property line order to properly maintain the structure(s). Dead plant materials do not have to be replaced if the quality of the bufferyard is not degraded. Failure to maintain a bufferyard is a violation of this Ordinance, and may be remedied in the manner prescribed for other violations. No bufferyard may be removed without suitable substitution which shall be approved by the Planning Commission. (23)

Development ordinances can go from the mere mention of bufferyards to the detail we find in the Spartanburg County Ordinance. While landscaping and

fencing are mentioned quite often in the Spartanburg County Bufferyard Ordinance, little is detailed in the way of lighting. While most development ordinances will address some sort of lighting, usually outdoor lighting, it is the Federal Communications Commission that dictates the level of lighting when it comes to communication towers. This ownership of lighting has left many communities to include lighting in their development ordinances in very general terms. One such example is the City of Greensboro, North Carolina:

30-5-1.1 Outdoor Lighting

Outdoor lighting structures shall be located, angled, shielded, or limited in intensity so as to cast no direct light upon adjacent property and to avoid the creation of a visual safety hazard to passing motorists (24)

The description within this section of the Greensboro ordinance is so general that a cellular operator may comply with the FCC's requirements but find himself at odds with the local municipality.

New Ordinances and their Policies

The tools that have been defined and reviewed to this point are tools that have long been utilized by local planning agencies. However, as communication towers become more prevalent, there is the need for new tools. Two tools that have recently been written into existing and new proposed amendments/ordinances are co-location and tower abandonment. Co-location is being used in new amendments/ordinances in order to pressure the Cellular/PCS operators into agreements with each other to construct communication towers

with the installation of more than one operator per tower. To compare how co-location has been implemented in new and existing ordinances a review of Columbia, South Carolina and Lenoir, North Carolina's ordinances can provide an insight into what is developing at the local level. The City of Columbia has defined co-location as:

(K) Co-location. At the time of the zoning permit application for a free standing tower, satisfactory evidence shall be submitted that alternative towers, buildings, or other structures are not available for use within the applicant's tower site search area that are structurally capable of supporting the intended antenna or meeting the applicant's necessary height criteria, or provide a location free of interference from other communication towers. (25)

The City of Lenoir addresses co-location in the following manner.

910.1 Communication towers in residential zoning districts:

910.12 The tower shall be designed and constructed to permit the co-location of one or more additional users;

910.2 Communication towers in non-residential zoning districts:

910.21 The tower shall be designed and constructed to permit the co-location of one or more additional users; (26)

While it is obvious that the difference in the two ordinances is that the city of Lenoir went to the detail of defining a difference between residential and non-residential identification, it failed in requiring the cellular operator to provide sufficient evidence in the operator's attempt to co-locate on another operator's tower. While these were only proposals at the time of research and not final amendments or ordinances, it must be conveyed that ordinance interpretation is key. If a city wants co-location to be a requirement, then it must not only require

the cellular operator to construct towers that can withstand co-location, it must also ask the operator to first seek out other towers to locate on before building their own.

The second new regulation, which has found its way into the zoning domain, is the issue of '**Abandonment**'. The feeling in many communities is that communication towers are unwanted structures, adding the concern of what will become of them once the cellular operator no longer requires them. (27) This concern has Planning Agencies addressing the issue within the text of their current or proposed ordinances. The City of Columbia, South Carolina has adopted the following text as their definition of abandonment:

(i) Abandonment. A tower that is no longer used for communication purposes must be removed within 120 days of the date it is taken out of service. (28)

While abandonment seems to be abated, where in the text does Columbia address the notification issue? The city has identified that once the tower's purpose of being a communication tower has been terminated it must come down within 120 days, however, the mechanism for notification fails to appear within the text of the ordinance. The same problem exists within Buncombe County, North Carolina's proposed amendment concerning abandonment. The proposal before Buncombe County reads as follows:

Article V. Removal Required at Termination of Use

Any tower erected under a permit issued pursuant to this Ordinance must be removed within sixty (60) days of the date upon which it ceases to be in active use. (29)

Conclusion

Communication towers have required the planning community to become more aware of its tools and creators of new tools. Planners must be aware that controlling wireless communication facilities within their jurisdictions requires a comprehensive understanding of those tools available to them while at the same time, continually searching for new ways to plan for their community's best interest.

Chapter 3: Safety and the Local Planner

Safety has recently become one of the keys in dealing with the siting of cellular towers. Citizen groups and opposers alike have brought safety to the forefront of the siting issue. Anytime a concern about safety arises in dealings with the public; emotions have a tendency to flare up. These emotions can skew a planner's objective when handling outside zoning requests. These emotions can alter political opinion, and this opinion can halt zoning procedures with only a slight hint of public concern. Once a citizen's group opposes a tower siting due to safety, the planning board will be required to review a zoning permit request much more closely. The board's decision can be made easier if the planning agency responsible for the zoning requirements is educated in understanding not all safety concerns brought up by the public are concrete concerns.

The safety opposition has a strong appeal to citizens and their concern for their families and property. Politicians cannot take these worries lightly, and, neither can the land use planner. The fears of cancer, pacemaker effects, hearing aid interference, and structural integrity of a tower are all valid safety issues, if they truly exist. If they do exist, to what extent do cellular towers cause them? What does research tell the land use planner about these concerns? If the local planner is going to append or rewrite his local zoning ordinance to address the onslaught of cellular towers then he must be informed about the safety concerns of the public.

Three of the safety issues that opposition continues to point out are tied together by one common component, electromagnetic fields (EMF). Cancer has been the biggest fear and the one safety issue, which has taken cellular towers to the task. A few cellular carriers have found themselves in court battles over the issue of EMF emissions and cellular devices. The cellular devices are being targeted as the root cause of cancer in these cases. EMF emissions from cellular devices are also considered to cause trouble with hearing aids and pacemakers. Research is ongoing in all three of these areas of safety and the local planner must seek out this research and study the results.

The fourth common safety concern of those opposing cellular tower construction is the towers' structural integrity. While a cellular tower is regulated from the federal level, the local planner has the ability to take one more step in reviewing the structure and determining what local precautions can be taken to ensure the public's safety. Setbacks are a key factor here. The cellular carrier will be asked to prove the structural integrity of his tower, and from this the planner will determine the required setbacks for the public's safety.

The key to understanding the safety issue and how to attack it would be best approached from a historical perspective. The concern of electromagnetic fields is not unique to cellular towers and devices. Local planners have been dealing with this issue for well over a decade. Most land use planners are not aware of how or where the EMF issue began. The earlier parts of this chapter will be dedicated to informing the land use planner of the EMF issue. The remaining will be dedicated to understanding what is going at the local level

concerning the issues of cancer, hearing aids, pacemakers, and structural integrity of the cellular towers being placed.

History of Electromagnetic Fields

How did electromagnetic fields become such a large concern? It appears that a Harvard-educated experimental psychologist, Nancy Wertheimer, might be the person who initiated the issue. In the spring of 1974, Wertheimer began searching the streets of Denver, Colorado for evidence of what might be causing childhood cancer. What Wertheimer found was a relationship between children who had the highest levels of cancer and the proximity of high-current electric power lines. Wertheimer spent the next two years analyzing her data and verifying the methodology utilized. Wertheimer acknowledged that she attempted to stay quiet during this time of analysis. Wertheimer puts it best, "I didn't want people getting anxious." (30) In 1979, Wertheimer along with co-author, Ed Leeper, had their research published under the title, "Electrical Wiring Configurations and Childhood Cancer." (31)

Scientists gave little attention to Wertheimer at first. However, a decade later, Paul Brodeur, a writer for The New Yorker made Wertheimer's research his catalyst in a three-part series on radiation. (32) Brodeur returned to the topic of radiation in The New Yorker again in 1990 and 1992. It appears Wertheimer's research with the writings of Brodeur launched a flurry of government activity in assessing the hazards of electromagnetic fields (EMF). The particular interest was with high-voltage power lines and "feeder" power lines, which go from house

to house. The cost to the public from this heightened anxiety over EMF has exceeded \$1 billion dollars annually, according to a July 1992 article in the journal *Science*, written by H. Keith Florig (33) Florig's calculations included the decrease in real estate near high-voltage lines the cancellation of or a moratorium on new power transmission projects, and the cost of active efforts to reduce EMF exposure (34) What a benefit it would be to society if scientists could come to a consensus on whether EMF is either a significant health hazard or not one at all.

The National Research Council (NRC) committee on EMF continuously reviews the copious body of research concerning EMF which to date covers some 13,000 journal articles. The NRC believes the literature supports the notion that electromagnetic fields are biologically harmless at the levels proposed by the Federal Communications Commission. The history of EMF study finds little in the way of how cellular tower and their emissions affect those located in their proximity. The point of gaining knowledge of EMF history is to realize that while there exists true questions of EMF exposure and their consequences, many of the concerns are generated by emotion and not science.

Electromagnetic Energy and Cellular Towers

Many times cellular companies refer to radio frequencies (RF) as the energy transmitted from their cellular towers and cell telephones RF is a form of electromagnetic energy better known as, "non-ionizing," which is the same kind of energy in ordinary light and television signals Some mistake this for a more

harmful energy source, "ionizing" radiation. Examples of ionizing radiation are x-rays one might receive at a medical facility.

Cellular towers are no different from all electrical devices, they produce electromagnetic fields, those invisible fields that surround any electric current. These fields can be found all throughout nature and are even found in the chemical reactions within the human body

Cellular towers are known to locate their antennas at or near the top of the tower, typically at a height of 150 to 300 feet. This is key since radio frequencies lose their power the farther they get from the source of transmission. The following is a quote from the FCC about excessive radiation exposure near cellular towers:

"As with all forms of electromagnetic energy, the power density due to a cellular transmitter decreases rapidly (according to an inverse square law) as one moves away from the antenna. Consequently, normal ground -level exposure would be much less than exposure very close to a base station antenna. Measurements have shown that ground-level power densities are well below limits recommended by currently accepted RF and microwave safety standards."(35)

What must be realized is that the transmission power levels of cellular towers are very low to begin with. A typical tower may emit 100 watts of power or less. The industry prefers to keep the wattage levels in urban areas to as low as 10 watts if possible. What the public may not know is, a television tower may emit up to 5 million watts, while a commercial radio station at times operates at levels of 100,000 watts or more. Many local police and fire departments have towers that can produce up to 500 watts of power. (36)

Cellular Standards

The standards that cellular towers fall within are not controlled by just the input of the FCC. The standards are a composite of exposure guidelines offered by the Institute of Electrical and Electronic Engineers (IEEE), the American National Standards Institute (ANSI), and the National Council on Radiation Protection and Measurements (NCRP), an independent organization chartered by Congress.

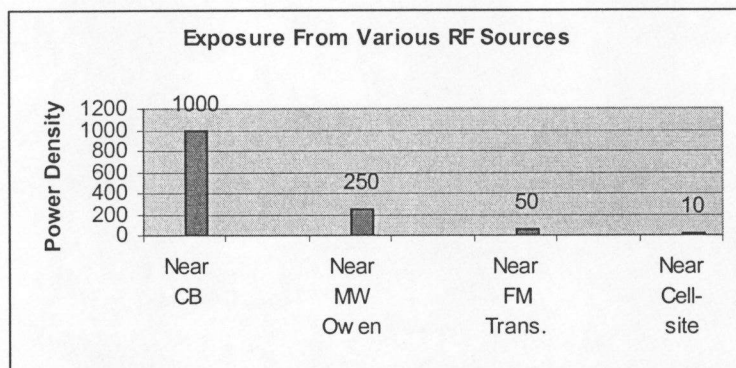


Fig. 3.1 Exposure from various RF sources
Source: American National Standards Institute

An example of the standards and the numbers that are reported as safe can be seen in the chart below (Fig. 3.1).

RF exposure as indicated by figure 3.1 clearly reflects that as measured, the exposure from a cell-site is lowest among like electrical devices. The FCC believes even in the "worst-case" scenario of multiple transmitters at a single site, all operational at the same time, "in order to be exposed to the ANSI-recommended levels for cellular frequencies, an individual would normally have to be within several feet of the antennas and in the direct transmission path. This

makes public exposure in excess to the ANSI guidelines very unlikely." (36) The industry takes special precautions to assure its maintenance personnel and others are limited in occupational exposure, and to keep the public away at a safe distance, fencing and other barriers are utilized.

Cancer A Real Risk?

Often a cellular service provider finds himself in difficult situations. One of these situations deals with the concerns of radiation and the perceived notion of cellular towers causing cancer. Many times a cellular company arrives at what is thought to be a routine zoning hearing only to find an organized group of citizens opposing their efforts to erect a new communications tower. One of the largest concerns appears to be the fear of cancer caused by the new tower.

The fear of cancer has now reached beyond the cellular tower and to the cellular phone. The flames of the cancer scare related to cellular portable phones were expanded by the national media, touching off hysteria as earlier as 1993.

Citizens always looking for a reason to deny a cell site, use the perceived risk of cancer causing radiation as just one additional argument for site denial. For example, in West Hollywood, CA, two cellular providers were denied sites because a woman testified that emissions from cellular antennas killed one of her dogs and gave her other pets headaches. (37) Like it or not, when a citizen brings such an emotional issue to a public hearing the cellular provider is hard pressed to turn such a negative around

What is needed is guidance from scientists and the courts. There are Standards' bodies but even those are continuously questioned. The citizens that come before the planning boards and let the fear of cancer control their emotions are not well informed concerning the issues of EMF. To planners however, the uninformed citizen can present a challenge. Even when the planner has the latest information to share with the citizen, the citizen's fears can still dominate their opinion concerning towers. What is important here is that the planner listens to the citizen's concern and with all the information available to him, he makes the rational decision, not the emotional one.

Remember that the earlier portion of this chapter reviewed the history on the concern of EMF. Recently, the world's largest group of physicists, the American Physical Society, said it could find no evidence that the electromagnetic fields that radiate from power lines cause cancer. (38) This statement is the strongest to date that down plays the effects of power lines and electromagnetic fields and their interaction. The society said, "groundless" public fears about a possible link between power lines and cancer were diverting billions of dollars into mitigation work. More serious environmental problems are neglected for lack of funding and public attention." (39) Robert Park, a physicist at the University of Maryland, and society spokesperson, said the group felt the time had come to take a position because, "public concern was growing even as the epidemiological evidence was shrinking and becoming fainter." (40)

While there may be the stance against EMF and power lines, what about cellular towers and EMF? The cellular industry has responded by authorizing a

long-term research program. With the industry, running the program, what precautions are being taken to protect their research from being labeled industry friendly? The industry has gone outside and has selected a three-member committee to advise it. They are a selected group of respected independent scientists who will be managing the ongoing research activities. As a first step in the long-term research program, the oversight committee awarded grants to the Schools of Public Health at the University of California at Berkley and the University of Alabama at Birmingham to help perform an integrated assessment of existing data. By the spring of 1995, a number of major research contracts were in process. (41)

And what about the courts? As citizens find they can fight the siting of a tower, they are now opposing the use of the phones themselves. Lawsuits are now being filed against the phone manufacturers with the premise that the handset itself is now causing cancer. On May 17, 1995 this premise took a step in favor of the cellular industry. In a Florida brain-cancer trial, a federal judge dismissed the lawsuit that questioned the safety of cell phones because the argument was not supported by scientific research. In late 1992, H. David Reynard filed a wrongful death suit against cellular phone manufacturer NEC Corp. and service provider GTE Mobilnet of Tampa, alleging that his wife's fatal brain tumor was the result of using a cellular phone. The reaction of the cellular industry was stated by CTIAs' President Thomas Wheeler, "This was the case that started it all and had the best chance. But the court threw out the suit on the

very specific grounds that it represented junk science, not supported by accepted scientific or medical research.” (42)

While the courts have now offered their views concerning cellular phones, it must be remembered that court decisions and scientific research have been known to be reversed. This being the case, it is ever important for the local planner to stay on top of industry publications.

Hearing Aids and the Digital World

Another concern which has surfaced in Europe, but has yet to arrive in the United States, at least at the local level, is that of hearing aid interference from the new PCS technology being introduced in the United States. While few planners have yet to experience citizens raising concern over how hearing aids are affected, it will arrive at the local level. When it does, the local planner needs to be up to date in what is going on and what is being done to alleviate the problem of digital communications interference. U.S. and European experts agree this is not a public health or safety issue, but rather an issue of interference management. However the experts see this issue, the public is surely going to see it as a health and safety issue. Now is the time to prepare for this next wave of reasons why towers should not be sited in “MY” neighborhood

The current proliferation of digital equipment and radio frequency emitting equipment means those who use hearing aids are going to continuously deal with the interference issue of the new technology. While the major source of hearing aid interference is from non-radio devices such as florescent lights and

computers, the issue for the local planner is another reason for not allowing tower development. (43) If a planning agency wishes to restrict towers then hearing aid interference is a good start. However, if the planning agency wishes to be more efficient, it will require the service provider to address the issue of interference and how they will manage it.

Wireless service providers and manufacturers in the United States and Canada have agreed that the best tactic in dealing with interference management is addressing it by cooperative inter-industry efforts to obtain electromagnetic compatibility (EMC) This inter-industry view is supported by a General Accounting Office (GAO) study for Congress, and by the Health Industry Manufacturers Association and the FCC before Congress. (44)

To the end of providing a safe EMC device, the Center of Study of Wireless Electromagnetic Compatibility was established in 1994 at the University of Oklahoma with seed money from the wireless industry. This independent center, which no longer exists, assured that all businesses and industries had access to electromagnetic evaluation services. The service was divided into six functions: to evaluate devices for the best design in promoting as little electro interference as possible with external devices, open dialog to address EMC issues, conduct research in resolving EMC issues, educate consumers and users about EMC, coordinate industry efforts in establishing standards, and coordinate inter-industry EMC issues

While interference is a concern, it should do little in the way of blocking zoning permit requests for new PCS providers However, planners should not

take the issue of hearing aid interference lightly. The local planner should become informed about the issue and be able to adequately answer the concerns of the citizens.

Pacemakers – Are They Affected Too?

As discussed previously, many electrical devices are affected by EMF. Just as with hearing aids, it is thought that pacemakers may also be affected. The Wireless Technology Group (WTG), a scientific group funded by the U S. Cellular Industry, has found evidence that the next generation cell phones (digital PCS) may interfere with pacemakers. (45) The study reports that in some cases pacemakers will recalibrate or even stop and start when a certain type of digital cell-phone is placed near the chest. This said, there have been no reports of death or injury by people with pacemakers who use cellular phones.

The WTG's main concerns are directed at the new digital cellular phones, rather than the older analog models, those in the majority today. However, as the new PCS technology begins to reach the masses there is the possibility they will be the most commonly used. (46) While the WTG's findings are reason for concern, it must be remembered that the study did not analyze analog sets, and was sponsored by the competition.

Along with its studies concerning hearing aids, the Center of Study of Wireless Electromagnetic Compatibility has begun to look into the issue of pacemakers. The more studies a planner can utilize, the better he will be able to address the issue of safety.

Structural Integrity and Safety

Cancer, hearing aid interference, and potential pacemaker problems are all serious concerns, but a fear that has real zoning consequences is that of tower height and structural integrity. Many view the transmission tower as a structure that will fall at the slightest breeze or land on a house without warning. Communities are reacting to this threat by enacting setback regulations that force service providers to have 'fall-zones' up to the full height of the tower away from existing structures. While this may quell the fears of citizens, is this practical? In March 1996, Richland County, South Carolina reacted to the misinformation on tower structure and gave a preliminary approval to a 300-foot setback requirement. When in actuality towers are designed to collapse within an area usually no larger than one-half to one-third their actual height. (47)

So how do cellular/PCS providers address the issue of structural standards for transmission towers? One way is by adhering to state building code regulations. For example, in the State of North Carolina there is a section of the code, which regulates the design of towers for wind loading by county. An example would be Gastonia County, North Carolina where section 1205 5 of the state building code designates that the appropriate wind speed design is for 70 mph. (48) This would mean, if a 300 ft lattice tower was to be located in Gastonia County, it would have to sustain wind speeds of 70 mph with gusts up to 76 mph. A sustained wind is recognized as a constant wind speed occurring for approximately two minutes.

Ice accumulation is another safety factor that must be dealt with in the design of tower integrity. Many times towers are designed to withstand 0.5 inches of radial ice accumulation. The ANSI Standard E T A./T.I.A. 222, Revision F paragraph 2 3 16 states that the wind load may be reduced by 25 percent due to the low probability that an extreme ice load will occur simultaneously with an extreme wind load. This is equivalent to 87 percent of the design of basic wind speed. Therefore, a 300 ft. lattice tower which meets the wind loads required for Gaston County and accumulates 0.5 inches of ice, would be able to withstand an average sustained wind speed of 69 mph and gusts of up to 75 mph.

Wind speed and ice accumulations are just two factors in dealing with tower safety. Other issues such as structural stress, tower deflection, and break points are beyond the scope of this study, however, planners need to educate themselves to the issue of tower safety. Many of the local jurisdictions that planners work in have building departments that verify these standards are met. Often though, the planners must address this issue at citizen informational meetings and planning board meetings.

Conclusion

The proliferation of cellular towers is only beginning if all the literature is correct in their projections of tower requirements for the future. It will be the local planner who will have to deal with the public concerning issues of health and safety. Planners must act now if they are to be better informed. It would be easy

for the local planner to look beyond concerns and imply it is the service providers who must address the burdens of health and safety

Chapter 4: Federal and Local Legislation and Local Planners

This chapter allows the reader to understand the regulatory framework the local planner must consider when siting wireless communication facilities. The two areas of research within this study are of the federal level and the local level of regulatory issues. Each level offers a variety of departments, processes, and land-use tools to be dealt with throughout the siting process.

Federal Communications Commission

The Federal Communications Commission (FCC) is an independent federal regulatory agency, which is responsible directly to Congress. Established by the Communications Act of 1934, it is charged with regulating interstate and international communications by radio, television, wire, satellite, and cable. Its jurisdiction covers the 50 states, the District of Columbia, and U.S. possessions. The general objectives of federal telecommunications regulations are to provide efficient use of the electromagnetic spectrum, which is considered a public resource; to develop a domestic telecommunications infrastructure able to provide service on the national level, as well as compete on a global level; and especially in recent years, to provide a highly competitive economic market which spurs technological advances in the telecommunications industry.

The FCC's Wireless Telecommunications Bureau (WTB) handles all FCC domestic wireless telecommunications programs and policies, except those involving satellite communications. Wireless communications services include

cellular telephone, paging, personal communications services, public safety, and other commercial and private radio services. The WTB regulates wireless telecommunications providers and licenses. The Bureau also serves as the Commission's principal policy and administrative resource with regard to federal auctions for the private use of the public airwaves. (49)

The WTB regulates the two primary wireless communications services which are the subject of this Thesis paper: cellular, and PCS. Portions of the frequency spectrum are allocated to specific uses (such as TV broadcast band, cellular, etc.), and specific frequencies within that part of the spectrum are assigned to licensed operators. These procedures are intended to prevent interference or conflicts among various operators or services at a given location attempting to use the same portion of the frequency spectrum.

Licenses

One of the functions of the FCC is to issue licenses to wireless communications carriers. The FCC issues licenses for certain frequency bands of the electromagnetic spectrum and effectively limits the number of wireless communications providers in a specific geographic service area.

Performance Standards

In addition to regulating licenses, the FCC establishes performance standards for cellular and PCS providers. The FCC requires cellular and PCS licensees to provide, within a specified period of time, a coverage ratio of a minimum quality

for either a composite geographic service area or a percentage of an area's population. (50)

The FCC establishes operational requirements for Enhanced Short Message Radio (ESMR) operators. Individual SMR operators are prevented by the FCC from owning another SMR system within 40 miles of its existing system unless that existing system is "fully loaded." A fully loaded system is defined as one which provides service to 70 mobile users per channel. Therefore, in order to accumulate other SMR licenses, an ESMR carrier must demonstrate that a certain number of users are using the existing system on a regular basis.

In 1994, Congress and the FCC determined that all carriers that provide comparable services should be regulated in the same manner. To achieve this regulatory parity, beginning in August 1996, cellular, ESMR, and PCS providers were regulated by the FCC in the same manner as common carriers. (51)

Safety Standards

The American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE) establishes operational safety standards for human exposure to radio frequency electromagnetic fields. These ANSI/IEEE standards are considered "consensus standards," agreed upon by committees comprised of university, industry and government representatives. The FCC currently requires cellular, ESMR and PCS providers to comply with the ANSI/IEEE standards for radio frequency electromagnetic fields as a condition of licensure. (52)

Federal Aviation Administration

Under authority granted by the Federal Aviation Act, the Federal Aviation Administration (FAA) has jurisdiction over the following communication facilities: (1) towers that exceed 200 feet in height; (2) towers that are located within 20,000 feet of a major commercial or military airport; and (3) towers that are located within 10,000 feet of a general aviation airport. The FAA reviews the location and height of such towers and may require them to be painted and/or illuminated to prevent possible interference with nearby airport operations. The FAA also reviews possible interference issues with aircraft-to-ground communications that may be caused by transmission facilities located in or near airport flight paths. Under the requirements of the FAA, wireless communications providers are responsible for filing a notice with the FAA if their facilities are subject to FAA review.

Federal Policy Issues

A.) Federal Jurisdiction

Federal jurisdiction over antenna structures and communication towers derives mainly from several provisions of the federal telecommunications laws (herein collectively referred to as the "Act"). Section 151 of the Act sets forth the Congressional mandate "to make available, so far as possible, to all the people of the United States a rapid, efficient, nationwide, and world-wide wire and radio communication service. " 47 U.S.C. § 151 (1991) More specifically, sections 302 and 303 of the Act give the FCC (Federal Communications Commission) the

authority to regulate communication stations, towers, and other facilities with regard to. coordination and assignment of radio frequencies, interference between users of the radio frequency spectrum, the kinds of facilities to be used with respect to their "external effects" and the quality of the signals emitted from such facilities, the location of classes of stations or individuals stations, the establishment of areas or zones to be served by stations, adoption of record keeping rules related to transmission of energy and communications, and painting/illumination requirements in the interest of air navigation safety. (53)

B.) Local Zoning Of Wireless Telecommunications Facilities After The Telecommunications Act of 1996

Section 704 of the Telecommunications Act of 1996 substantially revised the previous Communications Act of 1934 along with providing new federal standards for the siting of "Personal Wireless Services Facilities." "Personal Wireless Services" including all commercial mobile services (including personal communications services (PCS), cellular radio mobile services, and paging); unlicensed wireless services; and common carrier wireless exchange access services. Under section 704, local zoning authority over personal wireless services is preserved, and the FCC is prevented from preempting local and State land use decisions. However, local government zoning decisions are still restricted by several provisions of federal law. (54)

C.) Limitations on Local Government Zoning Authority under Section 704 of Telecommunications Act

Section 704 imposes limitations on what local and state governments can do. Section 704 prohibits any state and local government action, which unreasonably discriminates among personal wireless providers. Note, however, that the Congressional Conference Report accompanying section 704 states that localities are provided with flexibility to treat facilities that create different aesthetic or safety concerns differently to the extent permitted under generally applicable zoning requirements, even if those facilities provide functionally equivalent services. At any rate, actions which are alleged to unreasonably discriminate are subject to an expedited review process in federal or state court. The new law also prohibits any state or local government action, which prohibits or has the effect of prohibiting the placement, construction, or modification of personal wireless services. Local governments must ensure that any new ordinance they pass does not contain requirements in the form of regulatory terms or fees which may have the "effect" of prohibiting the placement, construction, or modification of personal wireless services.

Section 704 also preempts any local zoning regulation purporting to regulate the placement, construction, and modification of personal wireless service facilities on the basis, either directly or indirectly, on the environmental effects of radio frequency emissions (RF) of such facilities, which otherwise comply with FCC standards in this regard. This means that while state and local governments may study the effects of RF emissions, the local authorities may not regulate the

siting of construction of personal wireless facilities based on standards that are more stringent than those promulgated by the FCC. Section 704 mandates that local governments act upon personal wireless service facility siting applications to place, construct, or modify a facility within a reasonable time. Further, any decision to deny a request must be in writing, and supported by substantial evidence contained in the written record. (55)

D.) Limitations on Local Zoning under Section 253 of the Telecommunications Act

Section 253 of the Telecommunications Act of 1996 maintains, no state or local regulation or other legal requirement can prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service. In the FCC's opinion, Section 253 imposes a limitation on local government zoning authority that is independent of Section 704. However, nothing in Section 253 affects the ability of local governments to impose, on a competitively neutral basis, requirements necessary to protect the public safety and welfare or safeguard the rights of consumers. (56)

Tower Zoning Moratoria: Today's Hot Topic

Some local governments have reacted to the increased numbers of tower applications by either adopting or considering adoption of a brief moratorium or "freeze" on the processing of communication facilities siting applications in order to set up a process for the handling of siting applications or to develop an actual "wireless communications facility" ordinance. The issue of whether moratoria are

consistent with Section 704 of the Act has been challenged in the courts. In 1996, Sprint Spectrum, L.P. sued the city of Medina, Washington over its 6 month moratorium. The court found that the moratorium was reasonable because the city has authority to determine its telecommunications policy and procedure for processing applications. See, *Sprint Spectrum, L.P. v. City of Medina*, 924 F. Supp. 1036 (W.D. Wash. 1996). Despite this decision, the FCC has become very active in questioning zoning moratoria under the guise of procedural intentions.

Section 332©(7)(B)(I)(I) of the Act states: "State and local authorities may not unreasonably discriminate against new entrants into the personal wireless services market " The Wireless Bureau has opined that a local government ordinance that imposes a year-long moratorium on the acceptance, processing or issuance of any permit for the siting or operation of antennae that facilitate the provision of wireless service arguably unreasonably discriminates against new entrants into the personal wireless services market, thus they violate Section 332 as stated above. In the case of a city-imposed moratorium, one possibility may be to accept and process siting applications but only make final determinations once the moratorium is over. This way, new entrants do not lose their place in queue and can reach the market ahead of their competitors who have filed siting applications later on. (57)

If a city were to impose a brief, finite period of consideration or formal moratorium, it would be most effective if the city communicates clearly to wireless service providers: (1) the specific duration of the moratorium; (2) the tasks the

city intends to accomplish during the moratorium; and (3) the ways in which the wireless service providers can assist the city in achieving the stated goals of the moratorium (e.g., providing site plans, maps, co-location studies and other options). Education and open channels of communication appear to be key among most successful city/provider relationships.

Where does the General Public fit in?

To the extent that elected officials reflect the sentiments of their citizenry, they must now undertake broad-based citizen education programs to address the increasing sensitivity of residents to the aesthetics and perceived health impacts of wireless facilities. In some markets, communications facilities are akin to Superfund sites with the requisite claims of decreased property value and health concerns. A national wireless poll conducted by the Tynan Group underscored the basic lack of understanding by the citizenry concerning their basic knowledge of wireless and how it works (58)

The Local Level

A.) Local Permitting Process

Local jurisdictions regulate wireless communications facilities through the permitting process. Most agencies require a discretionary permit, such as a conditional use permit, in order to construct a facility. Whether a permit is processed administratively or requires a public hearing varies among local agencies. Several jurisdictions in the San Diego area, such as the City of San Diego and County of San Diego, have established a two-level review process for

wireless communications facilities. This two-level process enables administrative processing of "minor" projects, and a public hearing process for "major" projects. In general, administrative processing entails lower permit fees and shorter processing times, while the public hearing process, involves higher permit costs and a longer permit turnaround time.

For those jurisdictions with a two-level review process, whether a project is considered "major" or "minor" typically depends on both its type and location. For example, in the City of San Diego, building-mounted antennas and associated equipment rooms are processed by administrative review in all zones, except residential. Most building-mounted antenna proposals on residential uses or within residential zones require a conditional use permit approved by the Planning Commission. Towers and monopoles also require the approval of a conditional use permit by the Planning Commission. (59)

Many jurisdictions require all wireless communications facilities to be processed via public hearing to the planning commission, city council, or other decision-making body, because current land use regulations do not specifically enable a two-level review process.

In reviewing a permit for a wireless communications facility, local planners must consider the issue of land use compatibility. To address this issue of compatibility, wireless communications facilities are subject to local zoning requirements, which are described below.

B.) Permitted Zones and Locations

Local zoning ordinances designate specific zones where wireless communications facilities are either permitted or prohibited. Jurisdictions typically encourage wireless communication facilities to be located in commercial and industrial areas. Most jurisdictions permit wireless communications facilities in all zones through a conditional use permit process. When located in residential and/or open space zones, most jurisdictions typically require a conditional use permit approved by the Planning Commission or City Council.

Some cities prohibit wireless communications facilities in certain zoning areas. For example, the County of San Diego prohibits antenna facilities in special purpose "Ecological Resource Area" zones, and the City of San Diego prohibits locating communication antennas on properties designated as historic sites. The City of San Diego also has a policy of "prudent avoidance," which stipulates that wireless communications facilities, due to perceived concerns about health impacts, should not be located in areas where people would be exposed to them for prolonged periods of time.

C.) Standard Provisions

In addition to designated permitted zones and location, local jurisdictions also establish development standards with which wireless communications facilities must comply. In general, these development standards are specific to a particular zoning district. Local agencies also levy additional requirements not specifically set forth in their zoning ordinances via the discretionary permit

process. Specific conditions of approval are usually included when individual conditional use permits are approved.

D.) Setbacks, Screening and Landscaping

Primary local objectives are to eliminate or minimize the visual effects of wireless communications facilities, and to make such facilities compatible with surrounding uses. To accomplish these objectives, most local agencies require that minimum setbacks, adequate screening, and landscaping are provided for these facilities.

E.) Height

Most local zoning ordinances contain specific height limits for each zoning district. Wireless communications facilities such as towers or monopoles are typically allowed to exceed that height limit, subject to discretionary permit approval. (60)

F.) Co-location

Some communities require applicants to co-locate or share the use of their facilities with other wireless communications providers. In this paper, co-location is defined as locating wireless communications equipment for more than one provider on a single site. There are several factors that determine feasibility of co-location. These include technical factors such as:

1. A tower or building's structural capacity: An existing tower or building may not be able to support weight or wind loads from additional antennas without structural redesign (which may have additional visual impacts). In addition, co-location is problematic when designing the structural capacity of new towers. A provider is able to design a tower which supports the weight and wind loads of its own antennae and equipment, but cannot

predict how much more structural capacity is needed to accommodate antennae and equipment from other users;

2. Radio-frequency interference: Co-location may create signal interference between antennas. Approximately 20 feet of horizontal and vertical separation is typically needed between different antennas. On a tower, the need for separation may have a cumulative effect of adding multiple platforms which may make the tower more visually obtrusive;
3. Mechanical or electrical incompatibilities: Like structural capacity, mechanical or electrical incompatibilities may make it difficult for different providers to share existing or new sites;
4. Technological differences among providers: Wireless communications technology is evolving and may have different configurations in the near future. In designing an original site, it may not be feasible to plan for future co-location. (61)

Regulatory factors which affect co-location include the FCC's geographic service area requirements and any other limitations on tower sharing. Liability also is a factor. Which provider is liable for personal injuries or antenna damage for a shared site?

In addition, co-location may not be visually desirable in certain situations. For example, locating numerous antenna structures on a single site may result in the creation of a visually prominent antenna farm. A single cellular tower may be more visually unobtrusive to the casual observer. Alternatives to co-location would be to provide effective screening of more dispersed antenna sites.

Although there are many challenges to co-location, several cities require providers to co-locate facilities, where technically feasible and visually desirable. The City of Hickory, North Carolina requires permittees to cooperate with other communications providers in co-locating antennas within the city. Hickory requires that permittees demonstrate a good faith effort to share facilities and

accommodate other users. The city does not require permittees to co-locate facilities, if such co-locations would contribute to a substantial technical or quality of service impairment; however, competitive conflict or financial burden are not considered adequate reasons by Hickory against co-location. (62)

Similarly, in Palm Beach County, Florida, in order to encourage co-location, tower applicants are required to send certified mail announcements to all other users in the same area, declaring their sharing capabilities and/or siting needs. Except in cases where mechanical, structural, or regulatory factors prevent them from sharing, applicants cannot be denied space on a tower. (63)

The direct legal implications of co-location are currently not addressed in federal or state statutes. However, because wireless communications facilities typically require discretionary permits, it is within local government authority in granting these permits, to set reasonable project requirements, which may include provisions for co-location.

G.) Accessory Equipment Storage

Wireless communications facilities typically include small, un-manned equipment storage buildings or boxes that house transmitting and other equipment. Exterior equipment storage buildings are typically required to be architecturally compatible and consistent with surrounding buildings and structures, and also may be limited to a specific maximum size in certain jurisdictions. (64)

H.) Public Notification

Most local governments have standard public notification requirements contained in their zoning regulations. As part of the discretionary review process, public notice is required to be provided to all property owners located within a given radius of the project site (a 300 foot radius is typical). In addition, most jurisdictions require the posting of a public notice at designated public sites (such as City Hall or libraries), publishing a public notice in a paper of general circulation, and/or posting a notice on the project site. Public notice is usually required only for those projects, which require a public hearing, and is not required for projects subject to administrative review. The intent of public notification is to give local citizens, organizations, and other jurisdictions reasonable notice and opportunities for input into the permit review process

Conclusion

Federal policies and their mandates have caused very tense times for state and local officials. The Telecom Act of 1996 is one such policy that has caused a divide between federal and local authorities. However, if done correctly, local zoning authorities can achieve their goal of direct control, while at the same time recognizing the need to accept and work with the Telecom Act and its restraints. Teamwork is the solution, obtaining it is up to all parties involved in the wireless facility issues at hand.

Chapter 5: Methodology

The methods of data collection for this project consist of four types of investigation. By examining 1) materials available on-line (Internet), 2) published articles, reports and community ordinances, 3) interviews with county representatives, and 4) development of case studies, the objectives of this project can be met. Case studies in this project will examine the history of each county and the Telecom Act's impact on the communities. The issues and methods surrounding facility sitings, and the future wireless facility issues facing each community will be examined, as described in greater detail in the following paragraphs.

The main sources for wireless communication facilities information are on-line materials and the American Planning Association's Planning Advisory Service. Articles and reports are also becoming more common on this topic, as the issues of wireless facility siting unfold in the wake of the 1996 Telecommunications Act. The literature review critically considers the ordinances, reports, and articles that comprise the short bibliography on the topic. Ordinances are examined paying particular attention to the methods used to regulate facility sitings, the restrictiveness of the regulations, and the compatibility of the ordinances with the Telecommunications Act of 1996. Reports and articles are examined based on their relevance to the project, their observations concerning the Telecommunications Act of 1996, and their assessment of the applicable technologies of the wireless industry.

The counties were chosen for their similarities. First, the counties were among the first to deal with the wireless facility issue due to their proximity to the major highway corridors within North Carolina. Mecklenburg County has a major intersection of two highways which run both North/South and East/West, I-85 and I-77. Durham County finds itself adjoining both I-85 and I-40, while Wake County is the major thoroughfare for I-40 connecting the residents of the state to the North Carolina coast. The last county, Guilford is divided by I-40 going both east and west. Transportation corridors are vital for wireless communications providers as many of the users of cellular and PCS phones use them in their cars.

An additional reason for choosing these four counties is proximity (in the case of Mecklenburg) and ability to access information from Durham, Wake, and Guilford Counties. Meetings and discussions with Melony McCullough, a principal planner with the Charlotte/Mecklenburg Planning Commission, Stephen Sizemore, AICP, Wake County Planning Department, and Helen Youngblood, AICP, Durham County Senior Planner have taken place and a phone interview with Guilford County's Mark Kirstner, Land Use planner, have all been critical in providing much needed information. All have been very responsive and shown interest in the thesis project, and have been instrumental in their help in the development of the case history for each county.

The case histories are developed in two stages. First, the existing conditions prior to the Telecom Act of 1996 are reviewed which includes if an ordinance existed and if so, what were the controls utilized at that time.

The second stage of the case history development is the municipalities' response to the Telecom Act and the development of the current ordinance and the changes that have taken place since the passing of the Telecom Act.

Using the data collected in the research, a table will be designed to show the particulars of how each county has reacted to the Telecom Act and what changes have occurred compared to each other.

This project can become a tool that planners at the local level can use in their own communities to evaluate how similar communities have proceeded in developing land use controls in dealing with wireless facilities. This project will be applicable to both large cities and rural towns and counties. It will assist planners, and public policy makers at the local and state level by spelling out the issues that are at stake in the siting of facilities. It will also be helpful to developers and to those in the telecommunications industry by outlining the procedures that will both assist the community to mitigate facility proliferation and provide incentives for service providers to share facilities and work in a cooperative, yet competitive nature. By having these regulations in place, many of the ill-natured conflicts between municipalities and service providers will cease, as the process will be beneficial to both parties involved.

The heart of this project is to provide a comparison of how counties located on major transportation corridors have responded to the Telecom Act in

writing and rewriting their ordinances to adequately provide for wireless facilities in their jurisdictions and at the same time protect their constituents from the adverse effects of wireless facility placement. While the impact of this project is to provide local planners with the view of how similar counties have responded to the Telecom Act, Appendix A provides a perspective of how the Cellular/PCS service providers felt an ordinance should be written.

Finally, as part of this study, ordinance language has been reviewed that deals with removal of towers when communications technology no longer requires their use. This will lessen, and hopefully remove, the possibility of the local planning and zoning departments being caught off guard by the changing technologies. Technology in the wireless industry is evolving so quickly that it is inevitable that towers will soon be a thing of the past and unnecessary for a wireless phone to operate. The technology surrounding Global Positioning Systems (GPS) and satellite technology suggest that, within the next five years, each wireless phone will transmit directly to satellite rather than to a tower in an individual cell. Removal of abandoned towers will be expensive, and it is important not to leave communities "holding the bag" and responsible for removing the towers themselves. That is why a portion of the local regulations should be devoted to tower abandonment and tower removal. Also, as a part of the local regulations, some guidelines should be included for dealing with applications for wireless facilities. A series of application and review guidelines and checklists would aid both the planners and government officials in their review of applications, but also aid the communications providers, setting out

clear procedures to follow, making the permitting and approval process clear, understandable, and timely. This will, hopefully, reduce the expense that providers will incur for a series of costly plan revisions, as well as reduce the time necessary for government to review plans, freeing up time for other governmental activities.

Chapter 6: Analysis of Local Ordinances and the impact of the Telecom Act of 1996

Four years have passed since the enactment of the Telecommunications Act and the issues of siting telecommunication towers still weighs heavy in the public arena. What was supposed to be the guide for incorporating wireless facilities into the local landscape has become a point of contention between various groups within the local community. Each of the Counties in this study has decided to act or not act in a particular manner dealing with wireless facilities.

For ease of understanding, this study has chosen seven subjects to review and assign points to each county so their comparisons are equal in value. The seven subjects chosen are definitions, application requirements, co-location provisions, height restrictions, landscape requirements, district restrictions, abandonment clause, and post-telecom act amendments. The scoring for each subject is 1,5, and 10 points. The scoring is not a measurement it is a way to visualize the vigor with which the community has dealt with each subject. A one indicates the county had no such provision in their ordinance, a five recognizes the county addressed the issue but may be vague in its language, and a ten indicates that the county went to great detail in its explanation and left no open interpretation within the ordinance. The selected components were comprised not only from personal experience but in accordance with the "Key Elements to a Wireless Ordinance" located within the National League of Cities Siting Cellular Towers report (1997).

The next step is to define each scoring component. The following are how each scored term will be defined:

Definitions: Every ordinance has a definitions section located within it. Many terms are defined here to assist the reader of the ordinance in understanding the meaning of selected terms. This review looks for some form of definition concerning language that addresses the terms, telecommunication tower, communications tower, and/or wireless facilities.

Application Requirements: Does the local ordinance address the permitting process specifically for wireless facilities?

Co-location Provisions: Is their language within the ordinance to require wireless service providers to share tower space upon the same structure?

Height Restrictions: Does the local ordinance address height limitations?

Landscape Requirements: Are there landscape requirements within the ordinance for wireless facilities.

Zoning District Restrictions: Are wireless facilities addressed in permitted uses within varying zoning districts?

Abandonment Clause: Does the ordinance address the termination of use by the wireless service provider and offer a time restraint for the removal of the structure?

Post Telecom Act Amendments: Has the county amended their ordinance since the enactment of the Telecom Act?

At the end of this chapter a table will be offered to see how each county compares and other selected issues pertaining to the placement of wireless facilities within each community.

Guilford County, North Carolina

I) Community Profile

The county is part of the eleven-county Piedmont Triad region (population: 1.2 million), and is centered along the piedmont industrial crescent stretching from Raleigh to Charlotte. Guilford County is home to two major cities within North Carolina, Greensboro (205,000; 3rd in N. C.) and High Point (74,000; 7th in N. C.). The county has an excellent transportation infrastructure, including two Interstate highways, Piedmont Triad International Airport, and readily available rail and truck service which has helped solidify the County's position as a major distribution and transportation center in the Southeast. Governmentally, Guilford is administered by an eleven-member Board of County Commissioners (9 districts, 2 at-large) who oversee an annual budget of \$414 million that is raised from a tax base of some \$28.75 billion in valuation. (65)

II) County Development Ordinance

Guilford County, NC began addressing wireless facilities in 1992. While being proactive in addressing wireless facilities early on, Guilford has not amended their ordinance since its 1994 amendment. (66)

After reviewing the Guilford County Development Ordinance and its definition section, no reference can be found specifically defining any type of wireless facility. While the ordinance does address wireless facilities, it combines requirements under the heading of "Radio, Television, Communication Tower" for

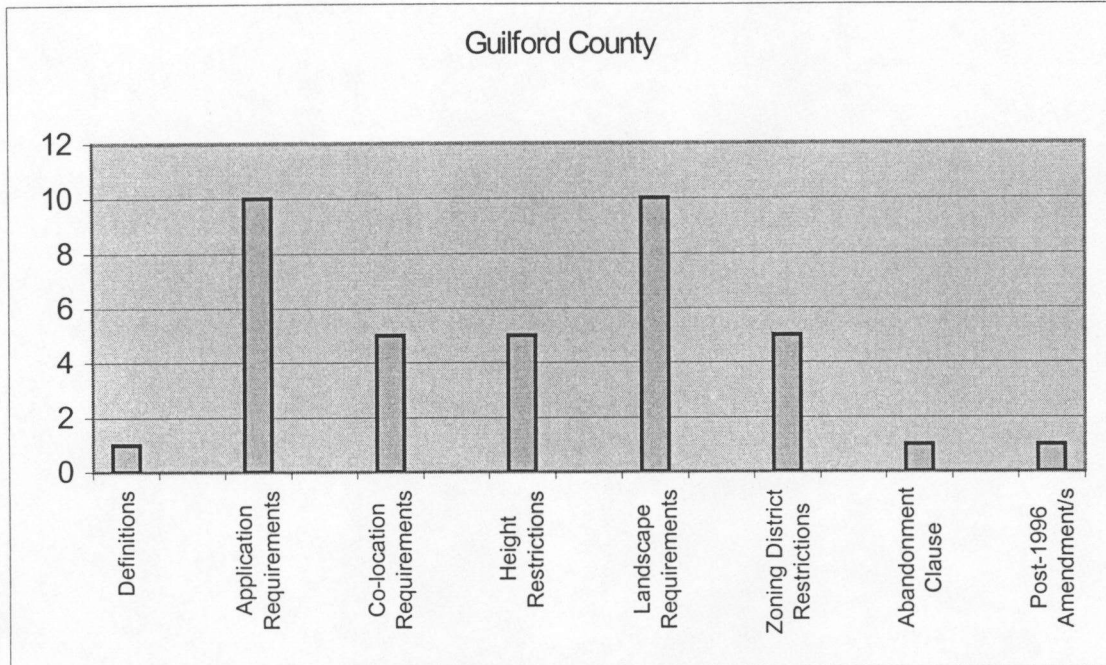


Fig 6-1 Guilford County Scoring

a principal use and as a “Satellite Dish/Communication Tower” for accessory use purposes. (67) The low score (Fig.6-1) that Guilford receives for its definition section is solely related to the absence of any definition concerning wireless facilities.

The application process on the other hand is quite detailed within the development ordinance. Once the wireless facility has been identified as either a principal or accessory use on the subject property, the ordinance is quite specific about the steps to be taken. Article III of the Guilford County development ordinance identifies an 18-step process in the Site Plan Approval Process. (68) This level of detail accounts for Guilford’s high score (Fig. 6-1) within this category.

Co-location requirements have become an important concern to many communities in an attempt to limit the amount of towers within their jurisdiction. Co-location is generally recognized as two or more wireless service providers locating on a single tower or pole. Guilford County does address this concern in their ordinance. However, the language is weak and is only found under Article 6, section 4.69 Radio, Television, Communication Tower (principal), category D, item 4. It reads as follows:

4 New towers shall be permitted only if there is no prudent or feasible method to share an existing tower (69)

The weakness occurs in the words, prudent and feasible. The ordinance fails to address or offer a definition to these terms. However, the ordinance offers no explanation thus a low score as indicated in Figure 6-1. The ordinance has identified that wireless facilities could be an accessory use on a property but no wording is in place within Article 6, section 4.76 Satellite Dish/Communication Tower (accessory) to address co-location.

The Guilford County Development Ordinance covers height restrictions by district and whether or not the projected use lies within a residential or non-residential district. Height restrictions are identified in the Development Ordinance under Article 4.4, Dimensional Requirements. The limits to height under Article 4.4 indicate that the highest point within a residential or non-residential district would be 80'. (70) At first glance this would appear to limit the placement of any wireless facilities that exceeded this 80' limit, however, Guilford has placed an exception to this height limit in Article 4, section 6.1. It reads as follows.

4-6.1 Structures Permitted Above Height Limits

Except as otherwise prohibited by the Airport Overlay District, the height limitations of this Ordinance shall not apply to public buildings, church spires, belfries, cupolas and domes not intended for residential purposes, or to monuments, water towers, observation towers, power transmission towers, silos, grain elevators, chimneys, smokestacks, derricks, conveyors, flag poles, radio, television and **communication towers**, masts, aerials and similar structures, provided such structures meet the required NC Building Code

While Article 4-6.1 allows the identified uses an exception to the height limitations, it offers no guidance to what would be a maximum height concerning each use. Again, the ordinance fails to go far enough (Fig. 6-1) in defining the acceptable limits to the users of the ordinance.

Guilford County has prepared the landscape portion of their Development Ordinance in a very detailed manner. Article 6.3 of the Development Ordinance defines the landscaping requirements. The landscape requirements are broken out by district along with the use within that particular district. The ordinance differentiates between what are described as **Planting Yards** and are defined within the ordinance as follows:

6-3.2 Planting Yards

A Required Planting Areas The following areas are required to be landscaped

- 1 Street planting yards,
- 2 Parking lots (excluding vehicle loading, storage, and display areas), and
- 3 Planting yards

B. Planting Area Descriptions:

1 Street Planting Yard A planting area parallel to a public street designed to provide continuity of vegetation along the right-of-way and a pleasing view from the road. No more than fifteen (15%) percent of the street planting yard may be used for walkways or signs. Parking, merchandise display and off-street loading are prohibited in the street planting yard

2. Parking Lot Plantings. Planting areas within and adjacent to parking areas designed to shade and improve the attractiveness of large areas of pavement

3. Type A Planting Yard A high-density screen intended to block substantially visual contact between adjacent uses and create spatial separation. A Type A Planting Yard reduces lighting and noise which would otherwise intrude upon adjacent uses.

4 Type B Planting Yard: A medium density screen intended to partially block visual contact between uses and create spatial separation

5 Type C Planting Yard A low-density screen intended to partially block visual contact between uses and create spatial separation.

6 Type D Planting Yard A peripheral planting strip intended to separate uses, provide vegetation in densely-developed areas and enhance the appearance of individual properties

These Planting Yards are then related to front, rear, and side-yard setbacks to guide the developer in the design of the required landscaping plan that must be submitted with each Site Plan Proposal (71) Here the County scores very high (Fig. 6-1) for their level of detail within the Development Ordinance.

Guilford County has 26 separate zoning districts identified within its Development Ordinance. Located in Article IV, Zoning is Table 4.3 1, the Permitted Use Schedule. (72) This schedule breaks out the Use Type and whether or not that use is allowed within a particular zoning district. There are four designations that guide the developer. First, if the square is left blank then the Use is not allowed in that district. Second, if a 'P' is located in the square then the Use is "permitted by right." Third, if an 'S' is located in the square then the Use is permitted with a **Special Use Permit**. The final option and the one found associated with all the districts under the Use Type connected to wireless facilities is an 'D' The 'D' identifies the Use Type and falls under Article 6, The

Development Standards of the Guilford Ordinance. Here, in the Development Standards, types that may require added attention due to their particular circumstance such as, wireless facilities, are required to follow selected and at time vague development standards. (73) Therefore, only a score of 5. (Fig.6-1)

The Abandonment Clause that many communities have incorporated into their local ordinance fails to make an appearance within the Guilford County Development Ordinance. The score is only a 1 as indicated in Figure 6-1. The clause is intended to specify a particular timeframe, which requires a wireless service provider to remove or tear down a wireless facility when it ceases to operate over a period of 6 to 12 months. The intent is to remove the facility so it doesn't become an eyesore to the community.

While Guilford County has amended their ordinance since 1996, they have not had an amendment, which affects the placement of wireless facilities. Again, a one is all the county can be given. (Fig. 6-1)

III) Planning Staff Interview

Mark Kirstner, County Planner for Guilford County, provided a phone interview, which offered some insight to the history of the Development Ordinance and the county's reactions to wireless facility placement within its jurisdiction. First, Mr. Kirstner pointed out that the county made no changes to its Development Ordinance due to the Telecom Act of 1996. He also acknowledged that the county had not amended its ordinance since 1994 concerning wireless facilities. He said, "The County felt that it had prepared itself in 1994 for any

issues that the Telecom Act would bring to the table". (74) He went on to point out that the county requires each request for a wireless facility placement to be reviewed by its Technical Review Committee (TRC). Mr. Kirstner mentioned that the TRC was the determining factor on whether a new wireless facility could meet the development standards set out in the ordinance. Article 9.3 of the Development Ordinance provides the structure of the TRC as well as its powers and duties. (75) Mr. Kirstner went on to say that since the initiation of the TRC there has been no need for public hearings and to date, no wireless service provider has requested a rezoning for any parcel in the Guilford County zoning jurisdiction. Mr. Kirstner was asked if he saw any increase in the number of wireless facility placement requests after the enactment of the Telecom Act of 1996. He replied "Yes", but felt the increase was not due to the Telecom Act but rather the Federal Communication Commission's (FCC) auction of new wireless airwaves. The FCC did place a stipulation on the new wireless service providers which requires them to build-out their new systems within 5 years. (76)

IV) Conclusion

While the 1994 amendment might have seemed appropriate to handle the oncoming Telecom Act, it now appears it is time to amend the ordinance to reflect a more up to date view of wireless facilities and their placement. The fact of leaving the total decision up to the Technical Review Committee concerning issue of proper height, co-location, and basically all aspects of determining

placement seem to leave Guilford County open for legal recourse by the Wireless Service Providers.

Mecklenburg County, North Carolina

I) Community Profile

Mecklenburg County is in the Southern Piedmont region of the Carolinas. Mecklenburg County is also home to the largest city in North Carolina, the city of Charlotte. The county population has seen dramatic growth from 581,466 in 1995 to 661,091 as of January 2000. At the same time the City of Charlotte has also seen its population go from 455,367 to 500,857 in the same time period. (77) The transportation infrastructure is significant and Charlotte's airport is ranked as the 14th busiest in the nation. The interstate/highway system is made up of three interstates connecting Mecklenburg to much of the United States. Interstate 40 connects North Carolina to California, while Interstate 85 goes from Alabama to Maine. The major interstate leading into the Midwest is Interstate 77. Each of these interstates are key to movement to and from Mecklenburg County.

The city of Charlotte and the county of Mecklenburg have a council-manager form of government. Mecklenburg County has nine commissioners, six elected by district and three at-large. These officials serve two-year terms. Both the city and county employ managers who are

responsible for the day-to-day operations of their respective governments. The planning authorities are a joint City-County agency for unified planning. The agency is comprised of 14 members, where the Planning Commission represents a cross-section of interests, experience, and expertise. Seven members are appointed by each governing body, the City Council and the County Commission. Each member is eligible for a maximum of two consecutive three-year terms. The Commission has a staff of technical planners and support personnel. (78)

II) Mecklenburg County Zoning Ordinance

The Mecklenburg County Zoning Ordinance can be evaluated on a three-part basis concerning wireless facilities. First, there were the pre-1991 zoning ordinance requirements, which identified wireless facilities as **cellular telephone transmission towers** that were grouped together with radio and television towers. Second, was the 1991 text amendment, which recognized, "Cellular telephone transmission facilities" as their own distinct use type and finally in 1996 the zoning ordinance was amended again to identify these towers as "wireless communications transmission facilities."

Chapter 2 of the Mecklenburg County Zoning Ordinance contains definitions. (79) However, after a review of Chapter 2, Part 2, no definition can be located for a wireless facility or telecommunication tower. While Mecklenburg addresses the issue within the text of the ordinance, the county has failed to

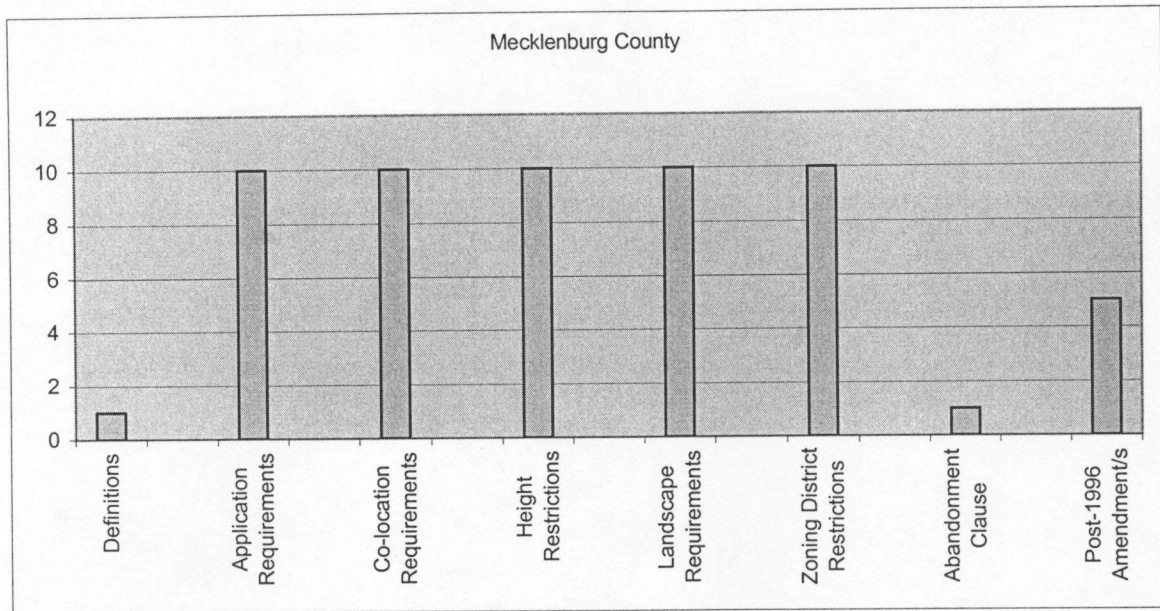


Fig. 6-2 Mecklenburg County Scoring

update its definition section to include their renaming of a wireless facility along with a definition from “Cellular telephone transmission facilities” to “Wireless amendment. (Fig. 6-2)

Mecklenburg County has done an excellent job in laying out the development approval process within their Zoning Ordinance. Chapter 4 of the ordinance provides a general understanding and leads in to the more detailed aspects of the approval process. The following is **Section 4.101 General**

Details:

Section 4.101 General.

- (1) The forms of development approval governed by this Chapter concern uses permitted as of right, and uses permitted under prescribed conditions allowed in a zoning district under Chapters 9,10, and 11.
- (2) Uses permitted by-right and uses permitted under prescribed conditions, and uses and structures accessory thereto, shall require a building permit and a certificate of occupancy.
- (3) Changes in the use of property shall require a certificate of occupancy.
- (4) The procedures and standards of this Chapter shall not apply to signs; rather, signs shall be subject to the permit requirements, procedures, and standards established in Chapter 13 of these regulations.

- (5) Appeals from administrative decisions rendered under this Chapter shall be governed by Chapter 5.
- (6) Variances from these regulations to allow a person to receive approval under this Chapter shall be governed by Chapter 5.
- (7) Amendments to the text of these regulations and to the Zoning Maps, including the reclassification of property to a conditional district or parallel conditional use district, shall be governed by Chapter 6. (80)

The remainder of Chapter 4 provides guidance in Building permits, Certificate of Occupancy, Zoning Review, Moratoriums, and the Public notification process for certain land uses. (81) Therefore, they score a 10. (Fig.6-2)

Reviewing height restrictions we find Mecklenburg County provides language which addresses wireless facilities directly. Chapter 12, Development Standards of General Applicability, Part 1: Supplement Development Standards, section 12.108 Height limitations, subsection 8 reads as follows:

- (8) Cellular telephone transmission facilities including, but not limited to towers, masts, antenna and related antenna support structures are permitted above (or below) the height limit in any district. Cellular telephone transmission facilities may be constructed up to a height of 40 feet in any zoning district, and need only to comply with the underlying zoning district's separation standards concerning setback, side and rear yards. Lots and buildings thereon must conform to the minimum area, height and yard requirements for the district in which they are located unless otherwise indicated by subdivision (a) below. If the facility is above 40 feet in height and is located on a lot in or adjacent to a residential district, the facility must comply with subsection (7) above. The maximum required separation of cellular transmission facilities from any adjoining property line in any zoning district shall be 200 feet. The facility plant and/or any related support building shall be allowed in accordance with Section 12.504.
- (a) Cellular telephone transmission facilities are permitted above (or below) the height limit in any zoning district as an ancillary or secondary use on a site where another use (other than single family or duplex use) is already established as the principal use of the property, such as a school, church, multi-family residential complex, shopping center, office building, commercial or other similar use. In this case, the cellular facility shall not be required, regardless of the underlying zoning, to separately comply with the normal district standards dealing with lot area, height and yard requirements as well as frontage on a public street and subdivision regulations so long as the principal use complies with such requirements for the underlying district. For lots in or adjoining a residential district, cellular facilities may be constructed over 40 feet in height provided that the minimum setback, side and rear yards adjoining the residential zoned property are increased by one foot for each one foot of facility height in excess of

40 feet, up to a maximum required separation of 200 feet. Separation from adjoining non-residentially zoned property shall be controlled by the adjoining property's minimum separation standards concerning setback, side and rear yards, as appropriate. For example, if the cellular facility is located upon residentially zoned property and is 100 feet in height, and the adjoining property to the rear is zoned O-2, the rear yard separation would be 40 feet. However, if the proposed transmission facility is located in a nonresidential district and adjoins only nonresidential districts, the facility may be constructed to any height subject to underlying minimum district requirements for separation from adjoining properties.

- (b) Cellular telephone transmission facilities are permitted above the height limit on lots in research, institutional, office, business, and industrial districts which do not adjoin lots in any residential district. Lots must conform to the minimum area, and yard requirements for the district in which they are located unless otherwise indicated by Subdivision (a).
- (c) Cellular telephone transmission facilities are permitted atop any building or structure (other than single family or duplex use) in any district so long as such facilities do not exceed 20 feet in height measured from the base of such facilities. (82)

Subsection 8 refers to subsection (7). It reads as follows:

- (7) Radio and television towers and similar structures, as a principal or accessory use, are permitted above the height limit in any zoning district. If such a structure is located on a lot in or abutting a residential district, it must be located 200 feet from all abutting property lines. (83)

Subsection 8 also refers the reader to Section 12.504 of Chapter 12 which provides the guidelines for any Public utility structure to be housed in conjunction with the wireless facility. (84) The guidance provided by the Mecklenburg County Zoning Ordinance is thorough in explaining that a wireless facility can be housed within any zoning district as well as how to calculate the separation of height requirements within each district. Once again, the county scores a 10. (Fig. 6-2)

Landscaping requirements for Mecklenburg County are described in detail in Chapter 12, Section 12.301. Section 12.301 breaks landscaping down into two parts, **Buffers and Screening**. According to Chapter 2, Definitions and Rules of Construction, a buffer is defined as, 'A strip of land with natural and planted vegetation located between a use or structure and a side or rear property

line intended to separate and partially obstruct the view of two abutting land uses or properties from one another. A buffer area may include any required screening'. Screening is defined as, 'A fence, wall, hedge, landscaping, earth berm, buffer area or any combination of these provided to create a visual and/or physical separation between certain land uses. Screening may be located on the property line or elsewhere on the site'. (85) The ordinance goes further to provide guidance of acceptable buffer requirements by district categories as outlined in Table 12.302(a), page 12-37. Each district is assigned a class level from A to C, which determines the appropriate numbers of trees and shrubs per 100 feet of acreage. (86) While it may seem inappropriate for a 200 foot communications tower to fall under such requirements it must be remembered that in most wireless facilities there is ancillary equipment located at the base of the tower which requires some type of screening. The Mecklenburg County ordinance provides a thorough explanation of this requirement, a 10 once again. (Fig. 6-2)

Mecklenburg County breaks their zoning districts into seven categories: Single Family, Multi-Family, Institutional, Research, Office, Business, and Industrial. Each of these categories are further broken down to lower levels of intensity and then by use type. The key used within the permitted use schedule is, a 'blank' next to the use indicates the use is not allowed in that district, an 'X' next to the use means the use is permitted by right, a 'PC' indicates the use is allowed with prescribed conditions and an 'O' informs the reader that the use is permitted within an overlay district as prescribed within the ordinance. (87) The Mecklenburg County ordinance allows wireless facilities in all districts but

prescribed conditions must be met. The controlling factors in these conditions are those outlined in section 12.108 of Chapter 12 mentioned above. The separation between the wireless facility as it relates to the district, where the facility is located and at what height appears to be the main factor in allowing a wireless facility to be placed. The clarity within this section make a 10 possible once again. (Fig. 6-2)

Mecklenburg County fails to address the abandonment issue within its zoning ordinance. This leaves the county and its residents vulnerable to wireless service providers and their ability to leave a structure once built on a property long after its use has expired. The complete absence of an abandonment clause can only provide a score of 1. (Fig 6-2)

Following the enactment of the Telecom Act of 1996 a major text amendment did come before the Mecklenburg Planning Commission and in its original form asked for major changes within the zoning ordinance, however, the amendment failed to garner enough support for approval. Shortly after this attempt a second amendment was introduced and passed, however, its change was only in recognizing the renaming of 'Cellular telephone transmission towers' to 'Wireless communications transmission facilities'. Thus no real change had taken place. The ability to attempt changes since 1996 scores a 5. (Fig 6-2)

III) Planning Staff Interview

A Ms. Melony McCullough, principal planner for this interview, represented Mecklenburg County. Ms. McCullough was asked if Mecklenburg took any extra measures concerning the enactment of the Telecom Act of 1996. She said that a

special coalition of wireless service providers along with city and county officials came together to study how the current 1991 text amendment for wireless facilities could be enhanced to address the Telecom Act issues. The coalition began meeting in late 1995 and eventually proposed a text amendment that would be known as Petition No. 97-12. (23) Ms. McCullough provided the staff analysis concerning the petition and said there were three issues which, the staff felt were, cause for denial. First, the petition sought to allow new towers of up to only 150 feet in height to comply with the separation requirements of a 100-foot tower. Second, the petition asked that there be no cap on the equipment building size associated with the new tower. Third, the petition asked that no new notification of adjoining property owners of existing tower sites be necessary for towers being extended 50 feet or less. (88) The staff felt each issue would deny adjoining property owners adequate protection from the wireless facility. The petition was denied and the coalition was disbanded. Ms. McCullough went on to say that the permit requests for wireless facilities increased from an average of about 1 wireless facility placement request per month to about 3.2 requests per month after the Telecom Act was set in place. (89)

When asked about any additional plans concerning wireless facility placement within the county, Ms. McCullough said, "Currently, a text amendment is being developed for **tower concealment** within residential districts". She went on to offer a definition of what concealment was, "They are structures designed to look like bell towers, steeples, flagpoles, and pine trees or the integration of antennas into lighting fixtures, hidden rooftop mounts, wall-mounted signage,

public art or other camouflage structures available to the wireless industry". (90)

When asked how likely the amendment was to pass she said, "Very likely, we have the necessary support from within the Planning Commission and City Council" How soon do you expect passage of this amendment? Ms.

McCullough: "Within the next 90 days".

IV) Conclusion

A summary of Mecklenburg County's wireless facility regulations looks like this:

- Wireless communication facilities are allowed in all districts.
- The facilities may be constructed as either a principal or secondary use.
- Tower height is controlled by the required yards (setback, rear, and side) for the zoning districts in which it is located.
- In residential districts or on sites adjacent to residential districts a tower as a secondary use may be increased beyond 40 feet in height if the yards are increased one foot for every foot above 40 feet with a maximum separation of 200 feet.
- A tower, as a principal or secondary use, located in a non-residential zoning district that is not adjacent to a residential zoning district, may exceed 40 feet without an increase in the required yards.
- If a tower over 40 feet is the *principal* use on a lot in a residential district or adjacent to a residential district, the tower must be 200 feet from all abutting property lines.
- All new towers up to 150 feet in height must be designed to accommodate two wireless service providers.
- When a new wireless communication facility or a replacement tower with increased height is proposed in a residential zoning district or within 100 feet of a residential zoning district, the zoning administrator is required to provide notification to all property owners within 100 feet and all home owners associations listed with the Planning Commission within one mile of the site

Mecklenburg County goes to great lengths to inform a wireless service provider of all that is necessary to place a new wireless facility within the county and assures itself of trying to comply with the Telecom Act of 1996

Durham County, North Carolina

I) Community Profile

Durham County is located in the north central portion of North Carolina's Piedmont region, four hours east of Mecklenburg County, one hour east of Guilford County and one hour west of Wake County, North Carolina. It is the apex of North Carolina's famous Research Triangle Park (RTP), the largest and one of the most successfully planned research areas in the United States.

Durham County has not seen the growth in population that Mecklenburg County has seen over the last five years but a look at longer-term view shows growth has occurred over time. Since 1980 Durham County has grown from a population of 152,835 to 214,501 in 2000. (91)

Durham County lies between two of North Carolina's major highway corridors, I-85 and I-40. The corridors are connected through Durham County and the City of Durham via highway 147, a recently completed road project within the city and county of Durham. I-40 runs through the southern portion of Durham County and is the main connector to RTP and to North Carolina's coastal ports. I-85 runs through the northern sections of Durham County and is the direct transportation corridor to the Mid-Atlantic and Northeast states.

A Board of Commissioners governs Durham County. The Board is comprised of five members who are elected at large on a partisan basis by a countywide vote. Commissioners serve two-year terms and elections are held in

November of even-numbered years. The Board takes office at its first meeting in December following the November election and at that time, elects a chairman and vice-chairman. (92) The primary duties of the board include formulation of policy, adopting an annual budget, establishing the annual property tax rate, appointing various officials, planning for county needs and enacting local ordinances. The board also has authority to call bond referendums, authorize the county manager to enter into contracts and establish new programs and departments.

The City/County Planning Department is charged with the responsibility of planning physical development in Durham County. The staff reviews, evaluates and makes recommendations on petitions to rezone property, grant site plans and/or special use permits and subdivide land. The Planning Department also prepares ordinance amendments for the Durham County Planning Board and the Board of Commissioners

II) Durham County Zoning Ordinance

The Durham County Zoning Ordinance is quite detailed in its explanation of how wireless communication facilities are to be handled within its jurisdiction. A separate section is devoted to concealed towers.(93) To maintain consistency between the evaluations of the studied counties, the section on concealment will not be reviewed The Durham County Ordinance is set up slightly different from the other

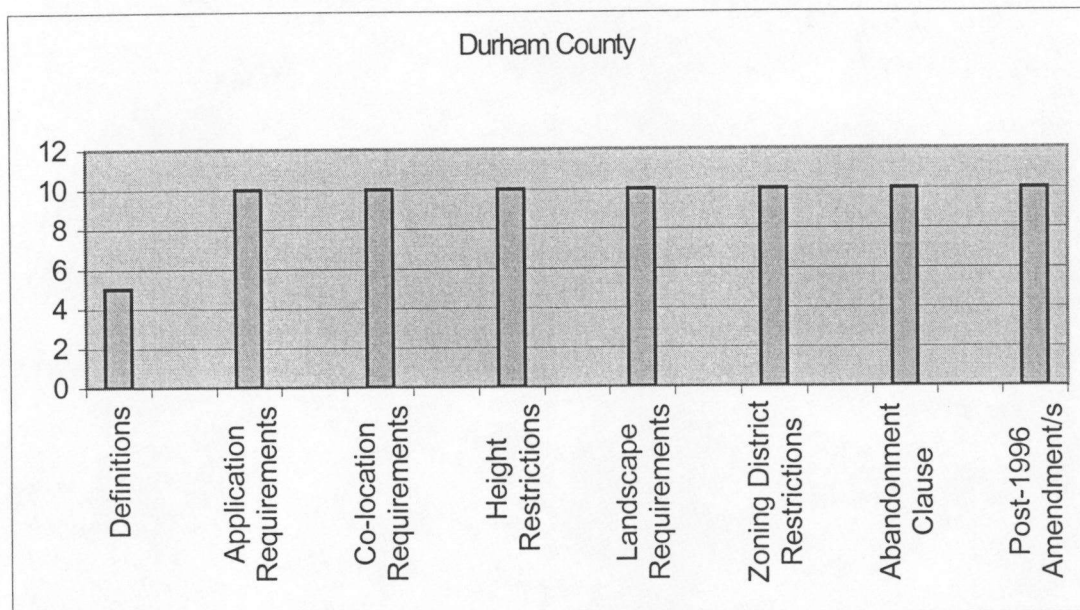


Fig. 6-3 Durham County Scoring

counties to the point where many of the scored elements are included within the text of the ordinance which concerns wireless facility placement.

The majority of Durham County's wireless facility placement requirements can be found in Section 7, subsection, 7.39 Towers for Transmitting and Receiving Electronic Signals.

The Durham County ordinance is unique in that it addresses communication towers within its definition section of the ordinance. The ordinance defines communication towers as:

2.2 Definitions

Towers for transmitting and receiving electronic signals: Structures whose principal function is to support communication antenna(s). (94)

The heading within the definition mirrors that of the title within Section 7, subsection 7.39. A score of 5 was given due to the general nature of the definition. (Fig. 6-3)

The application process in Durham County can be quite extensive concerning wireless facilities. A good example of how the permitting and application process affects wireless facility placement within Durham County can be seen by reviewing Section 7, subsection 7.39, item G. It reads:

G. RD and R-20 Dimensions: Towers [with the exception of concealed towers] in the RD and R-20 districts shall conform to the following setbacks:

- 1 RD District Towers may be permitted subject to the issuance of a Major [200 feet or more in height] or Minor [less than 200 feet] Special Use Permit. A tower shall have a setback from all property lines that is equivalent to the tower height. To prevent a clear view of the base of the tower, the setback shall contain an established-forested area with a depth of at least 100 feet. When the 100-foot requirement cannot be met, a Class 5 buffer shall be provided and it may be possible to use any existing forest toward meeting a portion of the Class 5 requirement. The approving body in deciding the Major or Minor Special Use Permit, may reduce the setback adjacent to nonresidential property upon consideration of circumstances which reduce the off site effects of the tower such as topography, berms, the proximity of other existing or potential uses, and existing vegetation and improvements made to the site to obscure or reduce the visibility of the tower. The approving body shall not reduce the required setback from adjacent property, which has a residential zone [R-D through PDR district].

Section G is an example of how the Durham County application process takes into consideration how height affects the permitting process. In this example, the determining factor is whether the tower is above or below 200 feet. The application/permitting process is also contingent upon a **Development Review Board** review. (95) The Development Review Board is provided for in Section 3 of the Durham County Ordinance and states the following:

3.5 Development Review Board

3.5.1 Creation

The Development Review Board (DRB) is the technical planning agency for the City of Durham and Durham County and is responsible for the application of this ordinance where specified and for the approval or recommendation of land use and development proposals in accordance with the provisions of this ordinance (96)

Section 3 also offers the power and duties of the Development Review Board, they are:

3.5.4 Powers and Duties

The DRB shall have the following powers and duties

- A Provide review of land use and development proposals (site plans etc) with approval of certain plans and recommendations to Governing Bodies on other plans as specified in Section 17.
- B Monitor existing ordinances adopted plans and development standards and recommend changes in order to improve planning and development within the jurisdiction.
- C Review revisions to development proposals for approval or recommendation to Governing Bodies
- D Recommend installation of street and utility improvements related to development proposals

The Development Review Board according to its creation can only evaluate applications based on their technical merit; to act in any other respect could be interpreted as arbitrary. The detail and clarity of this section warrant a 10 (Fig. 6-3)

Co-location requirements can be very definitive or vague and without merit The Durham County Ordinance actually places some detail within their text that spells out the conditions of co-location. Section 7, subsection 7.39, items J and K offers the outlines of how co-location is integral in the placement of wireless facilities throughout Durham County. Item J is key to tower approval. A

review of its text below reveals numbers 2,3, and 4 deal directly with implication of co-location.

J. The following information must be supplied with the site plan or building permit application for towers that are 75 feet in height or more prior to any approval:

1. Identification of the intended user(s) of the tower
2. Documentation provided by a registered engineer that the tower has sufficient structural integrity to accommodate more than one user
3. Documentation by the applicant that no suitable existing facilities within the coverage area are available to the applicant. Documentation may include maps, letters from adjacent tower owners, or calculations. Facilities include other towers, or other buildings or structures
4. A statement indicating the owner's intent to allow shared use of the tower and how many other users can be accommodated
5. Evidence that property owners of residentially zoned or used property located within 300 feet of the base of towers within the City of Durham or located within 600 feet of the base of towers outside the city limits have been notified of the proposal. (97)

Subsection 7.39, item K indicates a further initiative by Durham County in its efforts to encourage co-location:

- K. To further encourage co-location, additional users and associated equipment, which do not add to the tower height, may be added without additional approval. However, additional building code regulations may apply. Site plans must show the locations for at least two equipment buildings, even if the tower is proposed for a single user (98)

Durham County places the burden of co-location squarely on the wireless service providers and their desires to locate within the Durham County jurisdiction. The intent of co-location is clear and a 10 is scored for this area of the ordinance. (Fig. 6-3)

Height restrictions within Durham County are quite similar to those found in many other zoning ordinances. They are tied to setback requirements. Section 7, subsection 7.39, item F, number 2, elements (a) and (b) provide the language of how setbacks set the tone for tower height within Durham County:

2. **Setbacks: Towers in a nonresidential zone and located on the ground or top of a tower accessory structure:**
 - a. If the top of the tower is 75 feet high or less - normal setbacks of the zoning district for structures shall apply

b. If the top of the tower is more than 75 feet high

- and adjacent to, or separated by a public right of way from, property which is residentially zoned or used, the setback from adjacent property lines shall be 1 foot for every foot in height, or the setback of the zoning district, whichever is greater
- and adjacent to, or separated by a public right of way from, nonresidential property, the setbacks shall be as follows. The setback from a property line adjacent to nonresidential property shall be at least 50 feet and an additional 1 foot for every foot of tower height over 150 feet.

For example: 75 feet tower height	= 50 feet setback
100 - 150 feet tower height	= 50 feet setback
160 feet tower height	= 60 feet setback
175 feet tower height	= 75 feet setback

The setback from a public right of way which separates the tower site from nonresidential property shall be a minimum of 50 feet or 1/2 the tower height, whichever is the greater setback.

To encourage shared use of towers, applications for towers, which will operate with more than one user immediately upon completion, may reduce setbacks from adjacent nonresidential property. The setback from adjacent nonresidential property may be reduced by 25% when 2 users commit to occupy the tower immediately upon its completion or reduced by 50% when 3 or more users commit to occupy the tower immediately upon its completion. However, the required setback distance may not be reduced to less than 50 feet (99)

While the above example is concerned with nonresidential zones within Durham County, the ordinance is as detailed for residentially zoned areas throughout the county. The key here is that height is controlled not only by zoning districts but setbacks within those districts and the height requested by the wireless service provider. A well thought out design a 10 once again. (Fig.6-3)

Landscape requirements for wireless facilities in this ordinance are embedded within the text of Section 7, subsection 7.39, item I. The text for item (I) is written as follows:

I. Buffers. The base of the tower, any guy wires, and any associated structures, walls, or fences shall be surrounded by a landscaped buffer equivalent to Buffer Intensity Class 3 except for towers in the RD and R-20 district which are required to provide a forested area with a depth of 100 feet or a Class 5 buffer. The site developer may have the option of:

- a providing the landscape buffer around the tower base and associated items individually, or
- b providing a buffer around the perimeter of the entire site (100)

The ordinance refers to Class 3 and Class 5 buffers within the text of the above paragraph. The Durham County Ordinance buffers have been divided into 5 classifications, Class 1 up to Class 5. The differences are based on intensity of use. Section 10 of the ordinance provides the guidelines for landscape requirements. Section 10, subsection 10.2 defines each classification and reads as follows:

10.2 Buffer Areas

10.2.4 Buffer Width

- 1 Buffer width is based on the following intensity classifications

Class 1 Cemeteries, golf courses, passive recreational areas, wholesale nurseries, day care homes [note large homes as defined by NCAC 3U.0102 (14)]

Class 2 Offices (3 stories or less), churches, schools, public facilities including playgrounds, ball-fields, community swimming pools, and similar facilities, day care facilities, multifamily (developed at less than or equal to 16 units per acre and/or less than 12 units total)

Class 3 Neighborhood commercial and service activities, including but not limited to retail operations, restaurants (without drive-up windows), banks (without drive-up windows), convenience stores (without gasoline sales), offices (over 3 stories), multifamily (developed at greater than 16 units per acre)

Class 4 Commercial activities with higher vehicle activities, including but not limited to vehicle repair, service stations, drive-up window restaurants and banks, car washes, hotels and motels, shopping centers Also, light manufacturing activities and research facilities

Class 5 Heavy industrial uses, heavy manufacturing, truck terminals, mobile home sales, vehicle sales, heavy equipment sales, facilities involving outdoor storage and outdoor commercial recreation establishments (101)

What is interesting about the tower requirements for buffers is that in R-20 and RD both considered residential in nature require a Class 5 buffer which is

enforced within heavy industrial use areas. It appears the county goes to great lengths in protecting its residential areas from tower placement. The county's tight buffer restrictions warrant a 10 here as well. (Fig. 6-3)

The Durham County ordinance has separated its zoning districts into residential and nonresidential zones. There are 10 residential and 12 nonresidential zoning classifications not including the Overlay districts that are identified outside of the two aforementioned zoning classifications. Detailed information defining the residential and nonresidential zones can be located in Section 4 of the ordinance. Section 6 of the County Ordinance offers more definition into the specific permitted uses and the zoning districts they are permitted. Under the heading of **Permitted Uses and Yard Requirement Tables** there sits a table of permitted uses and within this table wireless facilities are recognized as **Towers for Transmitting and Receiving Electronic Signals** which identifies the placement of towers by height and their permitted zoning districts. (102) The following text is located within this table and should be used for district restrictions:

Section Six: Permitted Uses and Yard Requirements Tables

Table of Permitted Uses
Towers for Transmitting and Receiving Electronic Signals

A On a structure and not a concealed tower
[Note antennas are not considered to be towers]

Permitted Use in the following MU, O&I-1, SC, GC, CBD, CT, I-1, I-2,
I-3, RSCH, RAD

These towers are limited to 75 feet or 30 percent of building, whichever is less

B Less than 200 feet in height
Permitted Use in the following RD and R-20 up to 120 feet
O&I-2 up to 75 feet

The noticeable difference within Durham County's Ordinance is that not all districts are included in allowing wireless facilities yet the range of districts where towers are allowed is wide. The ability to allow such a wide array of districts to the placement of wireless facilities indicates the willingness Durham County will go in allowing wireless facilities access to the county, once again a 10. (Fig. 6-3)

So far the two previous counties studied have not addressed the abandonment issue within their ordinances. However, Durham County has written into their text conditions for wireless facility abandonment, which is quite detailed in nature. The text below is located in Section 7, subsection 7.39, item (L):

- L. Towers which are not used for a period of 6 months or more shall be removed by the owner within 90 days Towers which are not maintained for a period of 6 months or more shall be removed by the owner within 90 days. To assure the removal of towers which do not meet requirements for use or maintenance, a statement of financial responsibility, meeting the standards of the City or County, shall be submitted for each tower over 100 feet and a performance bond shall be posted for each tower over 150 feet Removal costs shall be charged to the tower owner (103)

While the county has given thought to abandonment they need to go one step further and incorporate a clause into the text, which might have required the wireless service providers to provide some proof on an annual basis that their tower was still operating. Otherwise, how is the county going to know when a tower is no longer operational? A 10 for having the foresight on facility abandonment. (Fig. 6-3)

While the county's score (Fig. 6-3) depended on text amendments written after the enactment of the Telecom Act of 1996, it should be noted that Durham

County was quite proactive to the situation. In August of 1995 the County offered a text amendment which today is the basis for what is known as Subsection 7.39, Towers for Transmitting and Receiving Electronic Signals. A copy of the text amendment can be found in Appendix A in the back of this study. The County has since introduced two additional text amendments to their ordinance. The first, TC-54-97, Nonconforming Towers, deals with towers that were previously in place but the zoning had changed within its located district. The City Council of Durham adopted this amendment in July of 1997 while the Board of County Commissioners did not adopt this amendment. In 1997 the assistant city attorney for the city of Durham offered the following text amendment, TC-71-98 to both the city and county governing bodies approval:

3. Requirements for nonconforming towers

Continuation, relocation, and reconstruction of, and enlargements and modifications to towers and associated equipment that do not meet current requirements of this ordinance [generally towers constructed prior to 8/95] are subject to the requirements below in lieu of requirements regarding grandfathering and nonconforming structures found in Section 19 of this Ordinance. Provided the requirements below are met, a special use permit is not required. A site plan must be submitted for any relocation or reconstruction of a nonconforming tower

A increases in height shall not exceed 15% of the height of the tower as it existed in 1995, and shall not equal or exceed a height that would either require a major special use permit or would require the tower, if unlit, to add lights,

B any relocation or structural change:

- i must be on the tower's current site;
- ii must eliminate the need for an additional tower or provide both additional co-location opportunities and additional antenna space beyond what is provided by the current tower, and
- iii may not change the style of the tower, if the tower is currently a monopole.

C any relocation must comply with current ordinance setback requirements, if physically possible, or, if compliance is not possible, the relocation must not increase the amount by which setbacks are nonconforming, other than increases necessitated solely by changes in size of the base to support the new tower. If the foregoing setback requirements cannot be met, then setbacks may only be decreased by up to 15% of the originally constructed tower height, which decrease must be considered by the Board of

Adjustment as a variance, applying the criteria for expansion of existing structures under Section 16 4 1

D No structural change to a nonconforming tower may be made unless the tower, as modified, meets the requirements of 1A through D above (Requirements for all towers and associated equipment) regarding interference with radio and TV reception, lighting, and building code and ANSI requirements. Additional antenna and dishes may not be placed on nonconforming towers that do not meet such standards.

E. If a nonconforming tower is damaged to the degree defined in Section 19.7 1.b of this code, a replacement tower constructed on the same site or lot must meet all requirements of part B) of this subsection, may not exceed the height of the previous tower, and must comply with all requirements of the current ordinance, except the requirement for a use permit.

Any change to a nonconforming tower that does not meet the criteria set forth in 3 A) through E) above shall be considered a new tower subject to all current provisions of the ordinance, including use permit requirements (104)

Once again, the text amendment dealt with the issue of nonconforming towers. Even though the city had already passed an amendment concerning this topic the new amendment made additional enhancements, which strengthen the ordinance, and this time found favor with the Board of County Commissioners. The amendment was adopted February 23, 1998 by the County. Just recently, another text amendment was brought before the governing bodies. It dealt with the issue of concealed towers. The amendment, TC-95-99, Concealed Communication Towers, is written as follows:

Performance Standards

8.1 Performance Standards for all Development

8.1.24 Concealed Communication Towers

Communication towers and associated equipment which are totally concealed within a building or structure so that they are architecturally indiscernible shall not be considered towers for transmitting and receiving electronic signals. They may be permitted in all zoning districts but shall be subject to the approval of the Development Review Board (DRB). For additions to existing structures and for architectural features that are exempt from the height requirements of Section 8 1 2, the DRB shall only consider, whether the addition or feature containing the antenna is architecturally harmonious in such aspects as material, height, bulk, scale and design with the building or complex of which it is a part, and if a stand-alone structure, whether such structure is harmonious with the surrounding area. If the DRB denies approval of a concealed tower, the applicant may appeal the decision to the Board of Adjustment [BOA] as an appeal of an administrative

decision as specified in BOA "Power and Duties", Section 3.3. A BOA review shall only consider the architectural aspects of DRB decisions listed above. In addition, such structures and associated communication antennas and equipment shall

- 1 meet all other applicable requirements of this ordinance (Durham Zoning Ordinance)
- 2 not interfere with normal radio and television reception in the vicinity
- 3 have lighting which consists of a red light at night and strobes in daylight, when lighting is required by the Federal Aviation Administration (FAA) The light shall be oriented so as not to project directly onto surrounding residential property The owner shall submit documentation from the FAA that the lighting is the minimum lighting required by the FAA
4. be constructed and maintained in conformance with all applicable building requirements
- 5 not exceed federally approved power density levels or American National Standards Institute (ANSI) standards for power density, whichever provides the stricter requirements The owner shall submit documentation that such power density levels will not be exceeded (105)

The amendment was not placed in the Supplementary Requirements section of the ordinance; rather it was placed in Section 8, Performance Standards. The difference is under this amendment the equipment and placement may not be considered a wireless facility which is based on height or a wireless facility at all. In Review, Durham County has been very proactive in monitoring changes needed and required to keep up with ongoing changes within the wireless industry. Durham County's Ordinance offers depth, detail, and clarity that few ordinances offer. (Fig. 6-3)

III) Planning Staff Interview

At the request for an interview with a county planner concerning the placement of wireless facilities, Durham County offered two senior planners for the session. Helen Youngblood and Steven L. Medlin, both AICP certified, brought mounds of information concerning the addressed topic. Instead of the typical 10 to 20 question interview, they offered a detailed presentation in the

history of wireless facility placement within Durham County. According to Mr. Medlin, the concern for addressing wireless facilities came about in 1992. Building permits for such facilities were starting to see an increase from about 1 permit every 3 to 4 months to 1 per month.(106) Citizens were starting to contact their county commissioners and in turn, the commissioners started contacting the planning office. The planning staff held a workshop for the commissioners in early 1993 to discuss a request for a moratorium on wireless facility placement. Mr. Medlin pointed out the request was made so the planning staff could research the topic of wireless facility placement. In late 1993 the moratorium passed by the Board of County Commissioners and the planning staff began their research. The planning staff put together workshops for the elected officials, wireless service providers, and county citizens to begin discussions on the topic of placement. Ms. Youngblood pointed out that this led to the initial text for section 7.39 of the Durham County ordinance. (107) Ms. Youngblood mentioned that issues such as co-location, electromagnetic fields, residential v. nonresidential districts, rooftop placement, and tower concealment were not written into the first version of the ordinance. Mr. Medlin spoke up to say that while these issues were not written into the text, the Development Review Board did tie such conditions to the special use permits they issued at the time. When asked about the effect of the Telecom Act of 1996, Mr. Medlin spoke of how the Board of County Commissioners requested that the City Attorney prepare a study of how the current ordinance could be improved in addressing the Telecom Act and if changes need to be made, what changes should be made. It should be

noted that the city and county planning offices were in the act of merging their planning efforts so the responsibility of reviewing the Telecom Act fell to the city attorney. The city attorney recommended that eight areas needed addressing.

They were:

1. Location of towers in nonresidential areas
2. Shared use of towers
3. Placement of towers on existing facilities
4. Removal of obsolete equipment
5. Reduced tower height
6. Reductions of electronic emissions and tower lighting to minimal levels
7. Use of landscaping on site
8. Use of concealed towers (108)

Ms. Youngblood confirmed that each of these areas were included in the text amendment offered in 1995 and was adopted August 28, 1995.

IV) Conclusion

It appears from the proactive stance that Durham County took in early 1993 to the present day text amendments the County is a leader in wireless facility placement and the utilization of land use regulations within its own jurisdiction.

Wake County, North Carolina

I) Community Profile

Wake County is located in the east central section of North Carolina and is made up of twelve municipalities including Raleigh, which is the state capital and county seat. Wake County has seen its population grow from 426,301 in 1990 to

593,937 by late 1999, and is reported to grow close to 800,000 by 2010 according to the North Carolina Office of State Planning. The major transportation corridor for Wake County is I-40, which runs through the southern portion of Durham County and centrally through Wake. One key aspect of Wake is that it abuts Durham County and shares in the economic vitality of the Research Triangle Park. Wake County, being the home of the state capital of North Carolina, not surprisingly finds its largest employer to be the State of North Carolina.

The seven-member Wake County Board of Commissioners, who are elected for four-year terms, govern the County. Under their direction, a professional county manager oversees the daily provision of services to citizens ranging from health programs and other human and social services to parks and recreational opportunities, land use planning and zoning responsibilities, law enforcement and public safety, solid waste disposal and recycling, and libraries.

Planning within Wake County is performed primarily by the Wake County Planning Office. The Board of Adjustment (BOA) is the key administrative body with which the Planning Office deals on a regular basis. The BOA handles items from text amendments to special use permits and usually holds the first round of public hearings prior to obtaining County Commission's approval. The BOA is made up of five regular members and four alternate members, each to be appointed for a term of three years by the Board of County Commissioners.

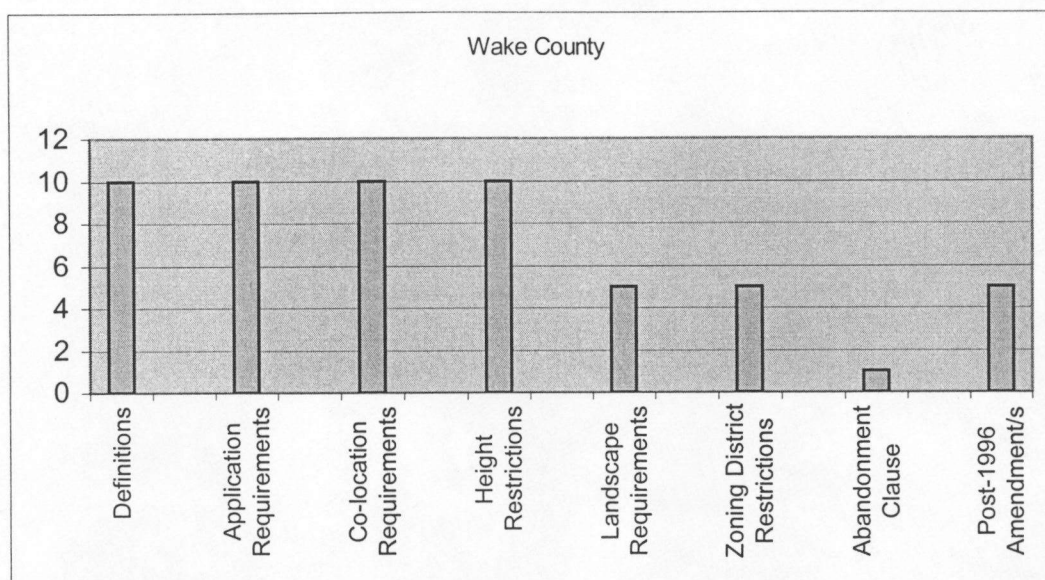


Fig. 6-4 Wake County Scoring

II) Wake County Zoning Ordinance

The Wake County Zoning Ordinance is unique in the sense that it does not have a section of the ordinance dedicated to explaining the county's view on Wireless Facility Placement. The Wake County approach is to address wireless facilities within each section of the ordinance's district requirements. This can be quite daunting since it requires the permit applicant to spend many hours studying the ordinance and in the end, it could still leave the applicant confused.

It is the intent of this ordinance review to help find common elements of the ordinance and explain on some order the method Wake utilizes. But first, a review of the seven scoring elements in Figure 6-4 as in the previous counties.

It should be noted that as the scoring begins for Wake County, the county did not have a comprehensive wireless view within its ordinance until the text was amended in December of 1996. The only reference Wake's ordinance had up to that point was a 1960 amendment that recognized only radio towers. (109)

The Wake County ordinance provides a definition that not only recognizes wireless facilities but also basically defines a structure, which encompasses many technologies. Section 1-1-1 offers the following definition for what Wake calls a Telecommunication Tower:

A Structure designed to support antennas used to provide commercial mobile radio services or other personal wireless services (e.g., cellular telephone communications, personal communications service (PCS), paging, specialized mobile radio (SMR)), excluding satellite dish antennas and amateur or ham radio antennas (110)

The application process within Wake County is as solid as any of the other counties studied to this point. Wake County has provided a web site that directs the applicant through the process after the correct application process is identified. In all cases, each application process requests that the applicant contact the Zoning Office within the Inspections/Development Plans/Permits Division to determine the correct application process that should be followed. For Example, if it is determined that the applicant is making a request for a telecommunication tower that requires a special use permit for the district they are locating in, then the applicant can go to <http://www.co.wake.nc.us/inspect/zoning> and click on Special Use Permit Process and be instructed in the 10-step process for filing that special use permit. (111) In fact, the online process is much friendlier than locating the process in paper form.

Co-location has become a demand just by almost all communities who now deal with wireless facility placement and Wake County is no different. It was mentioned earlier that Wake handled wireless facility requests by district within its ordinance. While that is true, there is a portion of Wake's text that each

district section refers back to in meeting general requirements. The co-location requirement can be found in this section of the ordinance. Wake County decided that the general requirements would reside in the Residential District text of the ordinance. Section 1-1-37, **Residential Districts**, subsection (E)(2), item (d) refers to co-location in the following text:

- (d) If the tower is more than one hundred (100) feet high, but less than one hundred and eighty (180) feet high, is shall be engineered and constructed to accommodate at least one (1) additional telecommunication user. If the tower is at least one hundred and eighty (180) feet high, is shall be engineered and constructed to accommodate at least two (2) additional telecommunication users. Provision of co-location sites on other towers is encouraged whenever feasible.

The requirement is written to exact specifications and allows for little misinterpretation by the tower applicant.

Height restrictions can also be located in Section 1-1-37, **Residential Districts** of Wake County's Zoning Ordinance. Section 1-1-37, **Residential Districts**, subsection (C)(16)(17) along with Subsection (E)(2), item (a)(c)(d) each reference the impact of height and how it is to be considered. (112) One example of how the text is worded concerning height can be reviewed in Subsection (C)(16) of Section 1-1-37 on page 109 of the ordinance. It says:

- (16) Telecommunication towers that are located on a structure constructed for purposes other than supporting telecommunication equipment, that are no taller than thirty (30) feet or thirty (30) percent of the structure's height, and that meet all relevant standards set forth in Subparagraphs (c) through (l) of Section 1-1-37(E)(2)

Here again, the text is specific in its details and further instructs the applicant to sections of the text, which would assist the applicant in their understanding of Wake County's height requirements.

The landscape requirements for wireless facilities are also found in Section 1-1-37, Subsection (E)(2)(f) and is written as follows:

- (f) A transitional bufferyard shall be provided in accord with the requirements in Section 1-1-29 applicable to a proposed low intensity nonresidential class of use

It appears simple enough to go to Section 1-1-29 of the Ordinance and locate what the requirements are for a low intensity nonresidential class; however, it is not that simple. The applicant is led to Table II at the end of Section 1-1-29 which, indicates that the main difference with low intensity nonresidential as compared to a high intensity nonresidential is only in bufferyard depth, one is 50 feet and the other 100 feet. The confusion occurs when bufferyard screening comes into play. Section 1-1-29 contains three subsections that address transitional bufferyard screening and they do not all build on each other. (113) The two tables located at the end of Section 1-1-29 refer to Classes of Bufferyards yet they do not indicate where the definition of those bufferyards can be found, an oversight that leaves the applicant confused. (114) While Wake County addresses landscaping in their concern for wireless facilities they come up short in being clear and precise as they have in other areas of directing wireless facility placement.

Wake County is like most other jurisdictions when it comes to having zoning district restrictions and only having two districts where wireless facilities are not allowed. The two districts, Mobile Home and Super Highway, do not offer any provisions for exceptions to this rule. (115) The Wake County Ordinance is written to allow wireless facilities in most districts under two conditions. The first

is to allow wireless facilities in a district under *General Use* conditions and the second is to allow placement under *Special Use Permit* conditions. The key here is that the General Use conditions are less restrictive while the Special Use Permits require the applicant to go before the BOA and hold additional public hearings throughout the process. (116) What normally moves an applicant's request from a General Use process to a Special Use permit process is the height of the facility along with the district being considered for placement. While it first appears that Wake County seems to regulate the placement of the wireless facilities like any other jurisdiction, its method of regulation is quite different. Many jurisdictions have written into their zoning ordinance a separate text amendment which solely addresses wireless facility placement and identifies it as a primary or secondary use which can be found in the Permitted Uses Table within the zoning ordinance. Wake County on the other hand has decided to address wireless facilities in the text of each zoning district within its ordinance. This is where the confusion begins. If an applicant is trying to research wireless facility placement within the Wake County Ordinance there is no identifier in the ordinance's Table of Contents or in the layout of Zoning District Chapters to lead an applicant to the information they seek. Many times when the applicant finally locates the information for the zoning district in which they wish to locate the wireless facility, they are referred back to another portion of the zoning text. Probably the most confusing aspect of the ordinance is that when the applicant is directed to the general guidelines for wireless facility requirements, they are located in Section 1-1-37, **Residential Districts**. Why? Residential districts are

usually the most restrictive in uses within zoning ordinances. While the ordinance is strong in many aspects, it is this indirect path the applicant must follow that causes Wake County's Zoning ordinance to only score a 5 and not a 10 in this category.

The most disappointing element of the Wake County Zoning Ordinance has to be the absence of a clause concerning **Abandonment**. The ordinance was updated in 1996 and various parties within the Planning Office brought the issue to the table but the final draft was written without this issue being addressed.

Post Telecom Act amendments are key in addressing the issues of the Act and moving local jurisdictions forward and keeping the local planners free of conflict with the 1996 Act. Wake County is one example of a community addressing its wireless facility issues in the Post-Telecom Act Era. It had been since 1960 that Wake County addressed such issues. Text amendment O-96-51 began coming together in early 1996 and by the end of 1996 was adopted. (117) However, having the knowledge of the Telecom Act being in place and the information available to Wake County, the zoning ordinance still comes up short on key elements such as ease of use, abandonment, and permitted use tables.

III) Planning Staff Interview

Representing Wake County was Mr Steven Sizemore, AICP, Land Use Planner/Attorney Mr. Sizemore provided the following path that Wake County

took while preparing and evaluating a text amendment concerning wireless facilities:

1. Late 1995: Mr. Sizemore begins wireless facility research.
2. Earlier 1996: Research is completed, Matrix of Comparison developed from wireless research. Jurisdictions compared: Cary, NC, Chapel Hill, NC, Orange County, NC, Raleigh, NC, Franklin County, NC, Johnston County, NC, Chatham County, NC, and Durham County, NC.
3. June 1996, Wake County Board of Adjustment holds telecommunications forum. The County invites representatives from the wireless industry to offer their comments on developing a text amendment concerning telecommunication towers. Representatives from 360, BellSouth, GTE, AT&T, and Dial Call attended and offered comments.
4. August 1996, Draft text amendment presented to Board of Adjustment for feedback.
5. September 1996, Board of Adjustment asks revision of amendment be tabled until October meeting.
6. October 1996, Board of adjustments asks Mr. Sizemore to make further revisions to proposed amendment and take to Planning Board's next meeting.
7. October 1996, Planning Board requests Planning staff to meet with Planning Board's Code and Operations Committee for final determination.
8. November 1996, Code and Operations Committee meets with Planning staff and industry representatives for final comments on text amendment. Determination was made to present final text amendment to Board of County Commissioners December agenda.
9. December 1996, Planning Director presents County Commissioners Text Amendment O-96-51 for final approval. County Commissioners approve text amendment 7-0. (118)

Mr. Sizemore was asked, "What were the concerns aired in the early meetings with the Board of Adjustment members?" According to Mr. Sizemore the issues were: 1) Should we not include radio and television towers in the amendment?, 2) Why not place a 1000-foot setback for towers in nonresidential districts? 3) Another individual suggested that instead of such a large setback in nonresidential district, we offer setbacks equal to the "crumble zone" of the tower? 4) How do we encourage monopole design over lattice designed towers?

5) What lighting is required on the top of the tower according to FAA regulations?

Mr. Sizemore indicated that questions one (1) and two (2) were not incorporated into the text amendment. It was felt that enlarging the amendment to include radio and television towers would bring too many variables in design and height that could be adequately addressed within the amendment. The 1000-foot setback requirement might remove the incentive for towers to be located in nonresidential districts since the issue of general use versus special use permits would come into play. Items 3 and 4 were incorporated into the text amendment. The issue of “crumple zones” is handled under the term “Fall Zones”, usually at 100% or the height of the tower. Monopole design is encouraged through the use of reduced setback requirements. Item 5 is incorporated in the text amendment via the requirement of following all FAA guidelines. (119)

Mr. Sizemore was asked his opinion of how the Telecom Act of 1996 came into play concerning the design of this 1996 text amendment. He felt the Telecom Act was a guiding force but felt increased population drove the need for this text amendment. However, Mr. Sizemore’s director disagreed with this opinion. Planning Director, Mike Jennings of Wake County, felt the Telecom Act did play a major role in Wake’s decision to develop a more comprehensive amendment concerning wireless communication facilities within Wake County. Mr. Jennings believed that the wireless frequency auctions that took place shortly after the Telecom Act’s passage were directly related to each other. He spoke of the increased federal regulations that local communities were to follow in allowing wireless service providers in their jurisdictions. (120) The outcome was

the current zoning ordinance that addresses wireless service facilities within each zoning district.

IV) Conclusion

The Wake County Zoning Ordinance appeared to be the most confusing of all the jurisdictions studied. The approach to address wireless facilities within each of the zoning districts may seem at first to clarify the issue of wireless facility placement, however, on further review this method seems to leave an applicant for a facility permit in a state of confusion. The confusion comes from the sparse amount of information provided within each zoning district's detail on wireless facilities. The brevity within each district's detail provides little in guidance or even where to find guidance concerning the issues of "Special Use Permits", "transitional bufferyards", or even clear guidelines for reduced setbacks. Each of the previous case studies provided a single source of information concerning wireless facility placement within their zoning ordinances. Even though a single source doesn't guarantee clear procedures for an applicant's attempt for securing a building permit, it does offer a single point from which to start. The positive aspect of Wake County and its planning staff is they are continuing to evolve in the issues concerning wireless facility placement. Recently Mr. Sizemore spoke before the Wake County Planning Board about designing a "Master Plan for Wireless" for the County. (121)

Land Use Regulations and How They Compare

The chart on the following page (Table 6-1) provides a comprehensive view of how each jurisdiction within this study compares when it comes to their regulations concerning Wireless Facilities. The chart utilizes topics that are included in the above evaluation but also include a level of detail, which assists the local planner in their view of just what communities are placing in their ordinances. One of the largest differences between the communities is the way each handles the approval process. Each has an administrative body that reviews the wireless facility application, however each utilizes or empowers a different type of legislative body in the final approval process. Guilford County requires the legislative body to be a Technical Review Committee, while Mecklenburg County utilizes a more typical legislative body, the Planning Commission.

Comparison of Land Use Regulations Concerning Wireless Facilities in Selected North Carolina Jurisdictions								
Table 6-1								
Jurisdiction	Classified As	Districts Allowed	Districts Not Allowed	"Fall Zone" Required	Setback adjacent to Residential Zone	Setback adjacent to Non-Residential Zone	Board Approval	Co-location Incentives
Guilford County	Radio, Television, Communication Tower	AG, GO-M, GO-H, HB, CP, LI, HI, and PI	All Residential districts	NO	One and one-half Tower height	100 feet from adjacent property line	Minor site plans only by Planning Dept., Major site plans Technical Review Committee	YES
Mecklenburg County	Radio, Telephone, cellular telephone, and telephone masts, towers, antennae, and similar structures	All Zoning Districts	None	NO	200 feet from any adjoining residential property line	Must meet established minimum setbacks for zoning district locating within	Planning Commission and County Commissioners	YES
Durham County	Towers for transmitting and receiving electronic signals	All Zoning districts	None	Yes	1 1 for every foot if tower is over 7 sq ft	Normal setbacks if tower is less than 7 sq ft, 50' plus 1 1 for every foot of tower greater than 7 sq ft	BOA for Minor SUP & Governing Body for Major SUP	YES
Wake County	Telecommunication Tower	All but two zoning districts	MH (mobile home), SHD (special hwy district)	yes 100%	Height of Tower	Height of Tower	BOA	YES

Chapter 7: Study Evaluation and Conclusions

Since the enactment of the Telecommunication Act of 1996 many communities have been searching for methods to evaluate the placement of wireless facilities. A few communities have chosen to act slowly or not even act at all. In the case of the four counties studied here, each had their own way of meeting the task of handling wireless facility placement.

Guilford County, North Carolina has chosen not to enhance their ordinance, which were last amended in 1994. While speaking with the planning staff from Guilford County it was apparent that their pre-telecom act amendment in 1994 was sufficient in meeting the needs required by the act itself. While Guilford County's ordinance may meet the needs of the telecom act on the surface, the issues of clarity and the absence of predefined regulations make it only a matter of time before the wireless providers begin evaluating their legal options concerning wireless facility placement within Guilford County. Section 704 (B) Limitations, (iii) of the telecom act states:

- (iii) Any decision by a State or local government or instrumentality thereof to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record. (122)

The 'substantial evidence' portion would seem to be a point of concern when it comes to Guilford County stating its case for denying wireless facilities. The lack of a well written ordinance in the area of defining wireless facilities, co-location requirements, height restrictions, and no abandonment clause would appear to leave Guilford County in a vulnerable position when stating their case before a

judicial review. The fact that Guilford County utilizes a Technical Review Committee (which has little in the way of guidance from the county ordinance) reviewing wireless facility applications leaves much of the review open to interpretation by this committee. This interpretation could be viewed as nothing more than a subjective evaluation and not one based on 'substantial evidence'.

Guilford County would be prudent to revisit their approach to wireless facility placement. First, it should be recommended that the planning staff, along with the county attorney, develop a thorough understanding of the Telecommunications Act. Second, a review of existing ordinances from surrounding communities would assist Guilford County in how other jurisdictions are approaching this issue. Third, hold workshops with local wireless service providers and the public. Fourth, from these activities develop and amend current regulations. These four steps would assist Guilford County in developing a wireless facility ordinance, which would not only protect the community, it would establish clear guidelines for the wireless service providers.

A model ordinance that many communities could utilize would be Mecklenburg County, North Carolina. Mecklenburg County was involved quite early in the aspects of how the telecom act was going to impact a community. Many of the large wireless service providers were already located within Mecklenburg County and targeted many of their early efforts in the surrounding area. The City of Charlotte and Mecklenburg County joined forces and led the way in bringing the wireless service providers and the public together. Many workshops were held to educate the planning staff on just how the wireless

technology worked and explained how a cellular/PCS system needed to be laid upon the county's landscape. This was not to say that Mecklenburg didn't have its share of problems locating wireless facilities within its borders. Many grassroots campaigns rose up to fight the zoning requests. One group, the Raintree Homeowners Association, led the way in fighting the county and the wireless service providers. The county had provided BellSouth Mobility DCS a zoning permit to erect a tower upon a piece of property the homeowners association was subleasing to a golf club association. The homeowners went to court and eventually won on grounds the subleasee had no authority to allow BellSouth Mobility DCS on the property for the purposes of erecting a cellular/PCS tower. (123) After the tower was up and operational, the court required that the tower is taken down and both the golf club association and BellSouth compensate the homeowners association. The point here is, even with an outstanding wireless facility ordinance, decisions being made can be flawed. It is this kind of incident that Guilford County will face if they continue down their path of weak regulations. What saved Mecklenburg County in this case was the county informed BellSouth that the Raintree development could face complications due to land ownership. However, the interesting part was the county still authorized the golf club association for the zoning permit.

Mecklenburg County still has several weak points to their ordinance, one being the lack of a wireless facility definition within their section of definitions. A second and more important omission was a clause concerning abandonment. However, Mecklenburg County is leading the way in developing land use

techniques for locating towers within tightly zoned residential areas. The county planning board now has before it a text amendment proposing tower concealment within these residential areas. What this allows is an area that was once off limits to wireless facility placement, now becomes a possibility. What Mecklenburg County has proven is that a well written ordinance goes a long way and continuing innovation such as the 'Concealment' amendment will keep the county on track with the ever changing wireless environment.

While the Mecklenburg County ordinance is well written there was another county within the study, Durham County, which showed to be technically improved over Mecklenburg. Like Guilford County, Durham County has a review board assigned to oversee wireless facility placement. The difference lies in the text of the ordinance where Durham County outlines the exact powers and duties of the Development Review Board. (124) The key here was Durham set up their ordinance to follow the guidelines for Section 704, part B, item iii of the telecom act, where applicant denials for wireless facility placement occurred Durham County was able to provide substantial evidence in written form. Durham County also was the only county to offer a clause concerning abandonment. The abandonment clause is key in the county protecting its citizens from wireless service providers walking away from these facilities and leaving unsightly towers upon the county's landscape. Durham County has been proactive in several ways to protect the interest of their citizens. One instance was in 1993 when the county enacted a moratorium so the planning staff could research how the county could best prepare for the telecom act and better understand the

implications of increased requests for cellular/PCS building/zoning permit requests. The research was directed by the county attorney and pointed to eight specific areas:

- 1) Location of towers in nonresidential areas
- 2) Shared use of towers by wireless service providers
- 3) Placement of towers on existing facilities
- 4) The removal of obsolete equipment
- 5) Reduced tower heights
- 6) Reductions of EMF and tower lighting to minimal levels
- 7) Use of landscaping of sites
- 8) The use of concealment for towers

The importance of such a detailed study has benefited the planning staff in their ability to produce a clear and concise ordinance, which states exactly what is expected of each cellular/PCS tower applicant.

The final county in this study was Wake County, North Carolina. Wake County was last within the study group to implement regulations for Cellular/PCS towers in written form. It must be pointed out that Wake County did an extensive study of the issue of siting cellular/PCS towers within their community. The crucial steps of involving the citizens, wireless service providers, and detailed review of the Telecommunications Act of 1996 were all taken into consideration. While Wake took the initiative in preparing itself for developing a text amendment for its current zoning ordinance, the amendment leaves those seeking Wake County approval for Cellular/PCS towers with a daunting task of trying to traverse an ordinance with great detail but little organization. Even with all the effort that Wake County put into their research of the wireless industry, critical points were still left out of the new text amendment. One example is the abandonment

clause, which seems to be the one item that three of the four counties studied lack in their ordinance updates. However, Wake County's weakest point seems to be the organization of their ordinance. Instead of providing a section dedicated to providing clear guidelines to wireless facility applicant, the ordinance is hard to follow and leaves more questions than it answers. An example of this is an applicant trying to follow the landscape ordinance concerning bufferyard requirements. Section 1-1-29 contains three subsections that address transitional bufferyard screening and they do not all build on each other. (49) The two tables located at the end of Section 1-1-29 refer to Classes of Bufferyards yet they do not indicate where the definition of those bufferyards can be found, an oversight that leaves the applicant confused. The positive aspect of the deficiency within Wake County's ordinance is that a simple text amendment could clarify many of the confusing aspects within the ordinance. Wake County is also looking at preparing a 'Master Plan for Wireless Technology' for the county. This would elevate Wake County to a leader in wireless facility siting and prepare it for even more technology heading its way.

Has the Telecommunication Act of 1996 had an impact on local land use ordinances? The answer is an obvious, yes. Each of the counties within this study made the telecom act a key issue when reviewing their current and future text amendments concerning their land development ordinances. Each issue within this study had to be addressed for each county to properly develop their land use controls concerning wireless facility placement Safety, federal and

local legislation, grassroots groups, and their own local land use tools all had relevance in the outcome of each county's text amendments.

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APPENDIX

**WIRELESS TELECOMMUNICATIONS FACILITIES
ORDINANCE**

(Model Ordinance)

Authored by: AT&T, Nextel, Western Wireless

CONTENTS

Section 1 Title

Section 2 Authority

Section 3 Purpose

Section 4 Applicability

4.1 Exemptions

Section 5 Review and Approval Authority

5.1 Approval Required

5.2 Approval Authority

Section 6 Approval Process

6.1 Pre-Application Conference

6.2 Application

6.3 Submission Waiver

6.4 Fees

6.5 Notice of Complete Application

6.6 Public Hearing

6.7 Approval

Section 7 Standards of Review

7.1 CEO Approval Standards

7.2 Planning Board Approval Standards

7.3 Standard Conditions of Approval

Section 8 Amendment to an Approved Application

Section 9 Abandonment

Section 10 Appeals

Section 11 Administration and Enforcement

Section 12 Penalties

Section 13 Conflict and Severability

13.1 Conflicts with other Ordinances

13.2 Severability

Section 14 Definitions

Section 15 Effective

Section 1 Title

This Ordinance shall be known and cited as the "Wireless Telecommunications Facilities Siting Ordinance" of [municipality], Maine, (hereinafter referred to as the "ordinance")

Section 2. Authority

This ordinance is adopted pursuant to the enabling provisions of Article VIII, Part 2, Section 1 of the Maine Constitution, the provisions of Title 30-A M R S A Section 3001 (Home Rule), and the provisions of the Planning and Land Use Regulation Act, Title 30-A M R S A Section 4312 *et seq.*

Section 3. Purpose

The purpose of this ordinance is to provide a process and a set of standards for the construction of wireless telecommunications facilities in order to

Implement a municipal policy concerning the provision of wireless telecommunications services, and the siting of their facilities;

Establish clear guidelines, standards and time frames for the exercise of municipal authority to regulate wireless telecommunications facilities,

Allow competition in telecommunications service; Encourage the provision of advanced telecommunications services to the largest number of businesses, institutions and residents of [municipality],

Permit and manage reasonable access to the public rights of way of [municipality] for telecommunications purposes on a competitively neutral basis,

Ensure that all telecommunications carriers providing facilities or services within [municipality] comply with the ordinances of [municipality],

Ensure that [municipality] can continue to fairly and responsibly protect the public health, safety and welfare;

Encourage the colocation of wireless telecommunications facilities ,
thus helping to minimize adverse visual impacts on the community,

Enable [municipality] to discharge its public trust consistent with rapidly
evolving federal and state regulatory policies, industry competition and
technological development,

Further the goals and policies of the comprehensive plan, while
promoting orderly development of the town with minimal impacts on
existing uses; and Protect the scenic and visual character of the
community

Section 4 Applicability

This local land use ordinance applies to all construction and expansion of
wireless telecommunications facilities, except as provided in section 4 1

4.1. Exemptions

The following are exempt from the provisions of this ordinance

A.) Emergency Wireless Telecommunications Facility. Temporary
wireless communication facilities for emergency communications by
public officials

B.) Amateur (ham) radio stations. Amateur (ham) radio stations
licensed by the Federal Communications Commission (FCC)

C.) Parabolic antenna. Parabolic Antennas less than seven (7) feet in
diameter, that are an accessory use of the property

D.) Maintenance or repair Maintenance, repair or reconstruction of a
wireless telecommunications facility and related equipment, provided
that there is no change in the height or any other dimension of the
facility

E.) Temporary wireless telecommunications facility Temporary
wireless telecommunications facility, in operation for a maximum

period of one hundred eighty (180) days.

F.) Antennas as Accessory Uses An antenna that is an accessory use to a residential dwelling unit

Section 5. Review and Approval Authority

5.1. Approval Required

No person shall construct or expand a wireless telecommunication facility without approval of the Code Enforcement Officer (CEO) or the Planning Board as follows

A.) Expansion of an Existing Facility and Colocation. Approval by the CEO is required for any expansion of an existing wireless telecommunications facility that increases the height of the facility by no more than 20 feet, accessory use of an existing wireless telecommunications facility, or colocation on an existing wireless telecommunications facility

B.) New Construction. Approval of the Planning Board is required for construction of a new wireless telecommunications facility, and any expansion of an existing wireless telecommunications facility that increases the height of the facility by more than 20 feet

5.2 Approval Authority

In accordance with Section 5.1 above, the CEO or Planning Board shall review applications for wireless telecommunications facilities, and make written findings on whether the proposed facility complies with this Ordinance

Section 6. Approval Process

6.1. Pre-Application Conference

All persons seeking approval of the CEO or the Planning Board under this ordinance shall meet with the CEO no less than thirty (30) days before filing an application. At this meeting, the CEO shall explain to the applicant the ordinance provisions, as well as application forms and submissions that will be required under this ordinance

6.2. Application

All persons seeking approval of the CEO or the Planning Board under this ordinance shall submit an application as provided below. The CEO shall be responsible for ensuring that notice of the application has been published in a newspaper of general circulation in the community.

A.) Application for CEO Approval. Applications for permit approval by the CEO must include the following materials and information

- 1.)** Documentation of the applicant's right, title, or interest in the property where the facility is to be sited, including name and address of the property owner and the applicant
- 2.)** A copy of the FCC license for the facility or a signed statement from the owner or operator of the facility attesting that the facility complies with current FCC regulations
- 3.)** Identification of districts, sites, buildings, structures or objects, significant in American history, architecture, archaeology, engineering or culture, that are listed, or eligible for listing, in the National Register of Historic Places (see 16 U S C 470w(5); 36 CFR 60 and 800)
- 4.)** Location map and elevation drawings of the proposed facility and any other proposed structures, showing color, and identifying structural materials
- 5.)** For proposed expansion of a facility, a signed statement that commits the owner of the facility, and his or her successors in interest, to:
 - a.)** respond in a timely, comprehensive manner to a request for information from a potential colocation applicant, in exchange for a reasonable fee not in excess of the actual cost of preparing a response,
 - b.)** negotiate in good faith for shared use by third parties;
 - c.)** allow shared use if an applicant agrees in writing to pay reasonable charges for colocation;
 - d.)** require no more than a reasonable charge for shared use, based on community rates and generally accepted accounting principles. This charge may include but is not limited to a pro rata share of

the cost of site selection, planning project administration, land costs, site design, construction and maintenance, financing, return on equity, depreciation, and all of the costs of adopting the tower or equipment to accommodate a shared user without causing electromagnetic interference

B.) Application for Planning Board Approval. An application for approval by the Planning Board must be submitted to the Code Enforcement Officer. The application must include the following information

- 1.) Documentation of the applicant's right, title, or interest in the property on which the facility is to be sited, including name and address of the property owner and the applicant
- 2.) A copy of the FCC license for the facility, or a signed statement from the owner or operator of the facility attesting that the facility complies with current FCC regulations
- 3.) A USGS 7.5 minute topographic map showing the location of all structures and wireless telecommunications facilities above 150 feet in height above ground level, except antennas located on roof tops, within a five (5) mile radius of the proposed facility, unless this information has been previously made available to the municipality. This requirement may be met by submitting current information (within thirty days of the date the application is filed) from the FCC Tower Registration Database
- 4.) A site plan.
 - a.) prepared and certified by a professional engineer registered in Maine indicating the location, type, and height of the proposed facility, antenna capacity, on-site and abutting off-site land uses, means of access, setbacks from property lines, and all applicable American National Standards Institute (ANSI) technical and structural codes,
 - b.) certification by the applicant that the proposed facility complies with all FCC standards for radio emissions is required; and
 - c.) a boundary survey for the project performed by a land surveyor licensed by the State of Maine

5.) A scenic assessment, consisting of the following.

a.) Elevation drawings of the proposed facility, and any other proposed structures, showing height above ground level,

b.) A landscaping plan indicating the proposed placement of the facility on the site, location of existing structures, trees, and other significant site features, the type and location of plants proposed to screen the facility; the method of fencing, the color of the structure, and the proposed lighting method.

c.) Photo simulations of the proposed facility taken from perspectives determined by the Planning Board, or their designee, during the pre-application conference. Each photo must be labeled with the line of sight, elevation, and with the date taken imprinted on the photograph. The photos must show the color of the facility and method of screening

d.) A narrative discussing

- 1. i.) the extent to which the proposed facility would be visible from or within a designated scenic resource,**
- 2.**
- 3 ii.) the tree line elevation of vegetation within 100 feet of the facility, and**
- 4**
- 5 iii.) the distance to the proposed facility from the designated scenic resource's noted viewpoints.**

6.) A written description of how the proposed facility fits into the applicant's telecommunications network. This submission requirement does not require disclosure of confidential business information

7.) Evidence demonstrating that no existing building, site, or structure can accommodate the applicant's proposed facility, the evidence for which may consist of any one or more of the following.

a.) Evidence that no existing facilities are located within the targeted market coverage area as required to meet the applicant's engineering requirements,

b.) Evidence that existing facilities do not have sufficient height or cannot be increased in height at a reasonable cost to meet the applicant's engineering requirements,

c.) Evidence that existing facilities do not have sufficient structural strength to support applicant's proposed antenna and related equipment Specifically.

i.) Planned, necessary equipment would exceed the structural capacity of the existing facility, considering the existing and planned use of those facilities, and these existing facilities cannot be reinforced to accommodate the new equipment.

ii.) The applicant's proposed antenna or equipment would cause electromagnetic interference with the antenna on the existing towers or structures, or the antenna or equipment on the existing facility would cause interference with the applicant's proposed antenna.

iii.) Existing or approved facilities do not have space on which planned equipment can be placed so it can function effectively.

d.) For facilities existing prior to the effective date of this ordinance, the fees, costs, or contractual provisions required by the owner in order to share or adapt an existing facility are unreasonable. Costs exceeding the pro rata share of a new facility development are presumed to be unreasonable. This evidence shall also be satisfactory for a tower built after the passage of this ordinance;

e.) Evidence that the applicant has made diligent good faith efforts to negotiate colocation on an existing facility, building, or structure, and has been denied access;

8.) Identification of districts, sites, buildings, structures or objects, significant in American history, architecture, archaeology, engineering or culture, that are listed, or eligible for listing, in the National Register of Historic Places (see 16 U.S.C 470w(5), 36 CFR 60 and 800).

9.) A signed statement stating that the owner of the wireless telecommunications facility and his or her successors and assigns agree to

a.) respond in a timely, comprehensive manner to a request for

information from a potential colocation applicant, in exchange for a reasonable fee not in excess of the actual cost of preparing a response,

b.) negotiate in good faith for shared use of the wireless telecommunications facility by third parties;

c.) allow shared use of the wireless telecommunications facility if an applicant agrees in writing to pay reasonable charges for colocation,

d.) require no more than a reasonable charge for shared use, based on community rates and generally accepted accounting principles. This charge may include but is not limited to a pro rata share of the cost of site selection, planning project administration, land costs, site design, construction, financing, return on equity, depreciation, and all of the costs of adapting the tower or equipment to accommodate a shared user without causing electromagnetic interference. The amortization of the above costs by the facility owner shall be accomplished at a reasonable rate, over the useful life span of the facility.

12.) A form of surety approved by the Planning Board to pay for the costs of removing the facility if it is abandoned

13.) Evidence that a notice of the application has been published in a local newspaper of general circulation in the community

6.3. Submission Waiver

The CEO or Planning Board, as appropriate, may waive any of the submission requirements based upon a written request of the applicant submitted at the time of application. A waiver of any submission requirement may be granted only if the CEO or Planning Board finds in writing that due to special circumstances of the application, the information is not required to determine compliance with the standards of this Ordinance.

6.4. Fees

A.) CEO Application Fee

An application for CEO approval shall include payment of an

application fee of \$ _____. The application shall not be considered complete until this fee is paid. The applicant is entitled to a refund of the application fee if the application is withdrawn within fifteen (15) days of date of filing, less all expenses incurred by the [municipality] to review the application

B.) Planning Board Application Fee

An application for Planning Board approval shall include payment of an application fee of \$ _____. The application shall not be considered complete until this fee is paid. An applicant is entitled to a refund of the application portion of fee if the application is withdrawn within fifteen (15) days of date of filing, less all expenses incurred by the [municipality] to review the application.

C. Planning Board Review Fee

An applicant for approval by the Planning Board shall pay all reasonable and customary fees incurred by the municipality that are necessary to review the application. The review fee shall be paid in full prior to the start of construction

That portion of the review fee not used shall be returned to the applicant within fourteen (14) days of the Planning Board's decision.

6.5. Notice of Complete Application

Upon receipt of an application, the CEO shall provide the applicant with a dated receipt. Within five (5) working days of receipt of an application the CEO shall review the application and determine if the application meets the submission requirements. The CEO or Planning Board, as appropriate, shall review any requests for a waiver from the submission requirements and shall act on these requests prior to determining the completeness of the application.

If the application is complete, the CEO shall notify the applicant in writing of this determination and require the applicant to provide a sufficient number of copies of the application to the [Planning Board, Planning Office, Code Enforcement Office, Engineering Department, Police Department, and Fire Department].

If the application is incomplete, the CEO shall notify the applicant in writing, specifying the additional materials or information required to complete the application.

If the application is deemed to be complete, and requires Planning Board review, the CEO shall notify all abutters to the site as shown on the Assessor's records, by first-class mail, that an application has been accepted. This notice shall contain a brief description of the proposed activity and the name of the applicant, give the location of a copy of the application available for inspection, and provide the date, time, and place of the Planning Board meeting at which the application will be considered. Failure on the part of any abutter to receive such notice shall not be grounds for delay of any consideration of the application nor denial of the project.

6.6. Public Hearing

For applications for Planning Board approval under Section 5.1(B), a public hearing shall be held within 30 days of the notice of the complete application.

6.7. Approval

A.) CEO Approval. Within thirty (30) days of receiving a complete application for approval under section 5.1(A), the CEO shall approve, approve with conditions, or deny the application in writing, together with the findings on which that decision is based. The CEO shall approve the application if the CEO finds that the application complies with the provisions in Section 7.1 of this ordinance.

The CEO shall notify all abutters of the decision to issue a permit under this section. The time period may be extended upon agreement between the applicant and the CEO.

B.) Planning Board Approval. Within ninety (90) days of receiving a complete application for approval under section 5.1(B), the Planning Board shall approve, approve with conditions, or deny the application in writing, together with the findings on which that decision is based. However, if the Planning Board has a waiting list of applications that would prevent the Planning Board from making a decision within the required ninety (90) day time period, then a decision on the application shall be issued within sixty (60) days of the public hearing, if necessary, or within 60 days of the completed Planning Board review. This time period may be extended upon agreement between the applicant and the Planning Board.

Section 7. Standards of Review

To obtain approval from the CEO or the Planning Board, an application must comply with the standards in this section

7.1. CEO Approval Standards

An application for approval by the CEO under Section 5 1(A) must meet the following standards

- A.)** The proposed facility is an expansion, accessory use, or colocation to a structure existing at the time the application is submitted.
- B.)** The applicant has sufficient right, title, or interest to locate the proposed facility on the existing structure.
- C.)** The proposed facility increases the height of the exiting structure by no more than twenty (20) feet
- D.)** The proposed facility will be constructed with materials and colors that match or blend with the surrounding natural or built environment, to the maximum extent practicable.
- E.)** The proposed facility, to the greatest degree practicable, shall have no unreasonable adverse impact upon districts, sites, buildings, structures or objects, significant in American history, architecture, archaeology, engineering or culture, that are listed, or eligible for listing, in the National Register of Historic Places (see 16 U.S.C 470w(5); 36 CFR 60 and 800).

7.2. Planning Board Approval Standards

An application for approval by the Planning Board under Section 5.1(B) must meet the following standards.

A.) Priority of Locations New wireless telecommunications facilities must be located according to the priorities below. The applicant shall demonstrate that a facility of a higher priority cannot reasonably accommodate the applicant's proposed facility

- 1.)** Colocation on an existing wireless telecommunications facility or

other existing structure in the following districts, as identified in the [name of municipality] Zoning Ordinance:

- 2.) A new facility on public or private property in an Industrial District, or permitted as an Industrial Use
- 3.) A new facility on public or private property in a Commercial District, or permitted as a Commercial Use.
- 4.) A new facility on public or private property in a Rural District, or permitted as a Rural Use
- 5.) A new facility on public or private property in a Residential District, or permitted as an Residential Use

[OR]

A.) Location

New wireless telecommunications facilities may be permitted only in the following districts as designated in the [municipal] zoning ordinance

[list districts here]

B.) Siting on Municipal Property If an applicant proposes to locate a new wireless telecommunications facility, or expand an existing facility on municipal property, the applicant must show the following:

- 1.) The proposed location complies with applicable municipal policies and ordinances
- 2.) The proposed facility will not interfere with the intended purpose of the property.
- 3.) The applicant has adequate liability insurance and a lease agreement with the municipality that includes reasonable compensation for the use of the property and other provisions to safeguard the public rights and interests in the property

[IMPORTANT NOTE: The working group, made up of industry and municipal representatives, could not reach consensus on the following subsection. Municipalities are strongly recommended to work with applicants in determining effective and appropriate colocation design requirements during the pre-application, design, and Planning Board workshop phases.]

C.) Design for Colocation. A new wireless telecommunications facility and related equipment must be designed and constructed to accommodate expansion for future colocation of at least three additional wireless telecommunications facilities or providers. However, the Planning Board may waive or modify this standard where the district height limitation effectively prevents future colocation

D.) Height. A new wireless telecommunications facility must be no more than ____ feet in height

[OR]

D.) Height. A new wireless telecommunications facilities must meet the following height standards, in the following districts:

1.) In any Manufacturing or Industrial District the maximum height for a wireless telecommunications facility shall be ____ feet

2.) In any Rural District the maximum height for a wireless telecommunications facility shall be ____ feet, or sufficiently above tree line to minimize interference.

3.) In any Commercial District the maximum height for a wireless telecommunications facility shall be ____ feet.

4.) In any Neighborhood Business/Commercial District the maximum height for a wireless telecommunications facility shall be ____ feet.

5.) Residential District. In any Residential District the maximum height for a wireless telecommunications facility shall be ____ feet.

E.) Setbacks A new or expanded wireless telecommunications facility must comply with the set back requirements for the zoning district in which it is located, or be set back one hundred five percent (105%) of its height from all property lines, whichever is greater. The setback may be satisfied by including the areas outside the property boundaries if secured by an easement. The following exemptions apply:

1) In _____ districts, the setback may be reduced by the Planning Board upon a showing by the applicant that the facility is designed to collapse in a manner that will not harm other property

2.) An antenna is exempt from the setback requirement if it extends no more than five (5) feet horizontally from the edge of the structure to which it is attached, and it does not encroach upon an abutting property.

F.) Landscaping. A new wireless telecommunications facility and related equipment must be screened with plants from view by abutting properties, to the maximum extent practicable. Existing plants and natural land forms on the site shall also be preserved to the maximum extent practicable

G.) Fencing A new wireless telecommunications facility must be fenced to discourage trespass on the facility and to discourage climbing on any structure by trespassers.

H.) Lighting. A new wireless telecommunications facility must be illuminated only as necessary to comply with FAA or other applicable state and federal requirements. However, security lighting may be used as long as it is shielded to be down-directional to retain light within the boundaries of the site, to the maximum extent practicable

L.) Color and Materials. A new wireless telecommunications facility must be constructed with materials and colors that match or blend with the surrounding natural or built environment, to the maximum extent practicable. Unless otherwise required, muted colors, earth tones, and subdued hues shall be used.

J.) Structural Standards. A new wireless telecommunications facility must comply with the current Electronic Industries Association/ Telecommunications Industries Association (EIA/TIA) 222 Revision Standard entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures "

K.) Visual Impact. The proposed wireless telecommunications facility will have no unreasonable adverse impact upon designated scenic resources within the Town, as identified either in the municipally adopted comprehensive plan, or by a State or federal agency

1.) In determining the potential unreasonable adverse impact of the proposed facility upon the designated scenic resources, the Planning Board shall consider the following factors.

a.) The extent to which the proposed wireless telecommunications facility is

visible above tree line, from the viewpoint(s) of the impacted designated scenic resource,

b.) the type, number, height, and proximity of existing structures and features, and background features within the same line of sight as the proposed facility,

c.) the extent to which the proposed wireless telecommunications facility would be visible from the viewpoint(s),

d.) the amount of vegetative screening,

e.) the distance of the proposed facility from the viewpoint and the facility's location within the designated scenic resource; and

f.) the presence of reasonable alternatives that allow the facility to function consistently with its purpose.

L.) Noise During construction, repair, or replacement, operation of a back-up power generator at any time during a power failure, and testing of a back-up generator between 8 a.m. and 9 p.m. is exempt from existing municipal noise standards

M.) Historic & Archaeological Properties The proposed facility, to the greatest degree practicable, will have no unreasonable adverse impact upon a historic district, site or structure which is currently listed on or eligible for listing on the National Register of Historic Places

7.3 Standard Conditions of Approval

The following standard conditions of approval shall be a part of any approval or conditional approval issued by the CEO or Planning Board. Where necessary to ensure that an approved project meets the criteria of this ordinance, the Planning Board can impose additional conditions of approval. Reference to the conditions of approval shall be clearly noted on the final approved site plan, and shall include:

1.) The owner of the wireless telecommunications facility and his or her successors and assigns agree to:

a.) respond in a timely, comprehensive manner to a request for information from a potential colocation applicant, in exchange for

a reasonable fee not in excess of the actual cost of preparing a response,

b.) negotiate in good faith for shared use of the wireless telecommunications facility by third parties,

c.) allow shared use of the wireless telecommunications facility if an applicant agrees in writing to pay reasonable charges for colocation

d.) require no more than a reasonable charge for shared use of the wireless telecommunications facility, based on community rates and generally accepted accounting principles. This charge may include, but is not limited to, a pro rata share of the cost of site selection, planning project administration, land costs, site design, construction and maintenance, financing, return on equity, depreciation, and all of the costs of adapting the tower or equipment to accommodate a shared user without causing electromagnetic interference. The amortization of the above costs by the facility owner shall be accomplished at a reasonable rate, over the life span of the useful life of the wireless telecommunications facility

2.) Upon request by the municipality, the applicant shall certify compliance with all applicable FCC radio frequency emissions regulations

Section 8. Amendment to an Approved Application

Any changes to an approved application must be approved by the CEO or the Planning Board, in accordance with Section 5

Section 9. Abandonment

A wireless telecommunications facility that is not operated for a continuous period of twelve (12) months shall be considered abandoned. The CEO shall notify the owner of an abandoned facility in writing ☐ and order the ☐ removal of the facility within ninety (90) days of receipt of the written notice. The owner of the facility shall have thirty (30) days from the receipt of the notice to demonstrate to the CEO that the facility has not been abandoned.

If the Owner fails to show that the facility is in active operation, the owner shall have sixty (60) days to remove the facility. If the facility is not removed

within this time period, the □municipality may remove the facility at the owner's expense. The owner of the facility shall pay all site reclamation costs deemed necessary and reasonable to return the site to its pre-construction condition, including the removal of roads, and reestablishment of vegetation.

If a surety has been given to the municipality for removal of the facility, the owner of the facility may apply to the Planning Board for release of the surety when the facility and related equipment are removed to the satisfaction of the Planning Board

Section 10. Appeals

Any person aggrieved by a decision of the CEO or the Planning Board under this ordinance may appeal the decision to the Board of Appeals, as provided by [section of Zoning or Land Use Ordinance]. Written notice of an appeal must be filed with the Board of Appeals within thirty (30) days of the decision. The notice of appeal shall clearly state the reasons for the appeal.

Section 11. Administration and Enforcement

The CEO, as appointed through either the Zoning Ordinance or by the Board of Selectmen or Town or City Council, shall enforce this ordinance. If the CEO finds that any provision of this ordinance has been violated, the CEO shall notify in writing the person responsible for such violation, indicating the nature of the violation, and ordering the action necessary to correct it. The CEO shall order correction of the violation and may take any other legal action to ensure compliance with this ordinance.

The [Municipal Officers], or their authorized agent, are authorized to enter into administrative consent agreements for the purpose of eliminating violations of this ordinance and recovering fines without court action. Such agreements shall not allow a violation of this ordinance to continue unless: there is clear and convincing evidence that the violation occurred as a direct result of erroneous advice given by an authorized municipal official upon which the applicant reasonably relied to its detriment and there is no evidence that the owner acted in bad faith, the removal of the violation will result in a threat to public health and safety or substantial environmental damage.

Section 12. Penalties

Any person who owns or controls any building or property that violates this ordinance shall be fined in accordance with Title 30-A M.R.S.A. § 4452. Each day such violation continues after notification by the CEO shall constitute a

separate offense.

Section 13. Conflict and Severability

13.1 Conflicts with other Ordinances

Whenever a provision of this ordinance conflicts with or is inconsistent with another provision of this ordinance or of any other ordinance, regulation, or statute, the more restrictive provision shall apply

13.2 Severability

The invalidity of any part of this ordinance shall not invalidate any other part of this ordinance

Section 14. Definitions

The terms used in this ordinance shall have the following meanings:

"Antenna" means any system of poles, panels, rods, reflecting discs or similar devices used for the transmission or reception of radio or electromagnetic frequency signals.

"Antenna Height" means the vertical distance measured from the base of the antenna support structure at grade to the highest point of the structure, even if said highest point is an antenna. Measurement of tower height shall include antenna, base pad, and other appurtenances and shall be measured from the finished grade of the facility site. If the support structure is on a sloped grade, then the average between the highest and lowest grades shall be used in calculating the antenna height.

"Colocation" means the use of a wireless telecommunications facility by more than one wireless telecommunications provider.

"Expansion" means the addition of antennas, towers, or other devices to an existing structure.

"FAA" means the Federal Aviation Administration, or its lawful successor

"FCC" means the Federal Communications Commission, or its lawful successor.

"Height" means the vertical measurement from a point on the ground at the mean finish grade adjoining the foundation as calculated by averaging the highest and lowest finished grade around the building or structure, to the highest point of the building or structure. The highest point shall exclude farm building components, flagpoles, chimneys, ventilators, skylights, domes, water towers, bell towers, church spires, processing towers, tanks, bulkheads, or other building accessory features usually erected at a height greater than the main roofs of buildings.

"Historic or Archaeological Resources" means resources that are:

- 1 Listed individually in the National Register of Historic Places or eligible for listing on the National Register;
- 2 Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary of the Interior to qualify as a registered historic district;
- 3 Individually listed on a state inventory of historic places in states with historic preservation programs approved by the Secretary of the Interior;
- 4 Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified by Secretary of the Interior through the Maine Historic Preservation Commission; or
5. Areas identified by a governmental agency such as the Maine Historic Preservation Commission as having significant value as an historic or archaeological resource and any areas identified in the municipality's comprehensive plan, which have been listed or are eligible to be listed on the National Register of Historic Places

"Historic District" means a geographically definable area possessing a significant concentration, linkage or continuity of sites, buildings, structures or objects united by past events or aesthetically by plan or physical development and identified in the municipality's comprehensive plan, which is listed or is eligible to be listed on the National Register of Historic Places. Such historic districts may also comprise individual elements separated geographically, but linked by association or history

"Historic Landmark" means any improvement, building or structure of particular historic or architectural significance to the Town relating to its heritage, cultural, social, economic or political history, or which exemplifies historic personages or important events in local, state or national history identified in the municipality's comprehensive plan, which have been listed or are eligible to be listed on the National Register of Historic Places.

"Line of sight" means the direct view of the object from the designated scenic resource.

"Parabolic Antenna" (also known as a satellite dish antenna) means an antenna which is bowl-shaped, designed for the reception and or transmission of radio frequency communication signals in a specific directional pattern.

"Principal Use" means the use other than one which is wholly incidental or accessory to another use on the same premises

"Public Recreational Facility" means a regionally or locally significant facility, as defined and identified either by State statute or in the municipality's adopted comprehensive plan, designed to serve the recreational needs of municipal property owners

"Designated Scenic Resource" means that specific location, view, or corridor, as identified as a scenic resource in the municipally adopted comprehensive plan or by a State or federal agency, that consists of:

- 1) a three dimensional area extending out from a particular viewpoint on a public way or within a public recreational area, focusing on a single object, such as a mountain, resulting in a narrow corridor, or a group of objects, such a downtown skyline or mountain range, resulting in a panoramic view corridor; or

- 2) lateral terrain features such as valley sides or woodland as observed to either side of the observer, constraining the view into a narrow or particular field, as seen from a viewpoint on a public way or within a public recreational area

"Targeted Market Coverage Area" means the area which is targeted to be served by this proposed telecommunications facility

"Unreasonable Adverse Impact" means that the proposed project would produce an end result which is:

- 1.) excessively out-of-character with the designated scenic resources affected, including existing buildings structures and features within the designated scenic resource, and
- 2.) would significantly diminish the scenic value of the designated scenic resource.

"Viewpoint" means that location which is identified either in the municipally adopted comprehensive plan or by a federal or State agency, and which serves as the basis for the location and determination of a particular designated scenic resource.

"Wireless Telecommunications Facility" or "Facility" means any structure, antenna, tower, or other device which provides radio/television transmission, commercial mobile wireless services, unlicensed wireless services, cellular phone services, specialized mobile radio communications (SMR), common carrier wireless exchange phone services, specialized mobile radio communications (SMR), common carrier wireless exchange access services, and personal communications service (PCS) or pager services

Section 15. Effective Date

This ordinance becomes effective on _____

VITA

Wendell Hardin was born in Lincoln Park, Michigan on May 3, 1960. He graduated from Edsel Ford High School in Dearborn, Michigan in June 1979. He began his post-secondary education at Adrian College, Adrian, Michigan in the spring of 1980 and finalized his post-secondary education at the University of Michigan-Flint in 1995 receiving a Bachelor of Arts in Social Sciences. He began his graduate work at the University of Tennessee-Knoxville, School of Planning in 1993 and completed his course work in 1995

From 1984 to 1991 he worked with various large telecommunication companies in the area of landline to wireless services. The companies included Nortel Networks, EDS, and USAA. From 1991 to 1995 his time was spent finalizing his education as mentioned above. From 1995 to 1999 he worked as the Manager of Real Estate and Construction for BellSouth Mobility DCS in their North Carolina Market.

In August 2000 he received the Master of Science Degree from the University of Tennessee-Knoxville, School of Planning.