

**Amendment to the Comprehensive Plans for Cellular and Personal  
Communications Service (PCS) Facilities on behalf of**

**Sprint Spectrum L.P. and its Affiliates**

**For Wireless Communications Facilities in the Pinelands**

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## I. PLAN INTRODUCTION

In 1995, the Pinelands Commission amended N.J.A.C. 7:50-5.4 to permit local communications facilities to exceed the 35 foot height limit if a Comprehensive Plan for the entire Pinelands National Reserve was prepared and approved by the Pinelands Commission. The regulations recognized that: (i) local communications systems rely on a network of facilities to receive and transmit radio signals; and (ii) the location of each antenna facility within this network has an effect on the location of other facilities; and (iii) a well-designed and integrated network can avoid the proliferation of towers throughout the entire Pinelands Area. A comprehensive plan for cellular communications providers was approved in 1998 and was amended in 2000 with the entry of the PCS carriers by the PCS Plan. The Cellular and PCS Plans were amended by the Commission in 2003 at the request of AT&T which operates both cellular and PCS wireless networks. Most recently, the Comprehensive plan was amended in 2012 at the request of T-Mobile. At the time of the adoption of the Comprehensive Plans, Sprint Spectrum L.P. and Nextel of New York, Inc. were two independent companies. Nextel had participated in the Cellular Plan and Sprint Spectrum L.P. participated in the adoption of the PCS Plan. Sprint Spectrum L.P. and Nextel of New York, Inc. merged in 2005. Petitioner, Sprint Spectrum L.P., shall refer to Sprint Spectrum L.P. and its affiliated companies and shall be referred to herein collectively as “Sprint.”

Sprint is now improving its wireless PCS communications system in the Pinelands in order to address deficiencies in its coverage to meet the needs of Jersey Central Power & Light Company, a FirstEnergy Company (“JCP&L”)(as discussed below), and its other customers, and submits the within amendment to the Cellular and PCS Comprehensive Plans in furtherance thereof. This amendment will be referred to as the “Sprint Amended Plan.” The Sprint Amended Plan is not proposed to supersede the prior Comprehensive Plans but is in addition to and incorporates all documents that have been approved by the Pinelands Commission in regard to the Comprehensive Plans.

Sprint has attempted to design its network utilizing existing and approved structures as requested by the Pinelands Commission with a minimum number of proposed new structures. The Sprint Amended Plan is an accurate representation of the facilities necessary for the provision of adequate and reliable wireless service by Sprint throughout the planned build-out area in the Pinelands during the next five (5) to ten (10) years.

The Sprint Amended Plan includes the following:

- Description of the joint use of facilities by Sprint.
- Maps (Attached in Appendix A)
  1. The locations of Pineland Commission approved facilities and the proposed Sprint Amended Plan facility (Qty of 1)
  2. Pinelands Facilities, Proposed Sprint Amended Plan facility (Qty of 1).  
Existing Sprint Facilities and Future Sprint Facilities
  3. Sprint reliable in-vehicle coverage from existing facilities, in the FirstEnergy service area
  4. Sprint reliable in-vehicle coverage from existing and future facilities, in the

- FirstEnergy service area
5. Sprint reliable in-vehicle coverage from existing, future and proposed facilities, in the FirstEnergy service area
- Spread sheet identifying Sprint's Proposed Use of Pineland Facilities (Attached in Appendix B)
  - Documentation regarding Fort Dix inquiry for leasing property for a wireless facility (Attached in Appendix C)
  - Documentation regarding Distributed Antenna Systems (DAS) as an alternate technology (Attached on Appendix D)

Sprint presents the Sprint Amended Plan to the Commission in order for it to be able to expand its service within the Pinelands to provide coverage to areas that are currently lacking reliable coverage. Such service is required pursuant to Sprint's FCC license and by its customers. Currently, a significant number of wireless customers reside in the Pinelands and additional customers travel through the region each day. The customers use wireless service for both convenience and out of necessity. As the price of wireless communication service continues to decline, more and more people use wireless services as their only means of accessing the telephone network. More importantly, safety and security are the top reasons listed by customers for purchasing a phone. As with most networks, if service does not exist, calls whether for convenience or necessity, do not go through.

In addition to providing service to Sprint's customer base, the effort to enhance the coverage in the Pinelands is also prompted by a Master Services Agreement between Sprint and FirstEnergy Service Company ("FirstEnergy"). The purpose of the Master Services Agreement is to enhance FirstEnergy's communications infrastructure. FirstEnergy owns ten electric distribution companies in different regions of the United States from Ohio to New Jersey. In New Jersey, the FirstEnergy operating company is known as Jersey Central Power & Light Company, a FirstEnergy Company ("JCP&L"). FirstEnergy is a public utility company regulated by the New Jersey Board of Public Utilities. In an effort to improve its communications network, FirstEnergy solicited the help of Sprint to replace its legacy dispatch radio network with the "push-to-talk" service offered on the Sprint network. FirstEnergy and Sprint agreed to work together to upgrade the Sprint network to eliminate gaps in the network so that FirstEnergy can improve communications among its personnel and better serve the public, especially during weather related and other emergency situations.

The effort to enhance Sprint's service in the Pinelands will provide for important interoperable communications among the personnel of the different FirstEnergy operating companies which is critical during times of weather related or other emergencies when the different companies are called upon to work in the other's region to bring service back on line quickly. The joint network upgrade is targeted to cover each of JCP&L's regional customer operations centers and its entire service area so that a common network of reliable communications utilized by all of the FirstEnergy personnel for all regions can be achieved between the operations centers and the line technicians working in the field.

The New Jersey Pinelands Commission has jurisdiction over one million (1,000,000) acres of property. Currently, certain portions of this area are not covered by Sprint, thereby compromising the safety and security of those customers of Sprint living/working in or traveling through the Pinelands area. It is believed that the Sprint Amended Plan strikes a balance between the growing demand for Sprint's services and the continued

protection and public enjoyment of one of New Jersey's greatest treasures. The Sprint Amended Plan is presented in a form that will facilitate ease of use by the Pinelands Commission staff, emergency service providers, and any future and/or alternate wireless service providers.

## II. COMPREHENSIVE MAP SUMMARY

### A. SPRINT MAP SUMMARY

The Pinelands Comprehensive Management Plan (CMP) requires any communication company that proposes a communication facility outside of the “unrestricted” area of the Pinelands to prepare a Comprehensive Plan for all of the existing and proposed facilities within the Pinelands in accordance with Section 7:50-5.4(c)6 of the Pinelands CMP. Therefore, Sprint is submitting this Amendment to the Comprehensive Plan in accordance with Section 7:50-5.4(c)6 of the Pinelands CMP. This Sprint Amended Plan outlines Sprint’s development plan for communication facilities within the Pinelands.

The Pinelands CMP effectively divides the New Jersey Pinelands into three regions governing the development of communication facilities. The first region, covering the Regional Growth and Pinelands Town Areas, is, effectively “unrestricted.” This region allows other carriers and Sprint to build facilities with associated structures to any height necessary to meet radio frequency design requirements, with no defined height limit or no limit on the number of structures in the region.

The second region, covering the Agricultural Production Area, Regional Development Area, and Select Villages, is defined as “height restricted.” This region requires the carriers, including Sprint, to meet certain siting criteria for proposed facilities, verify that no existing suitable structure exists within the immediate vicinity of the proposed facility, and to submit a “Comprehensive Plan” of all existing and proposed facilities within the Pinelands for approval by the Commission.

The third region, covering the Preservation Area, Forest Area, Special Agricultural Production Area, and Select Villages, is defined as “height and least number of structures restricted.” This region requires that the above mentioned siting criteria be met, that the other carriers and Sprint demonstrate that the least number of structures in this region is proposed, and that a “Comprehensive Plan of all existing and proposed facilities within the Pinelands be submitted for approval by the Commission.

#### Map 1

Map 1 identifies all the communication facility locations in the Comprehensive Plans, as amended. It also includes one proposed Sprint facility location. The facilities shown on Map 1 have been divided into five (5) groups having the following designations:

Group 1 denoted by red circles on the map, representing existing approved cellular communication facilities.

Group 2 denoted by blue circles on the map, represents existing approved PCS communication facilities.

Group 3 denoted by purple circles on the map, represents existing approved AT&T Amended Plan communication facilities.

Group 4 denoted by green circles on the map, represents approved T-Mobile Amended Plan communication facilities.

Group 5 denoted by a brown diamond on the map, represents a new tower proposed by Sprint.

#### Map 2

The second map in Appendix A (Map 2) adds information regarding Sprint's existing and future facilities. The Sprint existing and future facilities have the following designations:

Group 6 denoted by yellow stars, represents Sprint existing (on air) facilities.

Group 7 denoted by pink stars, represents Sprint future facilities.

Group 8 denoted by a single yellow diamond, represents a Sprint location (NY97XC025) that is proposed as a candidate for a site that was approved by the Commission in the T-Mobile Amended Plan (Site PCS-70).

#### Map 3

The third map (Map 3) is a focused view of the FirstEnergy service area where it intersects the Pinelands. In addition to the site information provided on Map 2, in-vehicle coverage from Sprint's existing facilities has been added.

#### Map 4

Map 4 is similar to Map 3 in that it is a focused view of the FirstEnergy service area. However, Map 4 includes in-vehicle coverage expected with the additional future facilities utilizing current locations outlined in the Cellular, PCS, AT&T, or T-Mobile plans. Reviewing Map 4 near the proposed Sprint facility (SPRINT- 1), reveals that a gap in reliable in-vehicle coverage exists.

Currently, there are no nearby Pinelands Plan facilities to provide coverage along Pasadena Road and to the electric power distribution network in this portion of the Pinelands. The proposed facility (SPRINT-1) will alleviate this coverage gap which is located between Route 539 and Route 72.

Reviewing the future facilities identified for use by Sprint on Map 4, there are 3 Pinelands Plan locations near the proposed Sprint facility (SPRINT- 1) which are not selected. These are Cell 2, Cell 3 and PCS 64. Analysis of these locations has raised concerns as to the viability of these Pinelands Plan locations. In regard to Cell 2, Sprint has pursued multiple solutions for this location from January 1999 to 2006. Several designs, locations and options have been submitted to the Pinelands Commission, but none of the available options were approved. Therefore Sprint considers Cell 2 as not viable and no coverage for this area has been shown. This location is still needed for coverage and would complement Sprint's current network design.

The Pinelands Plan location Cell 3 (a/k/a PCS 33) is located in an unrestricted area. However, this area is also exclusively residential in nature and is almost completely developed. Constructing a facility at that location would require placing a tower on a small residential parcel. Obtaining a willing landowner and receiving approval from Manchester Township to construct such a facility is, in Sprint's opinion, highly unlikely. Therefore Sprint does not consider Cell 3 a viable location, was not selected as a future

facility and no coverage is shown. However, a facility near Cell 3 is still needed for coverage and would complement Sprint's current network design.

The third facility in the FirstEnergy service area not included as a future facility is PCS 64. This Pinelands Plan location is located in Fort Dix. Sprint has spent many years attempting to gain approval from Fort Dix to place a communications tower on its property. These efforts have been terminated because Fort Dix has denied Sprint's request. A copy of the correspondence from Fort Dix denying Sprint's request to lease property for a communications facility is included in Appendix C. Therefore, Sprint does not consider PCS 64 a viable location and no coverage was shown from PCS 64 on Map 4.

#### Map 5

Map 5 includes all of the information included on Map 3 and Map 4, and adds the anticipated in-vehicle coverage from the proposed facility (SPRINT- 1). In reviewing Map 5, additional coverage from the SPRINT 1 facility extends reliable in-vehicle coverage west from Route 539 to the Ocean County boundary. Additionally, in-vehicle coverage is shown for Sprint candidate NY97XC025 - representing T-Mobile amended plan site PCS-70.

**B. AUTHORIZED CELLULAR COMPREHENSIVE PLAN FACILITIES ON WHICH SPRINT PROPOSES TO LOCATE**

Cell Plan

**Facility 1:**

This facility is located in Ocean County (Manchester Township). It is in the “height and least number of structures restricted” area and is required for coverage.

Cell Plan

**Facility 6:**

This facility is located on the border of the Preservation Area District and the Special Agricultural Production Area in Burlington County. It is in the “height and least number of restricted” area and is required for coverage.

Cell Plan

**Facility 9:**

This facility is located in Burlington County (Evesham Township). It is in the “height restricted” area and is required for coverage.

Cell Plan

**Facility 14:**

This facility is located in Atlantic County (Buena Vista Township). It is in the “height restricted” area and is required for coverage.

Cell Plan

**Facility 15:**

This facility is located in Gloucester County (Monroe Township). It is in the “height restricted” area and is required for coverage.

Cell Plan

**Facility 16:**

This facility is located in Atlantic County (Mullica Township). It is in the “height and least number of structures restricted” area and is required for coverage.

Cell Plan

**Facility 17:**

This facility is located in Atlantic County (Hamilton Township). It is in the “height restricted” area and is required for coverage.

Cell Plan

**Facility 21:**

This facility is located in Cumberland County (Maurice River). It is in the “height and least number of structures restricted” area and is required for coverage.

Cell Plan

**Facility 22:**

This facility is located in Cumberland County (Maurice River Township). It is in the “height and least number of structures restricted” area and is required for coverage.

Cell Plan

**Facility 25:**

This facility is located in Burlington County (Washington Township). It is in the “height and least number of structures restricted” area and is required for coverage.

Cell Plan

**Facility 28:**

This facility is located in Burlington County. It is in the “height restricted” area and is required for coverage.

Cell Plan

**Facility 29:**

This facility is located in Camden County. It is in the “unrestricted” area and is required for coverage.

Cell Plan

**Facility 35:**

This facility is located in Atlantic County (Weymouth Township). It is in the “heights and least number of structures restricted” area and is required for coverage.

Cell Plan

**Facility 47:**

This facility is located in Burlington County (Evesham Township). It is in the “height restricted” area and is required for coverage.

Cell Plan

**Facility 51:**

This facility is located in Cape May County (Upper Township). It is in the “height restrictive” area and is required for coverage.

Cell Plan

**Facility 55:**

This facility is located in Atlantic County. It is in the “heights and least number of structures restricted” area and is required for coverage.

**C. AUTHORIZED PCS PLAN FACILITIES IN WHICH SPRINT PROPOSES TO LOCATE:**

PCS Plan

**Facility 13**

This facility is located in Atlantic County (Folsom Borough). It is in the “height restricted” area and is required for coverage.

PCS Plan

**Facility 21:**

This facility is located in Burlington County. It is in the “height and least number of structures restricted” area and is required for coverage.

PCS Plan

**Facility 036:**

This facility is located in Camden County. It is in the “height restricted” area and is required for coverage.

PCS Plan

**Facility 052:**

This facility is located in Atlantic County (Hamilton Township). It is in the “height restricted” area and is required for coverage.

PCS Plan

**Facility 061:**

This facility is located in Ocean County (Barnegat Township). It is in the “unrestricted” area and is required for coverage.

PCS Plan

**Facility 062:**

This facility is located in Burlington County (Woodland Township). It is in the “height and least number of structures restricted” area and is required for coverage.

PCS Plan

**Facility 065:**

This facility is located in Ocean County (Little Egg Harbor Township). It is in the “height and least number structures restricted” area and is required for coverage.

**D. AUTHORIZED AT&T AMENDMENT FACILITIES ON WHICH SPRINT PROPOSES TO LOCATE:**

AT&T Amendment

**Facility 302:**

This facility is located in Atlantic County (Hamilton Township). It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 304:**

This facility is located in Atlantic County (Egg Harbor Township). It is in the Federal or Military Facility and is required for coverage.

AT&T Amendment

**Facility 305:**

This facility is located in Atlantic County (Egg Harbor Township). It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 307:**

This facility is located in Atlantic County (Egg Harbor Township). It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 309:**

This facility is located in Atlantic County (Hamilton Township). It is in the “height and least number of structures restricted” area and is required for coverage.

AT&T Amendment

**Facility 311:**

This facility is located in Atlantic County (Mullica Township). It is in the “height and least number of structures restricted” area and is required for coverage.

AT&T Amendment

**Facility 315:**

This facility is located in Atlantic County (Galloway Township). It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 317:**

This facility is located in Atlantic County. It is in the Federal or Military Facility and is required for coverage.

AT&T Amendment

**Facility 322:**

This facility is located in Atlantic County. It is in the “height restricted” area and is required for coverage.

AT&T Amendment

**Facility 324:**

This facility is located in Atlantic County (Folsom Township). It is in the “height and least number of structures restricted” area and is required for coverage.

AT&T Amendment

**Facility 327:**

This facility is located in Burlington County (Tabernacle Township). It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 328:**

This facility is located in Burlington County (Pemberton). It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 336:**

This facility is located in Burlington County. It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 343:**

This facility is located in Camden County. It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 347:**

This facility is located in Camden County (Winslow Township). It is in the “height and least number of structures restricted” area and is required for service.

AT&T Amendment

**Facility 353:**

This facility is located in Cumberland County (Maurice River Township). It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 355:**

This facility is located in Gloucester County (Monroe Township). It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 357:**

This facility is located in Ocean County (Berkeley Township). It is in the “height and least number of structures restricted” area and is required for coverage.

AT&T Amendment

**Facility 358:**

This facility is located in Ocean County. It is in the “height and least number of structures restricted” area and is required for coverage.

AT&T Amendment

**Facility 363:**

This facility is located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 366:**

This facility is located in Camden County. It is in the “unrestricted” area and is required for coverage.

AT&T Amendment

**Facility 374:** This facility is located in Gloucester County (Monroe Township). It is in the “height restricted” area and is required for coverage.

**E. AUTHORIZED T-MOBILE AMENDMENT FACILITIES ON WHICH  
SPRINT PROPOSES TO LOCATE:**

**(Facilities Referenced as T-Mobile site designations PCS 69 - PCS 111 on maps)**

T-Mobile Amendment

**Facility 69:**

This facility is located in Ocean County (Manchester Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 70:**

This facility is located in Ocean County (Manchester Township). It is in the Preservation Area, and required for coverage. *\*Please see section F for additional information on this approved location.*

T-Mobile Amendment

**Facility 71:**

This facility is located in Ocean County (Jackson Township). It is in a Rural Development Area, and required for coverage.

T-Mobile Amendment

**Facility 72:**

This facility is located in Ocean County (Jackson Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 74:**

This facility is located in Ocean County (Manchester Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 75:**

This facility is located in Ocean County (Barnegat Township). It is in a Regional Growth Area, and required for coverage.

T-Mobile Amendment

**Facility 76:**

This facility is located in Ocean County (Barnegat Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 77:**

This facility is located in Ocean County (Lacey Township). It is in a Preservation Area District, and is required for coverage.

T-Mobile Amendment

**Facility 81:**

This facility is located in Ocean County (Lacey Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 82:**

This facility is located in Ocean County (Stafford Township). It is in a Regional Growth Area, and required for coverage.

T-Mobile Amendment

**Facility 83:**

This facility is located in Ocean County (Berkeley Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 86:**

This facility is located in Ocean County (Stafford Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 88:**

This facility is located in Ocean County (Little Egg Harbor Township). It is in a Preservation Area District, and is required for coverage.

T-Mobile Amendment

**Facility 90:**

This facility is located in Burlington County (Pemberton Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 91:**

This facility is located in Atlantic County (Estell Manor). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 93:**

This facility is located in Burlington County (Medford Township) It is located in a Regional Growth Area, and is required for coverage.

T-Mobile Amendment

**Facility 94:**

This facility is located in Cumberland County (Maurice River Township). It is in a Rural Development Area, and required for coverage.

T-Mobile Amendment

**Facility 95:**

This facility is located in Cumberland County (Maurice River Township). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 96:**

This facility is located in Cape May County (Dennis Township). It is in a Pinelands Village area, and required for coverage.

T-Mobile Amendment

**Facility 97:**

This facility is located in Atlantic County (Estell Manor). It is in a Forest Area, and is required for coverage.

T-Mobile Amendment

**Facility 99:**

This facility is located in Atlantic County (Buena Vista Township). It is in a Rural Development Area, and is required for coverage.

T-Mobile Amendment

**Facility 100:**

This facility is located in Atlantic County (Hamilton Township). It is in a Regional Growth Area, and is required for coverage.

T-Mobile Amendment

**Facility 103:**

This facility is located in Atlantic County (Egg Harbor Township). It is in a Regional Growth Area, and is required for coverage.

T-Mobile Amendment

**Facility 105:**

This facility is located in Gloucester County (Monroe Township). It is in a Rural Development Area, and is required for coverage.

T-Mobile Amendment

**Facility 107:**

This facility is located in Atlantic County (Estell Manor). It is in a Forest Area, and required for coverage.

T-Mobile Amendment

**Facility 108:**

This facility is located in Burlington County (Evesham Township). It is in a Rural Development Area, and is required for coverage.

T-Mobile Amendment

**Facility 110:**

This facility is located in Burlington County (Shamong Township). It is in an Agricultural Production Area, and is required for coverage.

T-Mobile Amendment

**Facility 111:**

This facility is located in Camden County (Waterford Township). It is in a Rural Development Area, and is required for coverage.

**F. PROPOSED RAW LAND SPRINT AMENDMENT FACILITIES:**

SPRINT 001

This facility is located in Ocean County (Manchester) along Railroad Avenue. It is in the Preservation Area District which is “height and least number of structures restricted.”

Currently, there are no approved facilities in close proximity to this location. The facility is also located within the First Energy Service Area, and is necessary to extend reliable in-vehicle coverage west from Route 539 to the Ocean County boundary.

T-MOBILE Amended Plan Facility PCS70 (Sprint ID - NY97XC025)

This facility is located in Ocean County (Manchester) along Route 539. It is in the Preservation Area District which is “height and least number of structures restricted.”

Sprint, having joined in the T-Mobile plan amendment and reviewed the most recently approved T-Mobile amended plan, has recognized that the T-Mobile facility PCS-70 is in reasonably close proximity (within ½ mile) to a desired Sprint location.

Since Sprint has already identified a landowner for this facility, it will request that the Pinelands Commission consider this location as a candidate for the PCS-70 facility. The proposed candidate is represented as Sprint ID NY97XC025 on maps 2 through 5, as well in Appendix B.

**G. SPRINT SITES ALREADY ON AIR**

On Air Site

Cell Plan

**Facility 004:**

This is an existing facility located in Ocean County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 007:**

This is an existing facility located in Burlington County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 008**

This is an existing facility located in Burlington County. It is in the “unrestricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 010:**

This is an existing facility located in Burlington County. It is in the “unrestricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 011:**

This is an existing facility located in Burlington County. It is in the “height restricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 012:**

This is an existing facility located in Atlantic County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 019:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 020:**

This is an existing facility located in Atlantic County. It is in the “height restricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 023:**

This is an existing facility located in Cape May County. It is in the “unrestricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 024:**

This is an existing facility located in Ocean County. It is in the “unrestricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 027:**

This is an existing facility is located in Burlington County. It is in the “unrestricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 030:**

This is an existing facility located in Gloucester County. It is in the “unrestricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 031:**

This is an existing facility is located in Atlantic County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site

Cell Plan

**Facility 033:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and required for coverage.

On Air Site

Cell Plan

**Facility 034:**

This is an existing facility located in Atlantic County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 036:**

This is an existing facility located in Ocean County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 037:**

This is an existing facility located in Ocean County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 039:**

This is an existing facility located in Burlington County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 041:**

This is an existing facility located in Burlington County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 042:**

This is an existing facility located in Ocean County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 044:**

This is an existing facility located in Burlington County. It is in the “height restricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 049:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 050:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 053:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
Cell Plan

**Facility 056:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 2:**

This is an existing facility located in Camden County. It is in the “height restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 3:**

This is an existing facility located in Camden County. It is in the “height restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 5:**

This is an existing facility located in Atlantic County. It is in the “height restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 9:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 10:**

This is an existing facility is located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 14:**

This is an existing facility is located in Atlantic County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 15:**

This is an existing facility located in Atlantic County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 17:**

This is an existing facility located in Cumberland County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 19:**

This is an existing facility located in Burlington County. It is in the “height restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 20:**

This is an existing facility located in Burlington County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 24:**

This is an existing facility located in Atlantic County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 37:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 40:**

This is an existing facility located in Atlantic County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 43:**

This is an existing facility located in Atlantic County. It is in the “height restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 46:**

This is an existing facility located in Gloucester County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 49:**

This is an existing facility located in Camden County. It is in the “height restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 54:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 56:**

This is an existing facility located in Atlantic County. It is in the “height restricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 58:**

This is an existing facility located in Ocean County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
PCS Plan

**Facility 63:**

This is an existing facility located in Ocean County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
AT&T Amendment

**Facility 313:**

This is an existing facility located in Atlantic County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
AT&T Amendment

**Facility 318:**

This is an existing facility located in Atlantic County. It is physically located between the AT&T Amendment 318 and the Cell Plan Facility 17. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
AT&T Amendment

**Facility 334:**

This is an existing facility located in Burlington County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
AT&T Amendment

**Facility 348:**

This is an existing facility located in Camden County. It is in the “unrestricted” area and is required for coverage.

On Air Site  
AT&T Amendment

**Facility 364:**

This is an existing facility located in Burlington County. It is in the “height restricted” area and is required for coverage.

On Air Site  
AT&T Amendment

**Facility 373:**

This is an existing facility located in Atlantic County. It is in the “height and least number of restricted” area and is required for coverage.

On Air Site  
AT&T Amendment

**Facility 375:**

This is an existing facility located in Ocean County. It is in the “height and least number of restricted” area and is required for coverage.

**H. SITES NOT INCLUDED IN PROPOSED OR ADOPTED PLANS**

Not Included

Cell Plan

**Facility 2:**

This facility is located on the border of Burlington County and Ocean County along Route 70. Sprint had pursued approval of a facility in this location from 1999 to 2006. After searching several properties and locations on the properties, as well as alternate technologies, for a communications facility that met the environmental regulations and coverage requirements, Sprint was unable to obtain Pinelands Commission approval. Therefore Sprint considers this a problem area and has deleted this site from its plan. This site is needed by Sprint and other carriers, is located in the “height and least number of structures restricted” area and is required for coverage.

Not Included

Cell Plan

**Facility 3:**

This facility is located in Ocean County along Route 539 south of Route 70. The facility has been placed in the “unrestricted” Pinelands Town area. However, the entire area is developed with single-family homes on small lots. It is not reasonable to expect to build a 200’ tower on one of these properties. Therefore, Sprint believes the Cell 3 facility is unbuildable in its present location and management area. The non-residential areas near Cell 3 are located in the “height and least number of structures restricted” area. Sprint has deleted this site from its plan; however, this site is needed by Sprint and other carriers and is required for coverage.

Not Included

PCS Plan

**Facility 64:**

This facility is located in Ocean County on property controlled by Fort Dix. Sprint has attempted to locate a facility in Fort Dix for several years without success. In May, 2011, Fort Dix confirmed that it would not enter into a lease for the construction of a communications facility on its property. Please see the email chain attached in Appendix C. The land adjacent to Fort Dix is classified as Preservation Area District. Therefore, Sprint has deleted this site from its plan.

### III. SIGNAL PROPAGATION MAP

This Sprint Amended Plan includes a signal propagation map which demonstrates that in the area of the new wireless facility proposed by Sprint, Sprint has designed its network to utilize the least number of facilities in the Pinelands.

The propagation map depicts a signal strength of  $-99\text{dBm}$  for Sprint's CDMA 1900 MHz coverage. In-Vehicle coverage is identified as a signal strength of  $-99\text{dBm}$  (received CDMA Pilot Power), or better, as measured on the street at a height of 5 feet. When a signal passes through any type of material, it loses strength. If a  $-99\text{dBm}$  signal passes through a window into a vehicle, the resulting signal strength would be in the range of  $-105\text{dBm}$  to  $-107\text{dBm}$ . Thus, a customer would be able to receive or make a call in his/her vehicle. Whereas, if  $-105\text{dBm}$  (received CDMA Pilot Power) were to enter a vehicle, the resulting signal strength in the vehicle would be  $-111\text{dBm}$  to  $-113\text{dBm}$  and the likelihood of receiving or initiating a call would be very low. Signal strengths of  $-107\text{dBm}$  and lower are very weak and service at that level would be unreliable. Sprint has identified  $-99\text{dBm}$  as reliable In-Vehicle coverage in the Pinelands because the resulting signal inside a vehicle could be reliably received.

#### IV. CODE COMPLIANCE

##### PLAN COMPLIANCE WITH CODE – N.J.A.C. 7:50-5.4

Pursuant to N.J.A.C. 7-50 - 5.4, the plan shall include:

1. Five (5) and ten (10) year horizons [N.J.A.C. 7:50-5.4(c)6]

The Sprint Amended Plan, as submitted, does include such horizons as outlined in the Sprint Map Summary Plan. It is Sprint's intent to enhance the coverage in the Pinelands over time, with the majority of the sites being built as dictated by customer demand.

2. A review of alternative technologies that may become available for use in the near future [N.J.A.C. 7:50-5.4(c)6]

The primary alternative to traditional macro cell designs is technology referred to as "Distributed Antenna Systems" or DAS. This system is not considered to be a reliable network design in the Pinelands by Sprint for many reasons. A majority of these reasons were reviewed at a meeting in 2003 held between the Commission staff and all of the wireless carriers. Since then, there have not been any major changes to the technology to overcome these issues. Some of the issues that were discussed include the following:

1) With a DAS deployment, the antennas are placed at a low height on structures very close in proximity (1000-2000 feet apart). The radio frequency coverage is directed along roadways in a small oval shaped pattern. This technology would only cover a roadway and a very small area to the north and south of the roadway, not a complete circular area of approximately a two (2) mile radius covered by a "standard" macro site. In fact, it would take from eight (8) to forty (40) DAS sites to duplicate coverage provided by one (1) macro site depending on the application and the area to be covered.

2) The issue of E911 reliability and the inability for a network using a network-based solution to locate an individual within the required accuracy. This is also an issue when a network is using a GPS based solution and a user is in a poor GPS service area (dense forest for example). Now that most, if not all, Public Safety Answering Points (PSAP) in the Pinelands are accepting E911 Phase 2 location information, this issue is more acute.

3) Many areas of the Pinelands do not have sufficient number and placement of existing structures, such as utility poles, to accommodate a DAS deployment.

4) There are practical difficulties in attempting to provide for backup power to a DAS network, in contrast to a tower site where an emergency generator can be transported onsite and brought into service when needed.

For FirstEnergy, one of the main purposes for using the Sprint network is to have communications when the electric lines strung along the roadways are down. Since DAS relies on the very same utility poles and the electric power that is provided along those poles, if a FirstEnergy technician is dispatched to repair commercial power, the DAS network, by its nature will not be operating. This will leave the FirstEnergy technician without communications.

This also causes unacceptable coverage for public safety reasons. Due to the narrow band of coverage from a DAS deployment (along a roadway), only those customers traveling on the designated roadway would have coverage from a DAS network. The service off the roadway is very limited for those people located or traveling onto minor roads, paths, hiking trails and for homes that are set back a few hundred feet from the main road. In addition, emergency services such as fire, evacuation or search and rescue would experience difficulty communicating in these areas. For more discussion regarding DAS systems, please reference Appendix D

DAS does not provide an acceptable level of coverage and reliability and does not meet Sprint's network requirements for the Pinelands. In addition, Sprint does not believe that there are any other viable, and commercially available, alternative technologies that would allow Sprint to provide reliable voice and data communications to the gaps in coverage located in the Pinelands. Moreover, the Commission does not have the authority to dictate or legislate a preference for the use of a particular technology, including DAS, for the provision of wireless service. *See New York SMSA Limited Partnership v. Town of Clarkstown*, 612 F.3d 97, 105-06 (2d Cir. 2010).

3. The approximate location of all proposed facilities [N.J.A.C. 7:50-5.4(c)6]

The Sprint Amended Plan, as submitted, does include Cellular, PCS, AT&T, and T-Mobile Plan numbers as well as latitude and longitude. (See attached Spread Sheet in Appendix B).

4. Demonstration that the facilities to be located in the Preservation Area District, Forest Area, Special Agricultural Production Area and certain Pinelands Villages are the least number necessary to provide adequate service, taking into consideration the location of facilities outside the Pinelands that may influence the number and location of facilities needed within the Pinelands [N.J.A.C. 7:505.4 (c) (6)].

Sprint divided the Pinelands Radio Frequency (RF) design into two categories. The first category is where the FirstEnergy service area and the Pinelands overlap. The second area is the remaining portions of the Pinelands. The RF design in the FirstEnergy service area carefully considered all site locations in the comprehensive plans to determine the least number of towers necessary within the Preservation Area District, the Forest Area, the Special Agricultural Production Area and Pinelands Villages. Sprint designed its network in the Pinelands region "from the outside in" as requested by the Pinelands Commission. That is, Sprint attempted to design its networks so as to provide coverage for as much of the Pinelands as possible from facilities located outside the Pinelands. Then the design process focused on using designated/approved facilities within the Pinelands to the extent necessary to complete the

network and provide adequate service to the FirstEnergy service area in the Pinelands. After these efforts were exhausted, Sprint then attempted to resolve any remaining coverage gaps with facilities in less restricted areas of the Pinelands. For the one new tower Sprint proposes to be constructed, which is in an area without any nearby Pinelands Plan sites structures, Sprint thoroughly searched the less restricted zones first. Only after that search was exhausted, did Sprint research any facility locations in the Preservation Area District.

For the second design category, Sprint concluded that at this time, the facilities identified in the Cellular, PCS, AT&T, and T-Mobile plans were sufficient for providing adequate service to the remaining portions of the Pinelands. Therefore, for areas in the Pinelands and outside the FirstEnergy service area, Sprint is not proposing any other additional facilities to provide coverage to this section of the Pinelands.

The Sprint Amended Plan represents a network that when completed should provide adequate coverage for those areas within the Pinelands included in the Sprint planned coverage area while keeping the number of new towers in the most sensitive zones of the Pinelands to a minimum. In summary, the Commission can be assured that the “least number” criteria has been met. With this plan amendment, Sprint will not exceed one (1) new facility in the Forest Management, Preservation and Pineland Village Areas.

5. Demonstration of need for the facility to serve the local communication needs of the Pinelands, including those related to public, health and safety, as well as demonstration of the need to locate the facility in the Pinelands in order to provide adequate service to meet those needs [N.J.A.C. 7:50-5.4 (c) (1)]

The proposed facility is needed to provide adequate coverage to the Pinelands pursuant to Sprint’s FCC licenses, Sprint’s current coverage plan and customer requirements (including FirstEnergy). The Telecommunications Act of 1996 (“TCA”) is the federal law which governs the regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government. Specifically, the TCA, 47 U.S.C. § 332(c)(7)(B) provides in part:

(i) The regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government or instrumentality thereof ;

(ii) shall not unreasonably discriminate among providers of functionally equivalent services; and

(iii) shall not prohibit or have the effect of prohibiting the provision of personal wireless services.

(iv) Any State or local government or instrumentality thereof shall act on any request for authorization to place, construct or modify personal wireless service facilities within a reasonable period of time after the request is duly filed with such government or instrumentality, taking into account the nature and scope of such request.

(v) 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.

(vi) No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions.

(vii) Any person adversely affected by any final action or failure to act by a State or local government or any instrumentality thereof that is inconsistent with this subparagraph may, within 30 days after such action or failure to act, commence an action in any court of competent jurisdiction. The court shall hear and decide such action on an expedited basis. Any person adversely affected by an act or failure to act by a State or local government or any instrumentality thereof that is inconsistent with clause (iv) may petition the Commission for relief.

The TCA further provides at § 253(a): No State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service.

The Superior, Appellate and Supreme Courts of New Jersey recognize the need for these types of facilities. The New Jersey Supreme Court recognized the need for wireless service in its seminal decision, *Smart SMR of New York, Inc. v. Bor. of Fair Lawn Bd. of Adjust.*, 152 N.J. 309 (1998). The Court noted that "(In today's world, prompt and reliable information is essential to the public welfare...)" To this end, the Court was satisfied that a proposed "facility, including the monopole, is a necessary part of an increasingly public service." In fact, the Court noted that a Federal Commission (FCC) license "will suffice to establish that the use serves the general welfare." Regarding placement of such facilities, the Court, in agreement with the telecommunications Act of 1996, stated that "municipal boards may not altogether prohibit (mobile communication facilities) from being constructed within the municipality." It went on to say that its "goal in making these suggestions is to facilitate the decision of cases involving the location of telecommunication facilities" (emphasis added).

Further, although enhanced and beneficial to everyone, the fact that wireless service is utilized by emergency medical services, police and fire-fighters greatly increases this need. The federal government has stressed the importance of wireless communications and has made wireless communications a priority. The Congressional mandate set forth in the Telecommunications Act of 1996 was again reiterated in 1999 with the enactment of the Wireless Communications and Public Safety Act, October 26, 1999, P.L. 106-81, § 2, 113 Stat. 1286, amending 47 U.S.C.A. §§ 222 and 251, and appearing in part as 47 U.S.C.A. §§ 615, 615a, and 615b. The stated purpose of the 1999 Act is:

To encourage and facilitate the prompt deployment throughout the United States of a

seamless, ubiquitous, and reliable end-to-end infrastructure for communications, including wireless communications, to meet the Nation's public safety and other communications needs. October 26, 1999, P.L. 106-81, § 2(b), 113 Stat. 1286.

In addressing the important role that wireless telecommunications systems serve, Congress in 2003 specifically directed the FCC to:

[E]ncourage and support efforts by States to deploy comprehensive end-to-end emergency communications infrastructure and programs, . . . , including seamless, ubiquitous, reliable wireless telecommunications networks and enhanced wireless 9-1-1 service. . . . In encouraging and supporting that deployment, the Commission shall consult and cooperate with State and local officials responsible for emergency services and public safety, the telecommunications industry (specifically including the cellular and other wireless telecommunications service providers), . . . 47 U.S.C.A. § 615.

The importance of these wireless networks cannot be overstated.

6. Demonstration that the antenna utilizes an existing communications or other suitable structure to the extent practicable. [N.J.A.C. 7:50-5.4 (e) (3)]

Wherever possible, Sprint has utilized existing structures or sought to site at locations approved under the AT&T, T-Mobile, PCS and CP Plans where the CPs and PCS' carriers will likely be constructing structures in the future. Sprint will further address the use of existing structures at the time that an application for site approval is made to the Pinelands Commission.

It shall be noted that existing structures are not considered practicable for use until and unless:

- There is an agreement in place to use the structure with the land owner and/or the structure owner;
- The property meets the Pinelands Site criteria for the placement of Sprint' equipment; and
- Access and utilities to the site are available.

To ensure that existing structures were indeed utilized to the greatest extent possible, Sprint conducted extensive field research in the vicinity of each proposed location and reviewed the location of Existing AT&T, T-Mobile, CP and PCS Facility Structures along with lists of existing structures in the Pinelands. Sprint reviewed the lists with respect to identifying any existing structures that could be used to site its facilities. Where structures were identified, Sprint designed its network so as to make use of such existing structures.

7. Demonstration, or indication of the need to demonstrate when the actual siting of facilities is proposed, that the supporting structure is designed to accommodate the needs of any other local communications provider which has identified a need to locate a facility within an overlapping service area. [N.J.A.C. 7:50-5.4(e)2]

Sprint acknowledges that all new structures will be constructed so that they can be extended, if need be, to a height of 200 feet for the purposes of co-location. The particular design criteria of each facility will be addressed at the time of application.

8. Demonstration, or indication of the need to demonstrate when the actual siting of facilities is proposed, that, if an existing communications or other suitable structure cannot be utilized, the antennas and any necessary supporting structure is located such that it meets all siting criteria per the code. [N.J.A.C. 7:50-5.4 (c)4]

The applicant has conducted a thorough analysis of the siting criteria contained in N.J.A.C. 7:50-5.4(c)4 and has attached, as Appendix E, a viewshed analysis of the geographic area within the Pinelands where a new tower is required. The analysis included both a one mile radius of potential visibility and a one and one-half mile radius of potential visibility. It specifically addressed potential visibility from recreation facilities and campgrounds (N.J.A.C. 7:50-5.4(c)4ii(1)); publicly dedicated roads and highways (N.J.A.C. 7:50-5.4(c)4ii(2)); wild and scenic rivers and special scenic corridors listed in N.J.A.C. 7:50-6.105(a) (N.J.A.C. 7:50-5.4(c)4iii); the Forked River Mountains (N.J.A.C. 7:50-5.4(c)4iv); existing residential dwellings located on contiguous parcels (N.J.A.C. 7:50-5.4(c)4v); the criteria for existing commercial use (N.J.S.A. 7:50-5.4(c)4vi); and at a location having the least visual impact upon the resources described in N.J.A.C. 7:50-5.4(c)4ii, -5.4(c)4ii, and -5.4(c)v (N.J.S.A. 7:50-5.4(c)4vii).

The viewshed analysis found that within the one-mile and one and one-half-mile radius of the area in which a tower is needed that a 150-foot tall tower would only be visible from a few isolated locations. In addition, the following databases were reviewed but were not found within the search area: low intensive recreation facilities and campgrounds, wild and scenic rivers, pine plains and area necessary to maintain the ecological integrity of the Pine Plains and the Forked River Mountains,

9. Demonstration, or indication of the need to demonstrate when the actual siting of facilities is proposed, that the antenna and any supporting structure does not exceed 200 feet in height, but, if of a lesser height, shall be designed so that the height can be increased to 200 feet if necessary to accommodate other local communications facilities in the future [N.J.A.C. 7:50-5.4 (c)5]

Sprint acknowledges that all new structures will be constructed so that they can be extended, if need be, to a height of 200 feet for the purposes of co-location. The particular design criteria of each facility will be addressed at the time of application.

10. Demonstration that, where more than one entity is providing the same type of service or has a franchise

for the area in questions, the Amended Plan shall be agreed to and submitted by all such providers where feasible, and shall provide for the joint construction and use of the least number of facilities that will provide adequate service by all providers for the local communication system intended. Shared service between entities, unless precluded by Federal law or regulation, shall be part of the Amended Plan when such shared services will reduce the number of facilities to be otherwise developed [N.J.A.C. 7:50-5.4 (c)6]

Sprint is a current party to the Cellular Plan and PCS Plan and continues to provide the same type of service (fully duplexed voice and data service in the 1850-1990 range) as existing. It is licensed by the Federal Communications Commission (FCC) to provide such service throughout southern New Jersey including the New Jersey Pinelands, and is ready, willing and able to participate in preparation of any future plan amendments. The Amended Plan, as submitted, provides for the joint construction and use of the least number of facilities that will provide adequate service under the current build out plan of the signatory provider.

With respect to “shared services,” Sprint deems this to mean “shared frequencies.” Hence it is Sprint’s position that the FCC regulations, by their intent to create competition among providers, do not provide for the sharing of frequencies. The Telecommunications Act of 1996 was intended, in the words of the Congressional Conference Committee at the time of the adoption of the Act:

to provide for pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services . . . by opening all telecommunications markets to competition . . . H.R. Conf. Rep. No. 104-458, at 206 (1996), reprinted in 1996 USCCAN 124.

In 2009, the Federal Communications Commission (FCC) made clear that each carrier must be able to construct the network facilities needed for it to provide seamless and reliable coverage, without regard to the adequacy of its competitors’ networks. *In re Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B)*, WT Docket No. 08-165, 2009 WL 3868811, at 18 (¶ 56) (2009) (“Section 332(c)(7)(B) Ruling”). In the Section 332(c)(7)(B) Ruling, the FCC made no distinction between voice, data, E-911 or other wireless services and held that “the fact that another carrier or carriers provide service to an area is an inadequate defense under a claim that a prohibition exists, and [the FCC] conclude[d] any other interpretation of this provision would be inconsistent with the Telecommunications Act’s pro-competitive purpose.” *Id.* ¶ 56. This is because “Congress contemplated that there be multiple carriers competing to provide services to consumers,” *id.* at ¶ 58 (citation omitted), and “the ‘one provider’ rule prevents customers from having a choice of reliable carriers and thus undermines the Act’s goal to improve wireless service for customers through industry competition,” *id.* at ¶ 61 (citation omitted). Thus, “a State or local government that denies an application for personal wireless service facilities siting solely because one or more carriers serve a given geographic market has engaged in unlawful regulation that ‘prohibits or has the effect of prohibiting the provision of personal wireless services,’ within the meaning of Section 332(c)(7)(B)(i)(II).” *Id.*

**V. PUBLIC NEED**

Pursuant to N.J.A.C. 7:50-5.4 (c)(1), Sprint must demonstrate the need for the facility to serve the local communication needs of the Pinelands, including those related to public health and safety. The proposed facilities are needed to provide adequate coverage to the Pinelands pursuant to Sprint's FCC licenses, Sprint's current coverage plan and customer requirements (including FirstEnergy) as set forth herein. As previously set forth, the federal government has made wireless communications a priority as evidenced by the enactment of the Telecommunications Act of 1996 and the Wireless Communications and Public Safety Act, October 26, 1999, P.L. 106-81, § 2, 113 Stat. 1286. Reliable coverage is necessary for calls of convenience and, more importantly, calls of necessity. Over 57 million 9-1-1 calls are made each year in the United States from wireless phones. This benefits not only those who have phones, but also other individuals who may be in need and benefit from a wireless customer making a call for them. According to the United States Center for Disease Control's National Health Interview Survey (NHIS) conducted between January-June 2011, the number of American homes with only wireless telephones is on the increase. The survey shows that 31.6% of American homes had only wireless phones, up from 29.7% in the last half of 2010. Moreover, the survey found that 16.4% of the population received all or almost of their calls on wireless telephones even though they have a landline telephone. Here is a link to this survey:  
<http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201112.htm>

## VI. CO-LOCATION

In an effort to minimize the impact and quantity of wireless facilities, Sprint has and will continue to promote co-location. To the extent possible, Sprint will design and make all of its owned future structures available for use by other FCC-licensed wireless providers in accordance with the policies set for in this Section. As a threshold matter, Sprint may or may not retain ownership of any tower that it constructs. If ownership of a tower structure is transferred to a third party, the basic principles as set forth below shall be followed to promote collocation on the tower. In addition, Sprint will not be the owner of the underlying land and a lessee can grant no more rights than it has under a lease. The Sprint co-location policies under this Amended Plan are as follows, subject always to this basic limiting principle.

### A. Equal Access

- 1 Space on existing and proposed tower structures will be made available to other FCC-licensed wireless carriers in accordance with the process described.
- 2 Request for co-location will be considered in a timely manner.
- 3 No reciprocal agreements (e.g. *quid pro quo* access to another structure owned by the party requesting co-location) will be required to make an application eligible for co-location.
- 4 To facilitate initial and future co-locations, Sprint has signed master agreements with all the major wireless carriers.
- 5 With respect to proposed towers, Sprint will attempt to ensure that the lease allows for co-location by proposing and advocating lease agreement language that permits subleasing.
- 6 Notice of construction of new structures will be provided in accordance with any relevant Pinelands Comprehensive Management Plan regulations.

### B. Market Value Pricing

Co-location will be provided at fair market value rental rates. These rates will take into account rates in comparable leases for similar sites, and any site development costs incurred by the structure owner/operator during the site design, approvals, construction and maintenance stages for the site in question.

**C. Design of Tower Structures**

Tower structures will be designed to allow sufficient room for cable, antennas and equipment of future co-locators and to support the anticipated weight and wind load of their future additional facilities. Space for ground level maintenance, equipment shelter, and switching facilities will be reserved for future co-locators to the extent practical.

The tower structure will be designed so as to easily expandable to a height of 200 feet above ground level.

**D. Access and Utilities**

Each co-locator will be responsible for independently obtaining and maintaining their respective required electric and telephone utilities services so long as the underlying ground lease allows for the same.

Co-locators, if allowed by the underlying ground lease, will have: (1) a non-exclusive right of access for ingress and egress, seven (7) days a week, twenty four (24) hours a day, for the installation and maintenance of utility wires, poles, cables, conduits and pipes either over or underground, extending from the most appropriate public right of way to the tower structure area, and (2) access privileges to the tower facility area for all authorized personnel of co-locators for the maintenance and operation of their respective facilities.

## E. Co-location Procedures

### 1. Application

When a carrier has identified a need for service in an area where there is an existing or proposed Sprint tower structure, the carrier may contact Sprint and request the exact location, geographical coordinates, heights and available ground space within the structure lease area, etc. Contact information will be provided to the Pinelands Commission when determined.

If the carrier decides to pursue co-location on the structure, a formal application that contains information about the carrier's radio frequency requirements, antenna specification, equipment shelter dimensions, height of antennas, etc. will be provided to Sprint. The application will be reviewed by Sprint, its tower management company or successor in ownership to the tower, for any potential radio frequency interference issues, tower structural conflicts, electrical concerns, security or access issues, space availability, and lease term and regulatory compliance.

### 2. Approval

The application will be approved if there are no service disruptions or service affecting interference with existing signals, site operations or lease terms, regulatory conditions and lack of structural analysis failure issues. Existing site restrictions and technical incompatibility may not always permit co-location.

Should a structural analysis prove that the tower structure will not hold the additional antennas and equipment requested, the carrier may investigate with Sprint the possibility/feasibility and cost of modifying the tower structure or extending the height up to 200 feet, and relocating all existing users as necessary to accommodate the carrier's needs as well as the existing facilities and possible future co-locators. If the carrier desires to pursue such reconstruction and/or relocation of antennas, and same is feasible, Sprint will allow it provided such action does not cause unreasonable service disruptions or service affecting interference with existing signals, or cause interference with site operations, lease terms, regulatory conditions or future needs of Sprint. Sprint retains all rights previously held, including, but not limited to, those regarding tower ownership, unless otherwise negotiated in the agreement with carrier.

Reasons for any denial of co-location request will be provided to the applicant by the tower structure owner in writing.

3. Contract & Site Development

Once Sprint approves the co-location application, a “co-location package” shall be supplied to the carrier including site plans and tower drawings. Concurrently, a license, sublease or other appropriate agreement, will be prepared and forwarded to the carrier for review and execution.

Once an agreement for the specific site has been executed, site development and design will be coordinated between Sprint and the applicant. Right of Way access will be provided in accordance with the agreement.

The carrier will also contract with a design firm to prepare site plans and construction drawings as required by the carrier and Sprint. The carrier will prepare the application for all required regulatory site plan approvals. When the carrier has secured all permits, a pre-construction meeting will be scheduled with the carrier to ensure that all guidelines are followed in the planning and construction process with an emphasis on safety and security. Once construction is completed, access privileges to the secured lease area will be provided for all authorized personnel of the users of the facility for maintenance and operation in accordance with the agreement.

4. Application Period; Emergency Services; Compliance with Law

Application to co-locate will continue to be accepted by Sprint for that site as long as support structure space and ground space are still available. If sufficient ground space is not available under current lease terms, Sprint will not object to the carrier’s efforts to retain additional ground space. Applications will be accepted on a first come first serve basis until the support structure can no longer hold additional facilities without compromising the service of existing co-locators or the structural integrity of the tower structure.

Co-location opportunities may be provided to emergency service providers utilizing the same procedures outlined in this section.

All carriers must construct and operate their facilities in compliance with all applicable local, state or federal, laws, rules and regulations and lease terms and conditions.

## VII. LEVEL OF SERVICE

With regard to the level of service on which this plan is based, N.J.A.C. 7:50-5.4 effectively provides that the Pinelands Commission's goal for the wireless facilities plan is to provide adequate service that serves the local communication needs of the Pinelands. The facilities proposed by Sprint in this plan are indeed those that are needed to provide adequate service to the Pinelands pursuant to Sprint's FCC licenses, the current coverage plan and customer requirements. Currently, areas of the Pinelands receive either inadequate or no wireless voice or data service. These areas are considered gaps in coverage that lead to dropped calls or to a customer's inability initiate or receive a call or carry on a reasonable uninterrupted call. These coverage gaps also represent the inability for a customer to have the ability to utilize data communications. In some cases, the gaps in coverage are rather large geographic areas. Many of the larger gaps in coverage are located in the less populated portions of the Pinelands. Other gaps in coverage are located along highway arteries commercial areas and in residential neighborhoods.

In order to evaluate each coverage gap and the need for enhanced service in these gaps, Sprint has developed a link budget based upon the following:

- Equipment specifications
- Manufacturer recommendations
- Population density
- Morphology
- Expected wireless usage
- Quality of Service (blocked and dropped calls)

The purpose of the link budget is to establish a design criterion for each type of area based on a combination of data obtained from active Sprint networks, specifications and parameters defining the local environment. The design criterion is a threshold values expressed in terms of a minimum signal strength required to provide reliable service to an end user in a particular environment. Generally there are design criterion for three basic environments, in-street, in-vehicle and in-building.

The design criterion applicable for a given area is then applied to the signal strength of the existing network to determine if gaps in coverage exist. The design criterion is applied to either computer generated radio frequency propagation studies or empirical data collected by a team driving the roadways in the area in question. Areas where the propagation studies, or the empirical data, indicate the coverage from existing Sprint facilities do not meet the design criterion are considered gaps in coverage. Due to the many variables with radio wave propagation including tree types, tree heights, interference levels, customer equipment model and condition, seasonal variations, temperature, humidity, rain rates etc., it has been determined that a statistical model based on a link budget, enhanced with empirical data, and generated by a computer is a most accurate method for designing a wireless network. Therefore, Sprint has evaluated its existing coverage in the Pinelands and determined where there are gaps in coverage, and which gaps are significant.

The threshold determined to be required for a majority of the Pinelands is Sprint's in-vehicle threshold of -99 dBm (of Received CDMA Pilot Power) as measured on the street at a height of 5 feet. This is the criterion used to determine the need for the one additional facility proposed within Pinelands and the FirstEnergy operating area.

Sprint firmly believes that the currently proposed facility is needed to provide minimum adequate service under its current coverage plan. Sprint has developed this plan to meet its anticipated service needs for the next several years, however, changes in technical standards, customer usage patterns or land development may require modifications to the coverage plan in the future.

**VIII. FUTURE TECHNOLOGY**

The Sprint Amended Plan takes into account the forecasted needs of network and its customers in the Pinelands. Other than the one (1) new proposed facility in the Sprint Amended Plan, Sprint's current network design does not anticipate any additional facilities to be required in the Pinelands (above the facilities outlined in the Cellular Plan, the PCS Plan, the AT&T Wireless amendment, and the T-Mobile amendment) to provide coverage for its current and near future needs.

**IX. SHARED FREQUENCIES**

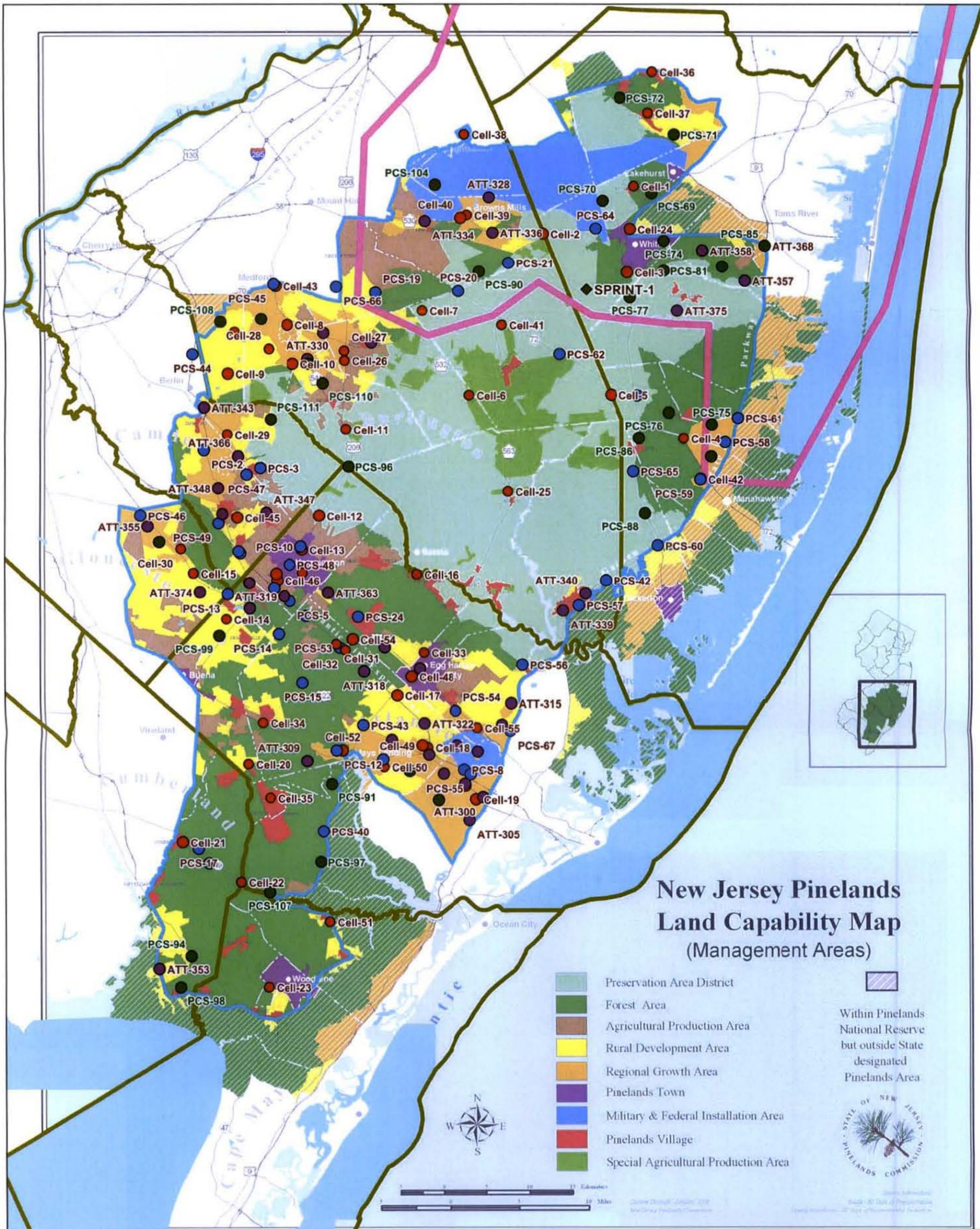
Under Sprint's federal license, it is required to provide services to its customers. Sprint will provide its own service pursuant to its license. In connection with shared frequencies, Sprint does not currently plan to have the Pinelands covered by another carrier's frequency, however, if there is a change, Sprint will notify the Commission.

## X. CONCLUSION

In summary, the Sprint Amended Plan constitutes an accurate representation of the existing and proposed wireless facilities necessary to provide adequate, reliable Sprint service to the New Jersey Pinelands region now and for the foreseeable future. Sprint has attempted to design its network in the Pinelands region “from the outside in” as requested by the Pinelands Commission. Sprint has attempted to collocate on all existing facilities and utilize facilities located outside the Pinelands wherever possible. Having exhausted all other possibilities, Sprint has proposed one new facility (SPRINT-1) for approval by the Pinelands Commission. Sprint has also proposed the acceptance of a viable candidate (Sprint ID – NY97XC025) for one of the approved T-Mobile amended plan facilities (site PCS70). The concentrated efforts of the Sprint team has produced a network design that meets the Pinelands goals and objectives by minimizing the number of new structures and where a new structure is needed, focused on minimizing the impact to the Pinelands.

**Appendix A**

SEE ATTACHED MAP(S)



### New Jersey Pinelands Land Capability Map (Management Areas)

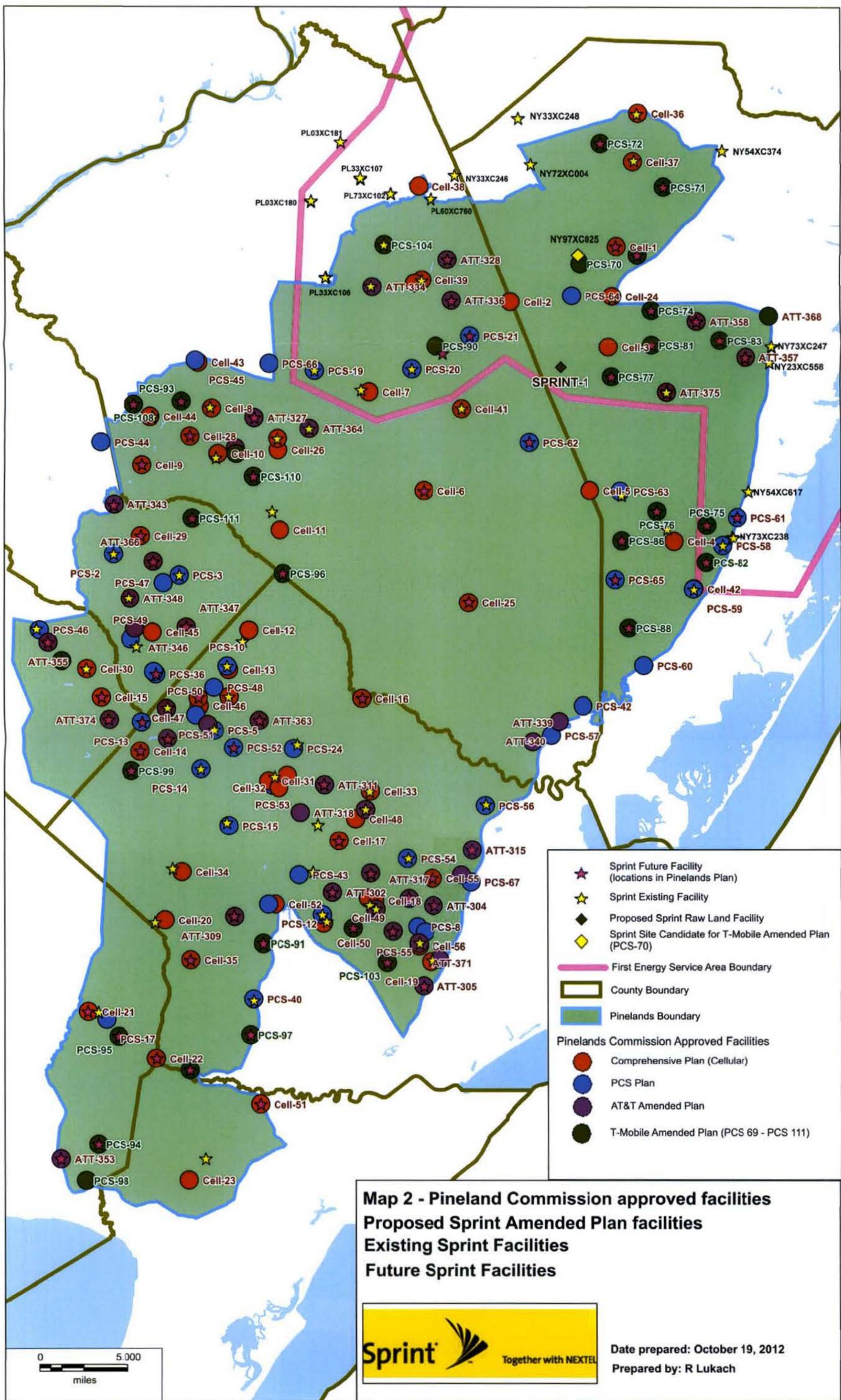
- Preservation Area District
- Forest Area
- Agricultural Production Area
- Rural Development Area
- Regional Growth Area
- Pinelands Town
- Military & Federal Installation Area
- Pinelands Village
- Special Agricultural Production Area
- Within Pinelands National Reserve but outside State designated Pinelands Area

**Map 1 - Pineland Commission approved facilities and the proposed Sprint Amended plan facility**



Date Prepared: October 19, 2012  
Prepared by: R Lukach

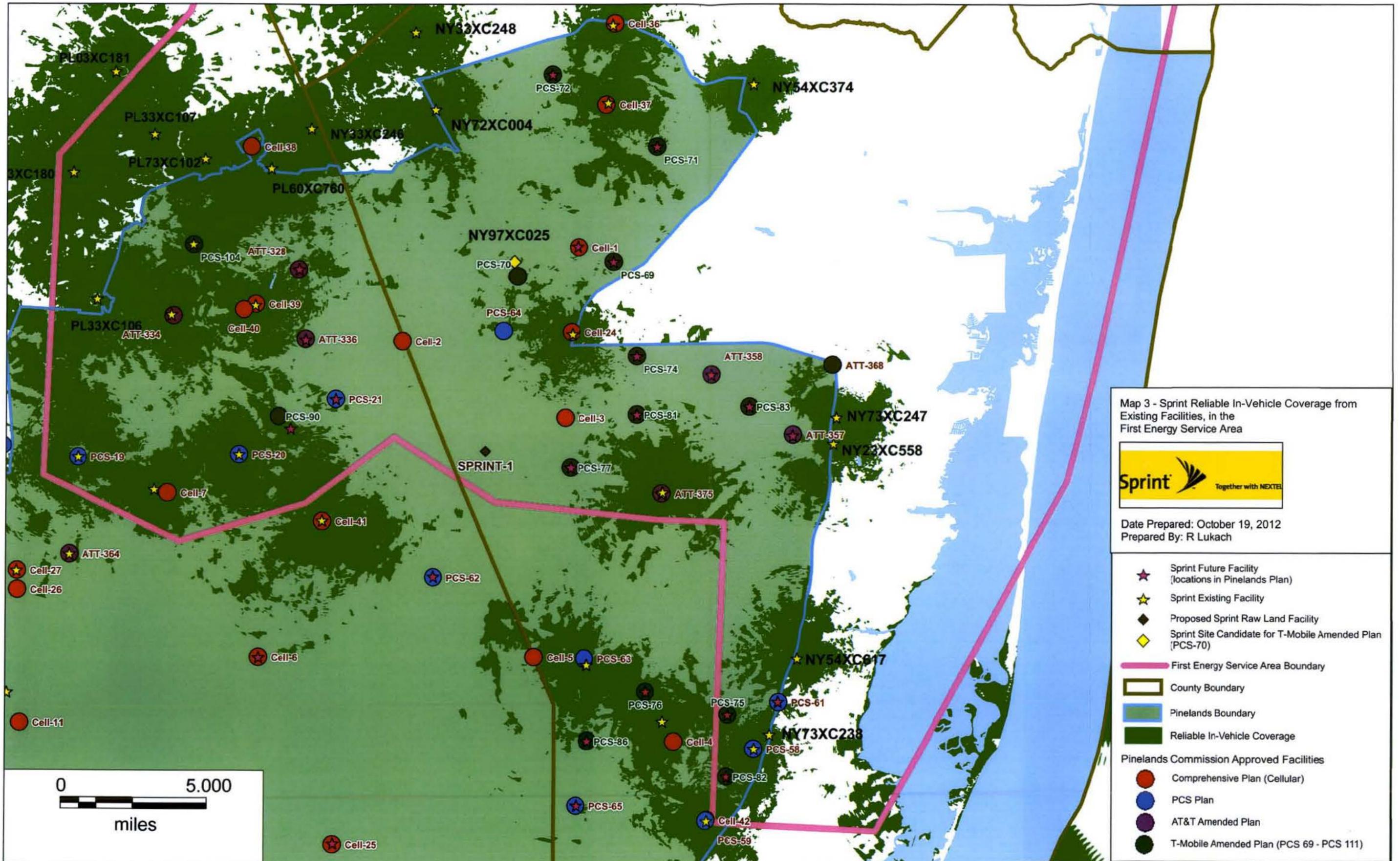
- Proposed Sprint Raw Land Facility
- First Energy Service Area Boundary
- County Boundary
- Pinelands Boundary
- Pinelands Commission Approved Facilities**
- Comprehensive Plan (Cellular)
- PCS Plan
- AT&T Amended Plan
- T-Mobile Amended Plan (PCS 69 - PCS 111)



**Map 2 - Pineland Commission approved facilities**  
**Proposed Sprint Amended Plan facilities**  
**Existing Sprint Facilities**  
**Future Sprint Facilities**



Date prepared: October 19, 2012  
 Prepared by: R Lukach

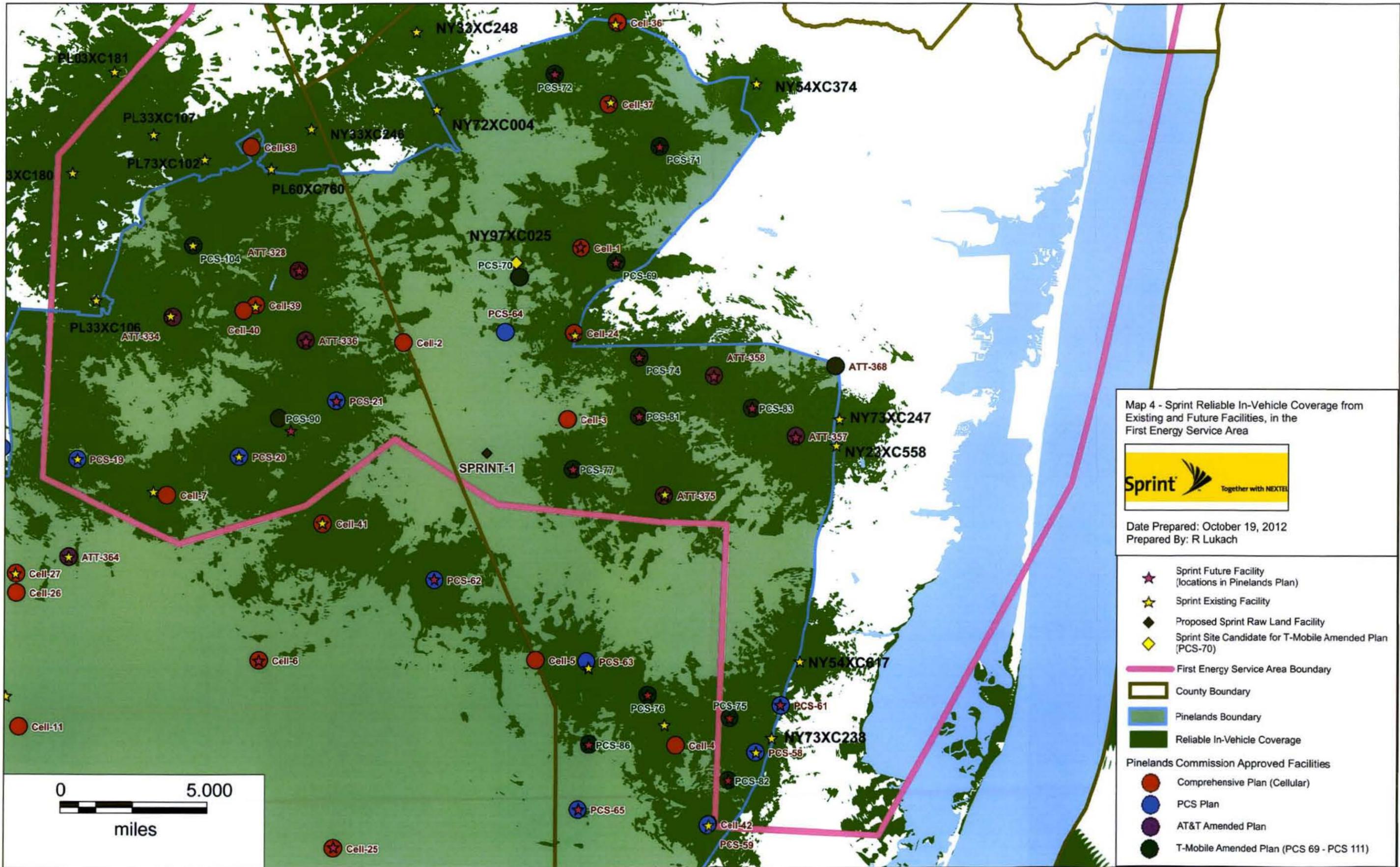


Map 3 - Sprint Reliable In-Vehicle Coverage from Existing Facilities, in the First Energy Service Area

**Sprint** Together with NEXTEL

Date Prepared: October 19, 2012  
Prepared By: R Lukach

- ★ Sprint Future Facility (locations in Pinelands Plan)
- ☆ Sprint Existing Facility
- ◆ Proposed Sprint Raw Land Facility
- ◇ Sprint Site Candidate for T-Mobile Amended Plan (PCS-70)
- First Energy Service Area Boundary
- County Boundary
- Pinelands Boundary
- Reliable In-Vehicle Coverage
- Pinelands Commission Approved Facilities**
- Comprehensive Plan (Cellular)
- PCS Plan
- AT&T Amended Plan
- T-Mobile Amended Plan (PCS 69 - PCS 111)

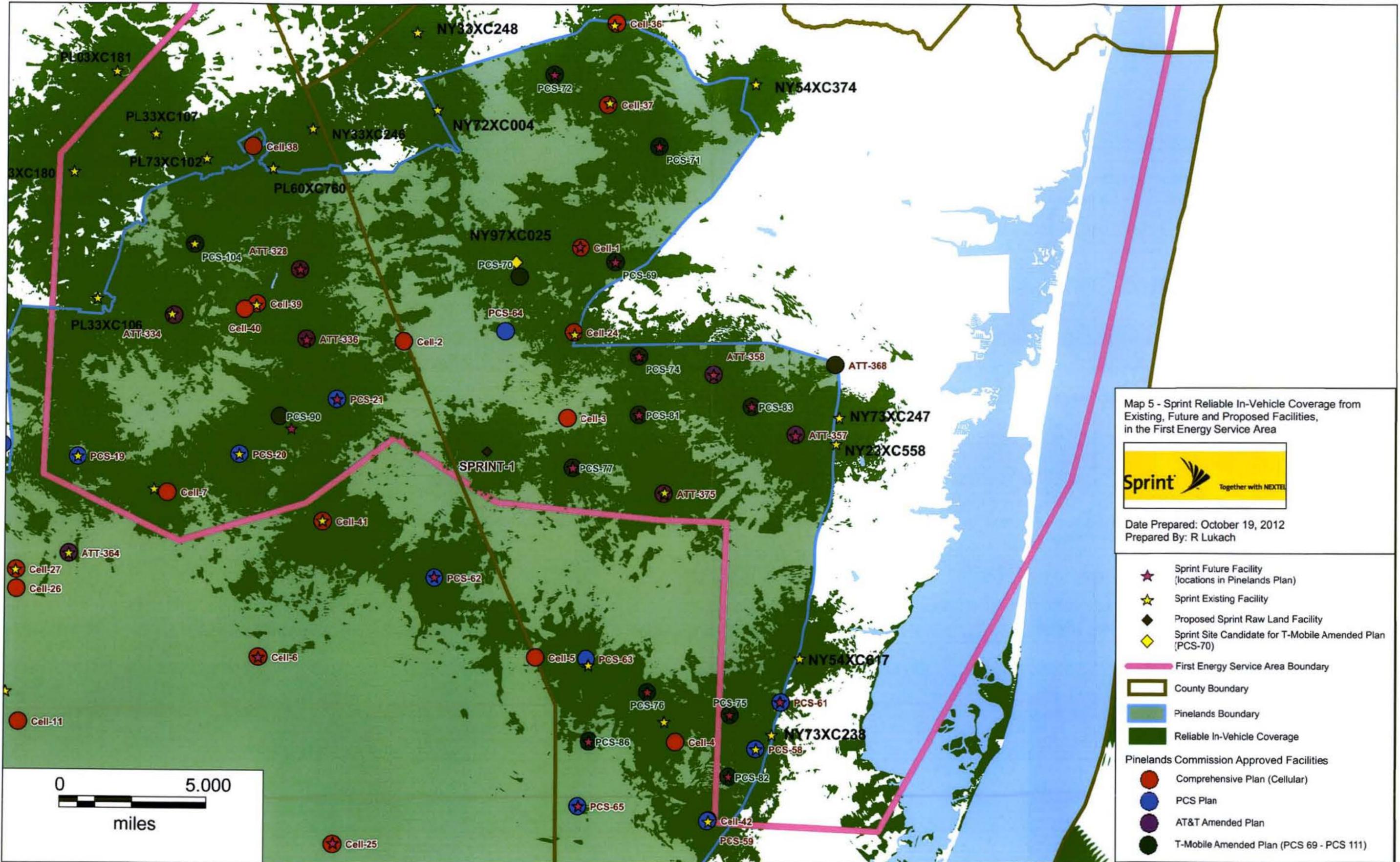


Map 4 - Sprint Reliable In-Vehicle Coverage from Existing and Future Facilities, in the First Energy Service Area



Date Prepared: October 19, 2012  
Prepared By: R Lukach

- ★ Sprint Future Facility (locations in Pinelands Plan)
- ☆ Sprint Existing Facility
- ◆ Proposed Sprint Raw Land Facility
- ◆ Sprint Site Candidate for T-Mobile Amended Plan (PCS-70)
- First Energy Service Area Boundary
- County Boundary
- Pinelands Boundary
- Reliable In-Vehicle Coverage
- Pinelands Commission Approved Facilities**
- Comprehensive Plan (Cellular)
- PCS Plan
- AT&T Amended Plan
- T-Mobile Amended Plan (PCS 69 - PCS 111)



Map 5 - Sprint Reliable In-Vehicle Coverage from Existing, Future and Proposed Facilities, in the First Energy Service Area



Date Prepared: October 19, 2012  
 Prepared By: R Lukach

- ★ Sprint Future Facility (locations in Pinelands Plan)
- ☆ Sprint Existing Facility
- ◆ Proposed Sprint Raw Land Facility
- ◇ Sprint Site Candidate for T-Mobile Amended Plan (PCS-70)
- First Energy Service Area Boundary
- County Boundary
- Pinelands Boundary
- Reliable In-Vehicle Coverage
- Pinelands Commission Approved Facilities**
- Comprehensive Plan (Cellular)
- PCS Plan
- AT&T Amended Plan
- T-Mobile Amended Plan (PCS 69 - PCS 111)

0 5.000  
 miles

**Appendix B**

SEE ATTACHED SPREAD SHEET

**Sprint Amended Plan 2012**

**Appendix B - All Pinelands Plan Facilities Spreadsheet**

LAT	LONG	Comprehensive Cellular Plan	PCS Plan	AT&T Amendment	T-Mobile Amendment	Sprint Amendment	Management Area	Site Status	SITE_ID	RAD_CENTER	ADDRESS	CITY	STRUCTURE
40.000522	-74.375224	1	30	360	-	-	H&N	Future					
39.765116	-74.319830	4	27	-	-	-	H&N	Existing	NY03XC198	195.0	1449 Route 72	Barnegat	Self Support
39.796690	-74.580152	6	-	-	-	-	H&N	Future					
39.879800	-74.647500	7	17	332	-	-	H&N	Existing	NJ5439	158.0	218 Sooy Place Rd	Vincentown	Lattice-Self Support
39.865055	-74.808972	8	-	-	-	-	U	Existing	PL33XC461	160.0	14 Stokes Road	Medford Lakes	Monopole
39.817659	-74.881880	9	-	-	-	-	H	Future					
39.823500	-74.802800	10	-	-	-	-	U	Existing	PL72XC055	79.0	Harwood Way Block 6505 Lot 9	Medford	Water Tower
39.779016	-74.742394	11	-	-	-	-	H	Existing	PL33XC455	187.0	1007 Route 206	Shamong	Self Support
39.671111	-74.773889	12	-	-	-	-	H&N	Existing	PL54XC817	80.0	Route 206 At Myrtle Ave	Hammononton	Guyed
39.580251	-74.883059	14	-	310	-	-	H	Future					
39.624671	-74.924590	15	-	356	-	-	H	Future					
39.623888	-74.645763	16	-	-	-	-	H&N	Future					
39.505524	-74.670620	17	-	-	-	-	H	Future					
39.406800	-74.570899	19	-	-	-	-	U	Existing	PL60XC164	107.0	20 Lincoln Ave	Egg Harbor	Self Support
39.437611	-74.867111	20	-	301	-	-	H	Existing	PL54XC823	185.0	West Boundary Road	Buena Vista	Guyed
39.363727	-74.939020	21	-	-	-	-	H&N	Future					
39.324857	-74.865151	22	41	354	-	-	H&N	Future					
39.241666	-74.813055	23	-	-	-	-	U	Existing	PL54XC819	150.0	413 Adams Ave	Woodbine	Water Tower
39.957081	-74.378522	24	-	-	-	-	U	Existing	NY33XC346	158.0	102 Lakewood Avenue	Manchester	Monopole
39.704502	-74.531814	25	55	-	-	-	H&N	Future					
39.839444	-74.736667	27	-	-	-	-	U	Existing	PL03XC192	140.0	241 Route 206 South	Tabernacle	Self Support
39.841605	-74.830566	28	-	337	-	-	H	Future					
39.758857	-74.882653	29	25	344	-	-	U	Future					
39.648056	-74.940833	30	-	-	-	-	U	Existing	PL03XC088	150.0	Industrial Dr (Lot 5)	Williamstown	Self Support
39.558750	-74.739444	31	53	-	-	-	H&N	Existing	PL13XC302	117.0	2877 Elwood Road	Hammononton	Water Tower
39.547002	-74.638144	33	-	-	-	-	U	Existing	PL73XC059	191.0	1100-1122 Hamburg Ave. & Moss Mill Road	Egg Harbor City	Guyed
39.482222	-74.848333	34	-	-	-	-	H&N	Existing	PL13XC364	155.0	7024 Harding Highway	Mays Landing	Guyed
39.406483	-74.829238	35	-	-	-	-	H&N	Future					
40.110444	-74.353278	36	-	359	-	-	H&N	Existing	NY72XC003	140.0	10 Don Connor Blvd	Jackson	Self Support
40.071777	-74.356083	37	-	362	-	-	H&N	Existing	NY72XC005	170.0	785 Miller Avenue	Jackson	Self Support
39.971129	-74.583179	39	-	-	-	-	U	Existing	PL33XC450	150.0	15 Trenton Road	Browns Mills	Monopole
39.864458	-74.539547	41	6	-	-	-	H&N	Existing	PL33XC454	180.0	Route 546 And Sooy Road	Chatsworth	Guyed
39.715278	-74.291389	42	-	-	-	-	U	Existing	NY03XC114	200.0	370 Hay Road	Manahawkin	Self Support
39.856389	-74.871111	44	-	338	-	-	H	Existing	PL33XC460	120.0	Merchants Way And Connecting Way	Southampton	Water Tower
39.624422	-74.820863	47	-	-	-	-	H	Future					
39.452250	-74.637778	49	-	-	-	-	U	Existing	PL33XC074	77.0	Ac Elec. Co. & Omnipoint Comm.	Mckee City	Monopole
39.438400	-74.683400	50	-	308	-	-	U	Existing	NJ5165	250.0	700 Babcock Road	MAYS LANDING	Lattice-Self Support
39.286764	-74.754171	51	-	352	-	-	H	Future					
39.624910	-74.788710	53	-	320	-	-	U	Existing	PL73XC064	160.0	570 S. Egg Harbor Rd	Hammononton	Self Support
39.474768	-74.570606	55	-	323	-	-	H&N	Future					
39.420833	-74.584444	56	-	-	-	-	U	Existing	PL55XC300	115.0	6518 Black Horse Pike	Egg Harbor	Self Support
39.743889	-74.912222	-	2	-	-	-	H	Existing	PL03XC168	153.0	Rte 73 & Copper Folley Rd	Berlin	Self Support
39.726389	-74.841389	-	3	-	-	-	H	Existing	PL03XC060	168.0	Arrowhead Avenue	Waterford Works	Self Support
39.597778	-74.804167	-	5	-	-	-	H	Existing	PL13XC301	127.0	Route 54 At Ac Express Service Road 1.75 Miles	Mays Landing	High-Voltage Transmission Tower
39.531944	-74.642222	-	9	-	-	-	U	Existing	PL13XC316	100.0	355 Cincinnati Ave	Egg Harbor City	Water Tower
39.650500	-74.790361	-	10	-	-	-	U	Existing	PL13XC318	100.0	51 North Whitehorse Pike	Hammononton	Monopole
39.604141	-74.880753	-	13	-	-	-	H	Future					
39.565278	-74.818333	-	14	-	-	-	H&N	Existing	PL13XC377	150.0	7685 Black Horse Pike	Mays Landing	Monopole
39.520697	-74.790425	-	15	-	-	-	H&N	Existing	PL54XC657	170.0	7128 Black Horse Pike	Weymouth	Monopole
39.363175	-74.927675	-	17	-	-	-	H&N	Existing	PL13XC354	170.0	5322 Route 49	Milville	Monopole
39.895833	-74.697222	-	19	-	-	-	H	Existing	PL33XC451	90.0	35 New Castle Drive	Southampton	Water Tower
39.897222	-74.593333	-	20	-	-	-	H&N	Existing	PL33XC452	150.0	14 Route 72	Vincentown	Monopole
39.924637	-74.531058	-	21	-	-	-	H&N	Future					
39.585750	-74.715222	-	24	-	-	-	H&N	Existing	PL33XC456	185.0	4326 Moss Mill Rd	Mullica Hill	Monopole
39.643848	-74.866124	-	36	-	-	-	H	Future					
39.444167	-74.688056	-	37	-	-	-	U	Existing	PL13XC379	180.0	5100 Harding Ave.	Mays Landing	Self Support
39.373138	-74.761611	-	40	-	-	-	H&N	Existing	PL33XC030	197.0	Old Mays Landing Road	Estell Manor	Self Support
39.479722	-74.698055	-	43	-	-	-	H	Existing	PL13XC378	160.0	5828 Cedar St.	Mays Landing	Self Support
39.681388	-74.993888	-	46	-	-	-	U	Existing	PL60XC690	110.0	305 Main Street	Williamstown	Monopole
39.666749	-74.887139	-	49	-	-	-	H	Existing	PL13XC300	113.0	Williamstown-Winslow Rd Pole#43	Winslow	High-Voltage Transmission Tower
39.582937	-74.783623	-	52	-	-	-	H	Future					
39.491389	-74.596667	-	54	-	-	-	U	Existing	PL33XC457	98.0	Aloe Street	Hammononton	High-Voltage Transmission Tower
39.536500	-74.513300	-	56	-	-	-	H	Existing	PL72XC053	200.0	N. Genoa Ave & County Highway 624	Egg Harbor City	Self Support
39.751667	-74.260556	-	58	-	-	-	U	Existing	NY03XC113	190.0	Acc Tower	Barnegat	Other
39.775024	-74.245115	-	61	-	-	-	H&N	Future					
39.836877	-74.467508	-	62	-	-	-	H&N	Future					
39.793100	-74.368800	-	63	-	-	-	H&N	Existing	PL33XC033	175.0	569 Route 72	Barnegat	Self Support

**Sprint Amended Plan 2012**  
**Appendix B - All Pinelands Plan Facilities Spreadsheet**

LAT	LONG	Comprehensive Cellular Plan	PCS Plan	AT&T Amendment	T-Mobile Amendment	Sprint Amendment	Management Area	Site Status	SITE_ID	RAD_CENTER	ADDRESS	CITY	STRUCTURE
39.723424	-74.375330	--	65	--	--	--	H&N	Future					
39.462885	-74.677627	--	--	--	--	--	U	Future					
39.452352	-74.569110	--	--	--	--	--	H&N	Future					
39.385455	-74.579849	--	--	--	--	--	U	Future					
39.430252	-74.613293	--	--	--	--	--	U	Future					
39.442920	-74.782720	--	--	--	--	--	H&N	Future					
39.552546	-74.686465	--	--	--	--	--	H&N	Future					
39.448900	-74.631100	--	--	--	--	--	U	Existing	NJ5075	100.0	Wrangleboro Toll Plaza	Hamilton	Monopole
39.498337	-74.528330	--	--	--	--	--	U	Future					
39.458569	-74.596250	--	--	--	--	--	H&N	Future					
39.519000	-74.692900	--	--	--	--	--	H	Existing	PL13XC303	135.0	Columbia Road	Hamilton	Guyed
39.478367	-74.636754	--	--	--	--	--	H	Future					
39.590206	-74.854065	--	--	--	--	--	H&N	Future					
39.856752	-74.761619	--	--	--	--	--	U	Future					
39.988923	-74.555045	--	--	--	--	--	U	Future					
39.966300	-74.637200	--	--	--	--	--	U	Existing	PL73XC100	108.0	561 Pemberton Browns Mill Road	Pemberton	Water Tower
39.954015	-74.550656	--	--	--	--	--	U	Future					
39.784181	-74.912230	--	--	--	--	--	U	Future					
39.683208	-74.833889	--	--	--	--	--	H&N	Future					
39.707300	-74.895130	--	--	--	--	--	U	Existing	PL70XC056	90.0	102 South Route 73	Winslow Twp	Monopole
39.241683	-74.967673	--	--	--	--	--	U	Future					
39.670175	-74.981826	--	--	--	--	--	U	Future					
39.906968	-74.236002	--	--	--	--	--	H&N	Future					
39.937043	-74.288908	--	--	--	--	--	H&N	Future					
39.605754	-74.756096	--	--	--	--	--	U	Future					
39.847700	-74.702600	--	--	--	--	--	H	Existing	NJ5383	180.0	Rte 648 South & Rte 532	VINCENTOWN	LATTICE-GUYED
39.737558	-74.869265	--	--	--	--	--	U	Future					
39.615800	-74.853800	--	--	--	--	--	H&N	Existing	PL73XC098	108.0	1249 Mays Landing Road	Folsom	Water Tower
39.606304	-74.917397	--	--	--	--	--	R	Future					
39.878055	-74.320560	--	--	--	--	--	H&N	Existing	NY72XC028	170.0	2301 Lacey Road	Forked River	Monopole
39.992950	-74.352150	--	--	--	--	69	Forest Area	Future				Manchester	Raw Land
39.985600	-74.413900	--	--	--	--	70	Preservation Area	Future				Manchester	Raw Land
40.050200	-74.324400	--	--	--	--	71	Rural Development Area	Future				Jackson	Raw Land
40.085800	-74.392200	--	--	--	--	72	Forest Area	Future				Jackson	Existing Structure
39.946300	-74.337000	--	--	--	--	74	Forest Area	Future				Manchester	Existing Structure
39.768500	-74.277500	--	--	--	--	75	Regional Growth Area	Future				Barneget	Raw Land
39.779900	-74.330900	--	--	--	--	76	Forest Area	Future				Barneget	Existing Structure
39.891000	-74.379400	--	--	--	--	77	Preservation Area District	Future				Lacey	Raw Land
39.917300	-74.336910	--	--	--	--	81	Forest Area	Future				Lacey	Raw Land
39.737800	-74.278200	--	--	--	--	82	Regional Growth Area	Future				Stafford	Raw Land
39.921320	-74.264087	--	--	--	--	83	Forest Area	Future				Berkeley	Raw Land
39.755489	-74.368329	--	--	--	--	86	Forest Area	Future				Stafford	Raw Land
39.682876	-74.360821	--	--	--	--	88	Preservation Area District	Future				Little Egg Harbor	Raw Land
39.916110	-74.567700	--	--	--	--	90	Forest Area	Future				Pemberton	Fire Dist. Raw Land
39.420280	-74.751700	--	--	--	--	91	Forest Area	Future				Estell Manor	Raw Land
39.870000	-74.840000	44	26	--	--	93	Regional Growth Area	Future				Medford Township	Raw Land
39.253570	-74.927600	--	--	--	--	94	Rural Development Area	Future				Maurice River	Raw Land
39.343070	-74.905900	--	--	--	--	95	Forest Area	Future				Maurice River	Existing Structure
39.727840	-74.730500	--	--	--	--	96	Pinelands Village	Future				Dennis	Raw Land
39.344440	-74.765000	--	--	--	--	97	Forest Area	Future				Estell Manor	Raw Land
39.563611	-74.892500	--	--	--	--	99	Rural Development Area	Future				Buena Vista	existing on air struct.
39.433056	-74.655278	--	--	--	--	100	Regional Growth Area	Future				Hamilton	Raw Land
39.404900	-74.619081	--	--	--	--	103	Regional Growth Area	Future				Egg Harbor	Existing Structure
39.654758	-74.967181	--	--	--	--	105	Rural Development Area	Future				Monroe	Raw Land
39.315090	-74.829700	--	--	--	--	107	Forest Area	Future				Estell Manor	Raw Land
39.867306	-74.891083	--	--	--	--	108	Rural Development Area	Future				Evesham	On air
39.808055	-74.762500	--	--	--	--	110	Agricultural Production Area	Future				Shamong	Raw Land
39.773475	-74.828061	--	--	--	--	111	Rural Development Area	Future				Waterford	Raw Land
39.992700	-74.416100	--	--	--	--	--	H&N	Proposed	NY97XC026	150	6 Railroad Ave	Manchester	Raw Land
39.898900	-74.434000	--	--	--	--	"70 Candidate"	H&N	Proposed	NY97XC025	150	750 Highway 539	Manchester	Raw Land

**Appendix C**

SEE ATTACHED DOCUMENT(S)

From: Stefula, Evelyn V USA CIV (US) [mailto:evelyn.v.stefula.civ@mail.mil]  
Sent: Tuesday, May 24, 2011 2:02 PM  
To: Ed Gomez; Warrick, John R USAF CIV (US)  
Cc: Eckstein, Richard S USA CIV (US)  
Subject: RE: (NJ484V) NY33XC347 Proposed Sprint tower at Route 70 West Mile Mark 35.7

Not at this time.

Evelyn

Evelyn Stefula  
US Army Signal Command  
Network Enterprise Center (NEC)  
Chief, Plans and Business Operations  
Building 6530 8th Street  
Ft Dix, NJ 08640  
609-562-4010 DSN 562-4010  
[evelyn.stefula@us.army.mil](mailto:evelyn.stefula@us.army.mil)

-----Original Message-----

From: Ed Gomez [mailto:egomez@transcendwireless.com]  
Sent: Tuesday, May 24, 2011 1:54 PM  
To: Warrick, John R USAF CIV (US)  
Cc: Stefula, Evelyn V USA CIV (US)  
Subject: RE: (NJ484V) NY33XC347 Proposed Sprint tower at Route 70 West Mile Mark 35.7

John

Thank you for the response. Since I just took over management responsibilities of this site from Sprint/Nextel you were the last point of contact listed, so I figure I would follow up with you on interest.

Evelyn,

Would you be interested in leasing tower space for Sprint Nextel on the tower the Department of Army had constructed?

Ed Gomez  
Transcend Wireless, LLC  
845-548-2934 (mobile)

201-786-9161 (e-fax)

-----Original Message-----

From: WARRICK, JOHN R GS-11 USAF AMC 87 CES/CEAO  
[mailto:john.warrick@us.af.mil]  
Sent: Tuesday, May 24, 2011 8:47 AM  
To: Ed Gomez  
Cc: Stefula, Evelyn V USA CIV (US)  
Subject: RE: (NJ484V) NY33XC347 Proposed Sprint tower at Route 70 West Mile  
Mark 35.7

Ed,

As you probably know by this time my e-mail address changed when Fort Dix became part of Joint Base McGuire-Dix-Lakehurst on 01 Oct 09. Command and control of the former US Army installation transferred to the US Air Force along with all real estate interests and actions.

It has been nearly 5 years since we last heard anything about this area of interest from your firm and in that time the US Army Network Command (NETCOM), Directorate of Information Management (DOIM), has established cellular communications capability to satisfy our present and future requirements. Evelyn Stefula is the DOIM Point of Contact.

Thank you for your interest.

John

-----Original Message-----

From: Ed Gomez [mailto:egomez@transcendwireless.com]  
Sent: Monday, May 23, 2011 4:34 PM  
To: WARRICK, JOHN R GS-11 USAF AMC 87 CES/CEAO  
Subject: FW: (NJ484V) NY33XC347 Proposed Sprint tower at Route 70 West Mile  
Mark 35.7  
Importance: High

Mr Warrick

I am just following up on the voice mails I had left you, in addition to the email chain below. I received your voicemail today regarding the notice letter I had sent you which you must have received this morning.

Kindly call me tomorrow afternoon (5/24) after 1430 hours so we can discuss further.

Thank you

Sincerely,

---

Ed Gomez  
Sr. Site Acquisition Project Manager

Transcend Wireless, LLC

10 Industrial Avenue, Suite 6

Mahwah, NJ 07430

Mobile: 845-548-2934

Fax: 201-786-9161

[EGomez@TranscendWireless.com](mailto:EGomez@TranscendWireless.com)

From: Ed Gomez [mailto:[egomez@transcendwireless.com](mailto:egomez@transcendwireless.com)]  
Sent: Friday, May 20, 2011 1:36 PM  
To: 'john.warrick@dix.army.mil'  
Subject: RE: (NJ484V) NY33XC347 Proposed Sprint tower at Route 70 West Mile Mark 35.7

Hi John

Have you had a chance to review with the team to determine if we can proceed

with a lease on "Little Iraq?"

Ed Gomez

Transcend Wireless, LLC

845-548-2934 (mobile)

201-786-9161 (e-fax)

From: Ed Gomez [mailto:egomez@transcendwireless.com]  
Sent: Monday, April 18, 2011 9:41 AM  
To: 'john.warrick@dix.army.mil'  
Cc: 'jwaltner@transcendwireless.com'; 'Jack Gavin'  
Subject: FW: (NJ484V) NY33XC347 Proposed Sprint tower at Route 70 West Mile Mark 35.7

Hello John

I know it has been awhile since Sprint had spoken with you regarding this site, but we wanted to reach out to you to see if there is still interest in your end to proceed with a proposed tower with Sprint Nextel.

Please advise.

Thanks.

Sincerely,

---

Ed Gomez  
Sr. Site Acquisition Project Manager

Transcend Wireless, LLC

10 Industrial Avenue, Suite 6

Mahwah, NJ 07430

Mobile: 845-548-2934

Fax: 201-786-9161

[EGomez@TranscendWireless.com](mailto:EGomez@TranscendWireless.com)

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----- Original Message -----

From: Warrick,John R <<mailto:john.warrick@dix.army.mil>>

To: 'Jack Gavin' <<mailto:jgavin@transcendwireless.com>>

Sent: Tuesday, October 17, 2006 2:15 PM

Subject: RE: NY33XC347 Proposed Sprint tower at Route 70 West Mile  
Mark 35.7

Jack,

Here are the comments:

~~~~~

ENVIRONMENTAL:

1. I think they are going to have a major hurdle to over come with the Pinelands if this location has not been identified already on the Pinelands approved master plan for communications towers with in the Pinelands. I know we went through this before with Verizon or one of the other companies who had a meeting with the Pinelands Commission. And they can't claim immunity because the proposed site is on Federal Lands. It spells is right out in the Pinelands Management Plan they must present a plan for review and approval meeting certain requirements as provided in the PLC Management Plan.

2. They will need to move this site back further. At a minumin if this is considered a scenic corridor through the Pinelands it must be back set 200 feet off the roadway.

3. There is a height restriction of 35 feet, unless it is attached to an existing suitable structure and then it can be no more than 200 ft otherwise they have to go through a lengthy justification process to get approval from the PLC.

4. Also mention is made about electrical power: Your right it would be a concern to us. Currently power comes in from the east on Rte 70, turns up north on Grande Concourse Road and then turns in on one of the side entry roads toward the Tiger Base Site. I'm sure it would be considered a "no, no " to cut across the training site to further supply power to this proposed Communications Tower site, be it either aerial or underground.

~~~~~

NATURAL RESOURCES:

This is my first look at this one. I assume they are doing the Pinelands approvals. Is this in the previous mentioned easement for Route 70? 196 feet, that is really tall. Who is addressing the potential for a wildfire to totally wipe out this facility. It would nice to see the site map. Their drawing is very local and the mile marker does not mean anything to me. Who is looking at wetlands and endangered species?

~~~~~

DOIM:

The following questions are submitted from the DOIM.

1) After Consulting with Motorola the following requirements will be needed for the LMR Antenna Placement:

2 transmit (the 115' level they indicated would work) as well

1 receive, a minimum of 30' above the transmit (10' antenna plus 20' tip-to-tail for isolation purposes).

2) The Tower Drawing depicts Sprint Antennas at the top with 85 feet empty and then the government's Land Mobile Antennas. What is the minimum separation needed for Sprints equipment? Does Sprint have plans for this 85 feet? I believe they may be planning to sublease that space to other carriers. John, you may want to make sure they understand the rules of any subleasing activity.

3) I don't see any lightening protection or grounding indicated on the drawings. Does a ground field need to be built? We need Sprint to clarify how they will ground the entire facility including the tower to provide adequate protection from Lightning Strikes.

4) Is Sprint hooking up power to the US Army building? Is there any environment control systems (e.g. Air Conditioning) coming with the US Army building?

5) How big a generator is Sprint Installing (e.g., how many kW). Is this generator being sized such that it will support future expansion of the site and support Army requirements in its shelter?

6) Does Sprint have a drawing, which depicts how much space they plan to use in the 12 x 20 shelter? Can the 12 x 20 shelter be caged inside so that other future users can be secured, but all companies have access to the shelter. What I have seen in the past is metal cages put up with locking doors with each users equipment inside.

I am not sure how we handle this as the Army. I am assuming that our approach is that Sprint will build the site and the US Army will own it? I guarantee that once the site is up Ft Dix will be approached by other carriers to lease space on the tower. If I am wrong I will be very surprised. Therefore we should require Sprint to oversize things like generators, buildings, etc. so that we can support other leases.

~~~~~

John

---

From: Jack Gavin [mailto:jgavin@transcendwireless.com]  
Sent: Tuesday, September 19, 2006 9:24 AM  
To: Warrick,John R  
Subject: NY33XC347 Proposed Sprint tower at Route 70 West Mile Mark

35.7

John,

Attached please find the proposed tower near mile mark 35.7 West off of Route 70.

Sprint's engineer has included the military's antennas and a location for radio equipment within the compound.

Please advise of any comments or proposed revisions. Upon receipt of any comments or your approval on behalf of the military, Sprint will produce full size construction drawings for distribution to the military.

Please contact me with any questions or comments.

Jack Gavin  
Transcend Wireless  
201-310-7234

**Appendix D**

SEE ATTACHED DOCUMENT(S)

## Discussion of Distributed Antenna Systems (DAS) as an Alternative Technology

### General Background

The concept of using a Distributed Antenna System (DAS) to provide coverage in a wireless system is not new. DAS systems, in many forms, have been used to provide coverage to tunnels, inside large buildings, inside shopping malls and in parking decks for over 30 years. In the past 5 years there have been deployments of DAS systems in limited outdoor areas as well.

A DAS wireless network distributes the radio signal from a base station over various antenna locations via cables. The cables can be simple copper wire, antenna transmission line or fiber optic cables. The DAS systems using copper cable (telephone or CAT5 lines) or antenna transmission line (Diameter of 1"-2") are limited in the area that can be served due to the loss of signal per foot associated with these types of cables as well as their size/weight characteristics. These types of systems are generally limited to vehicle/train tunnels where a simple linear application is required, or in a building/parking garage where a network of cables can be affixed to the existing structure. The area of the coverage gaps in the Pinelands is far greater than the area that can be covered by a copper wire or antenna transmission line DAS system. Therefore the copper based DAS systems are not applicable for the Pinelands.

The fiber optic cable based DAS systems are not hindered by the size and weight of the cables required to interconnect the distributed antennas to the base station. The fiber optic cable is relatively lightweight and can commonly be installed along utility poles. It also has a very low loss of signal per foot of cable. A fiber DAS system operations under the concept of converting the base station radio signals to optical signals and distributing the optical signals to various locations via fiber optic cable. Additional electronic and optical equipment (over and above the normal base station equipment) is required to convert the radio signal to light, back to radio frequency, and to amplify the radio signal at the remote end for use over the air. Therefore, each remote location(s) will require cabinets to house the equipment to convert the optical signal back to a radio signal, an amplifier (to amplify the radio signal), an antenna, and a structure to mount the equipment and elevate the antenna. The cabinets range from 1'x1'x1' to 1'x3'x2' depending on manufacturer, frequency bands supported and functions. These remote locations all connect back to one central location where the base station radio equipment is stored. In essence, the wireless system becomes a mesh of wires connecting all the end points or "nodes". Ultimately what started out as a wireless system becomes much more of a "wired" network and the wireless portion is now limited to approximately the last 600 to 900 feet as opposed to the last 1 to 2 miles with a Macro Cell approach. The fiber optic DAS system is also utilized in shopping malls, large office buildings and tunnels to provide coverage internal to these structures. The fiber optic DAS system is the only DAS option for larger areas due to the use of low loss, lightweight fiber optic cables interconnecting the base station and each "node" or remote location.

The facilities normally used for remote DAS equipment are common utility poles. The current regulations in New Jersey limit access to these poles to companies with utility status. The wireless carriers do not have utility status in the State of New Jersey. Therefore, a third party is required to install and maintain the fiber optic cables and remote equipment. The third party would also be responsible for negotiating and executing pole attachment agreements and right-of-way use agreements with the utility companies owning the poles. Agreements may also be required with

local municipalities, counties, or the State of New Jersey, depending on which entity owns the streets. These requirements are necessary for the implementation of a DAS system.

#### **Purpose of the Proposing a New Communications Facility**

Commonly, a wireless service provider proposes a new communications facility to resolve a lack of reliable wireless service to an area of the Pinelands Reliable service being defined as "To encourage and facilitate the prompt deployment throughout the United States of a seamless, ubiquitous, and reliable end to end infrastructure for communications, including wireless communications, to meet the Nation's public safety and other communications needs" as stated in the Wireless Communication and Public Safety Act, (October 26, 1999, P.L. 106-81, 2, 113 Stat. 1286, amending 47 U.S.C.A. 222 and 251, and appearing in part as 47 U.S.C.A. 615, 615a, and 615b). Common macro cell facilities provide this level of reliable service via:

- Battery back-up (and in some cases generator back-up)
- Base station equipment designed to be fault tolerant
- Redundant power supplies
- Gated and locked base station equipment, telephone service and power service.
- Diverse routing and/or alternate methods of interconnect lines from the base station to the central mobile switching office in case of failure.
- Dedicated, protected and shielded transmission lines connecting the base stations to the antennas
- Exclusive access and control of the equipment by authorized personnel for the respective wireless provider
- E911 location capability via triangulation of the antennas/sectors of the proposed facility as well as triangulation from surrounding wireless facilities enabled by the large coverage footprints and coverage overlap between sectors and Macro Cells
- Sectorized antennas with the ability to tilt or pan the antennas to optimize the network

The above attributes of the proposed wireless telecommunication facility enable a wireless provider to provide:

- Better than 98% grade of service and availability.
- 911 caller location information to First Responders that meet the FCC requirements.
- A network that is relied upon when commercial power and other wired commercial services are interrupted, sometimes for days.
- A network that has the ability to optimize the antenna system to reduce and/or eliminate dropped calls.

#### **Alternate Fiber Optic Distributed Antenna Systems**

As with any solution, there are regulations, constraints, advantages and disadvantages as compared to other solutions. The science of converting a radio signal to light, transmitting that signal along a fiber optic cable, converting it back to a radio signal and amplifying it to a usable level is commonly known as a fiber optic Distributed Antenna System. DAS is becoming an alternate method of providing radio signals in areas where traditional methods are not feasible. However, each specific implementation of a Fiber optic DAS system must be analyzed to determine if it can provide not only RF signal at the remote location(s) but reliable service as defined by Congress, the FCC, industry and subscribers of the service.

The implementation of a DAS system for the Pinelands would consist of eliminating a proposed 200' communications structure and replacing it with several remote antennas, or nodes fed via new fiber optic cables, throughout the gap in coverage. The antennas are omnidirectional in nature (whip antenna) and are usually less than 3 foot in length. Below is a simplistic view of a DAS system.

## A Typical Outdoor Distributed Antenna System Network



Analysis of a DAS system for the Pinelands has many steps. Each step is outlined below.

1. Determine if there is an existing infrastructure of utility poles through the coverage gap.
2. Determine the owners of the utility poles (phone and power companies) and determine any specific restrictions that may exist. Reference the National Electrical Safety Code for basic requirements for locating communications equipment on utility poles.
  - a. Generally there is a limit of 1 communication cabinet per pole due to space constraints.
  - b. Each pole must be evaluated by the owner to determine if a DAS node would be allowed based on present and planned uses on the particular pole. Therefore if Verizon or the cable company have an existing cabinet (or have plans for a cabinet) on a pole, that pole is most likely not a candidate for a DAS node.
  - c. For power companies, it is generally required that a disconnect switch must be installed at each node so a technician can turn off the DAS node while working on the pole. Also, many power companies do not allow battery back-up of DAS nodes because if battery back-up was employed, turning off the disconnect switch would not shut down the DAS node. (NOTE: *PierCon Solutions has performed testing on transmitters in the Cellular and PCS frequency bands on transmitters which have similar output power as the standard DAS node (20w). It was found that the FCC RF Exposure guidelines are exceeded when a worker is less than 3' from the front of the transmitting antenna. Therefore if a technician needs to work on the utility pole near the antenna, the DAS node must be shut down*)
3. Determine if the area to be covered will be E911 Compliant.
  - a. This analysis consists of an assessment of the area to determine if there will be difficulty in determining the location of a user. One looks to determine if the area is open with no large buildings or tall dense trees that could possibly reduce the coverage overlap between nodes. The overlap is used to triangulate the user's position. If the nodes are mounted below the tree canopy or behind large buildings, overlap is minimal and triangulation is not possible. Also, if there are areas of dense forest, the GPS location capability of some

phones will not provide adequate location information. In these situations, location must rely on the network triangulation method. In this case, the network may only be able to determine which node the user is communicating with (using additional specialized location equipment) and possibly how far from the node. Unfortunately, since the node antenna is omnidirectional, the direction from the node would be unknown and if there is no triangular available, a latitude and longitude for the user can not be determined. In this case only the latitude and longitude of the active node is known.

4. Determine how many wireless providers have coverage gaps in the area of concern.
5. Assess the reliability of the utility poles and associated lines.
  - a. In each area when a DAS system is proposed, one should review the area to identify the risk of the system being shut down due to failures related to the utility lines. It is desirable to utilize poles in open areas which have little risk of damage from falling trees and branches. In some cases there may be an intersection prone to accidents that often damage certain utility poles, these poles should be avoided.
6. Assess the areas to be covered by the DAS system and determine if there are any concerns with interference using the DAS omni-directional antennas or if there is any fast moving traffic which result in dropped calls due to the minimal coverage overlap and small coverage footprint of each node does not allow time for the handoff process.
  - a. The Pinelands includes several highways which would create dropped calls due to handoff issues.
7. Determine the number of frequency bands required for each carrier and the equipment required to meet these requirements. The requirements for the top 4 carriers are summarized below.
  - a. Sprint/Nextel Licenses – Sprint/Nextel is licensed to operate in the 800, 1900 and 2500 MHz frequency bands using multiple technologies. This creates a requirement for the use of a shared amplifier which operates at significantly lower power (requiring more DAS nodes, cost & logistical issues) or the use of multiple single amplifiers which increases the bulk and mass attached to each utility pole. Therefore it is not likely that a single small cabinet and one antenna on a utility pole is an accurate representation of what a node installation would consist of.
  - b. Verizon Wireless and AT&T Licenses – These carriers are licensed to operate in the 700, 850, 1700, 1900 and 2100 MHz bands using multiple technologies. This creates a requirement for the use of a shared amplifier which operates at significantly lower power (requiring more DAS nodes, cost & logistical issues) or the use of multiple single amplifiers which increases the bulk and mass attached to each utility pole. This also more than triples the cost of the amplifier requirements. Therefore it is not likely that a single small cabinet and one antenna on a utility pole is an accurate representation of what a node installation would consist of.
  - c. T-Mobile is licensed to operate in the 1900 and 1700 / 2100 MHz bands using two technologies, GSM and UMTS. The multiple technology and frequency nature of T-Mobile's network translates into the need for separate DAS amplifiers. Therefore, two (2) separate repeater amplifiers shall be required per node for this purpose.

### **Preliminary Design**

Once an analysis of the area where a DAS system may be proposed, a preliminary design is then created. Engineers need to survey the intended coverage areas searching for appropriate structures to locate DAS nodes. Many times the coverage areas have to be surveyed with representatives of the utility companies to determine what utility poles may be available.

Once the available poles are determined, an engineer reviews the list to determine if there are a sufficient number of utility poles in the proper locations to create a network producing seamless coverage. Often replacement and additional of utility poles are required in order to design a DAS network with continue wireless service.

The number of wireless providers that the DAS network will support is also a major factor. If carrier specific nodes are required, then each carrier would need their own utility pole at each DAS node location. This is the most common deployment used for outdoor systems. If common DAS nodes are designed which will support all providers, then the power output for each provider is drastically reduced, reducing the coverage footprint from each DAS node. The result is many more DAS nodes are needed to provide seamless coverage.

Once a preliminary design has been completed, one can access the visual impacts and estimate the reliability of the DAS design to determine, on a case by case basis, if it would provide the degree of coverage and reliability required for the given area

### Summary

A review of the purpose and a general DAS analysis for the Pinelands has uncovered several differences between a Macro Cell design and a fiber optic DAS design. The main differences are as follows:

- Availability and Feasibility to Construct
  - The Macro Cell can be constructed pending the approval from the local municipality and the Pinelands.
  - The DAS system must be able to identify and secure approximately poles for each wireless provider. The Pinelands regulations encourage any proposed application be constructed to accommodate multiple providers. In keeping with this philosophy, a multiplication factor of at least 4 is required (given each carrier requires their own cabinet and only 1 communications cabinet is allowed per pole) to determine the total number of DAS nodes.
- Reliability and Outages
  - The Macro Cell network has proven to have a 98% or better level of reliability over the past several decades.
  - The DAS system has several issues regarding reliability. They are:
    - Battery Back-up power restrictions for nodes
    - Shutdown of nodes during Power, Phone and Cable service technician visits
    - The DAS node disconnect switches, equipment boxes and antennas are not gated and secured. The disconnect switches cannot be locked and are accessible to vandalism.
    - The DAS nodes will go out of service when commercial power is lost, a time when wireless service is needed the most
    - Damage from storms and falling trees can damage the fiber optic cables and create outages for portions, or all, of the DAS network depending on the location of the damage.
    - The DAS network must be installed and maintained by a third party utility company and not the wireless telecommunications provider.
    - The DAS system adds more active components to the wireless network, creating more points of equipment failure.
- E911 Compliance
  - The Macro Cell network has been designed to meet the FCC E911 requirements and can locate users with latitude and longitude coordinates, as required by the FCC, within 50m 67% of the time and 150m 95% of the time with GPS based solutions. The requirement for network based solutions is 100m 67% of the time 300m 95% of the time.
  - The DAS systems have been challenged in meeting these requirements. Recently additional hardware has been developed to assist in E911 location services. However, since there is normally very little overlap between nodes and the nodes use omnidirectional antennas, most often the system can only tell the First Responders which node the user is on and how far from the node the user is located. If the node has a 750' coverage radius, and the location information states which node and how far from the node, there is no practical way to determine in which direction or the latitude and longitude of the user.

**Conclusion**

In my expert opinion, in most cases, the use of a DAS system to provide coverage to the Pinelands is not a reliable or responsible solution. The gaps in coverage are usually significant in size and many are in remote areas.. The battery back-up restrictions and E911 compliance issues do not allow the DAS system to meet the intent of the Wireless Communication and Public Safety Act and does not meet the requirements of the top ranked wireless service providers in the country. Please feel free to contact me if you have any questions or if you need any additional information.

Regards,



Date: September 9<sup>th</sup>, 2011

Glenn Pierson  
General Manager/Sr. RF Engineer  
PierCon Solutions LLC  
Office-(973)-628-9330 ext. 206  
Mobile-(201)-572-6206