

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE: :
 :
APPLICATION OF CELLCO PARTNERSHIP : DOCKET NO. 413
D/B/A VERIZON WIRELESS FOR A :
CERTIFICATE OF ENVIRONMENTAL :
COMPATIBILITY AND PUBLIC NEED FOR :
THE CONSTRUCTION, MAINTENANCE :
AND OPERATION OF A WIRELESS :
TELECOMMUNICATIONS FACILITY AT :
723 LEETES ISLAND ROAD, BRANFORD, :
CONNECTICUT : APRIL 13, 2011

RESPONSES OF CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS
TO INTERVENOR, TOWN OF BRANFORD INTERROGATORIES

On April 6, 2011, Intervenor, Town of Branford, issued Interrogatories to Cellco Partnership d/b/a Verizon Wireless ("Cellco"), relating to the above-captioned docket. Below are Cellco's responses.

Question No. 1

What propagation model does the applicant employ to determine calculated coverage?

Response

Cellco uses a proprietary propagation modeling tool called Geo Plan Version 5.8.2. This tool is used across the country by Cellco's network designers.

Question No. 2

What is the frequency band that is depicted in these plots?

Response

The coverage plots included in the Application are labeled as cellular coverage (850 MHz frequency band), PCS coverage (1900 MHz frequency band), and LTE (700 MHz frequency

band).

Question No. 3

What clutter model and what terrain data base were utilized in these calculations?

Response

Modeling data and settings incorporated into Cellco's Geo Plan tool is proprietary information and can not be disclosed.

Question No. 4

What effective radiated power and antenna type along with beam tilt, if applicable, were utilized in these calculations?

Response

Specifications for the antennas that Cellco intends to use at the proposed Branford South Facility are included behind Tab 7 of the Application. Cellco's network design engineers assume an effective radiated power of 372 watts for its cellular antennas, 463 watts for its PCS antennas, and 638 watts for its LTE antennas and no downtilt of the antennas.

Question No. 5

Were drive tests ("scan tests") that would verify the results of the calculated plots conducted? If so, please provide the data sets which were generated by the tests and note whether the data needs to be corrected for variables including, but not limited to, antenna position, gain and line loss.

Response

Cellco uses baseline drive data to help "fine tune" its Geo Plan propagation modeling tool. The data sets and input data associated with the development and use of the Geo Plan

modeling tool is proprietary information and can not be disclosed.

Question No. 6

Have you performed continuous wave (“CW”) tests from the proposed site or any other site either identified or considered?

Response

A drive test was performed at the Branford South cell site location with test transmitters at heights of 120 feet and 100 feet.

Question No. 7

In calculating the expected coverage from the proposed site, what antenna centerlines, antenna types and effective radiated power did the applicant assume would be put in use?

Response

See Cellco’s response to the Town’s Interrogatory No. 4 above. As described in the Application, Cellco’s antennas will be installed at 90’ above ground level.

Question No. 8

Have you performed a minimum height analysis to determine the minimum antenna centerline that it requires to meet its alleged coverage needs?

Response

Yes. See also Cellco’s response to Council Interrogatory No. 3.

Question No. 9

By what method was it determined that identified alternate sites did not meet the needs of the Applicant? If studies were conducted to confirm the utility of the alternate sites, please provide copies of those studies?

Response

Cellco's Radio Frequency ("RF") Engineers perform desktop propagation analyses to determine if a particular alternative location will satisfy the coverage objectives in a particular area. No written reports or studies are produced.

Question No. 10

What antenna centerlines, antenna types and effective radiated power did the applicant assume to determine expected coverage from alternate sites indicated?

Response

In the desktop analysis described in response to the Town's Interrogatory No. 9 above, RF Engineers analyze several antenna centerline heights in an effort to determine whether a particular antenna height would, in fact, satisfy the coverage objectives in a particular area. This analysis would utilize antenna types and effective radiated power similar to that which Cellco proposes to use at the Branford South Facility.

Question No. 11

Is there another combination of alternate sites that could be utilized to achieve the alleged coverage needs?

Response

It is conceivable that a combination of two or more alternate sites could be used to satisfy Cellco's Branford South coverage objectives. In an effort to avoid the unnecessary proliferation of towers, however, Cellco believes that it makes more sense to utilize a single (stealth) tower structure, that can be shared by multiple wireless carriers, rather than installing multiple structures to satisfy those same service requirements. Details regarding Cellco's site search in

Branford are also included in the Site Search Summary behind Tab 8 of the Application.

Question No. 12

What alternate means of achieving the alleged coverage needs have been explored?

Please provide any studies upon which you relied in making this determination.

Response

As discussed at length in the Application, Cellco's Branford South telecommunications facility took on several different forms during the course of the development of the cell site proposal. Cellco worked very closely with the Connecticut State Historic Preservation Officer ("SHPO") and the Branford/Guildford Scenic Roads Advisory Committee ("SRAC") before deciding to pursue the "rustic water tank" design option for the proposed facility.

Question No. 13

Does the applicant possess any data that support either dropped calls, customer complaints or other switch based or customer service representative based information that supports its claim of lack of service in the entire area that it claims it has a coverage issue?

Response

See Cellco's response to Council Interrogatory No. 7.

Question No. 14

Are there other sites in Branford at which you are considering developing wireless communications facilities? Please describe.

Response

Cellco's plans for the development of future cell sites in Branford was the primary topic of discussion during meetings with Town officials beginning back in July of 2010 and is

described at length in the Application. Cellco intends to install antennas on the recently approved T-Mobile/Florida Tower Partners tower at 123 Pine Orchard Road in Branford. This site is identified on Cellco's coverage plots as its Branford West Facility. It is also possible that, at some point in the future, Cellco might seek to utilize the proposed AT&T facility in the Short Beach area of Branford. This facility is west of Cellco's Branford West Facility and would not affect coverage in the Branford South search area. Cellco understands that AT&T is currently considering alternative site locations in the Short Beach area. Cellco has no other plans for cell site development in Branford for the foreseeable future.

Question No. 15

Please name all carriers with whom you have reason to believe will co-locate on the proposed facility.

Response

As discussed at length in the Cellco Application, the proposed Branford South Facility will be shared by Cellco, T-Mobile and AT&T.

Question No. 16

Please identify the size of the search ring and explain why that radius was chosen and where the ring was centered.

Response

See Cellco's response to Council Interrogatory No. 11. The Branford South search ring is generally centered in the area where most, if not all, of the service problems exist. These problem areas are depicted on the coverage maps included behind Tab 6 of the Application.

Question No. 17

What is the percent of dropped calls in the target area?

Response

See Cellco's response to Council Interrogatory No. 7.

Question No. 18

If you conducted any drive tests, please produce the results of those drive tests?

Response

See Cellco's response to Town of Branford Interrogatory No. 5 above. The results of the drive test are incorporated into the coverage plots included behind Tab 6 of the Application.

Question No. 19

In any coverage simulations what angle of downtilt was assumed for each facility depicted in the coverage map generation?

Response

The existing coverage plots provided in the Application take into consideration existing or proposed conditions for those sectors of the four (4) adjacent cell sites directed toward the Branford South search area. At the Guilford South cell site, Cellco antennas maintain 0° downtilt. At the Branford 3 cell site, Cellco antennas maintain 2° downtilt. At the Guilford 2 cell site, Cellco antennas maintain 0° downtilt. At the proposed Branford West cell site, Cellco has designed its facility antennas with 2° downtilt.

Question No. 20

Please describe the methods used by your visual impact consultant to calculate seasonal visibility.

Response

Please refer to the Application, Tab 9 (*Visual Resource Evaluation Report*, dated November 2010, prepared by VHB). The methodologies used to calculate seasonal visibility, a combination of computer modeling and in-field verification, are discussed on pages 3 and 4 of this report.

Question No. 21

What studies did you undertake to eliminate alternate technologies from consideration given that they are of lesser impact to surrounding property uses?

Response

Cellco is not aware of any alternative technologies available that would provide wireless service, at all of its operating frequencies, to an area comparable to that which it can achieve at the proposed Branford South Facility.

Question No. 21

Who conducted the feasibility studies on alternate technologies?

Response

To the extent that alternative technologies are considered, that analysis would involve all members of Cellco's development team including its RF Engineers, real estate and construction experts and environmental professionals.

Question No. 22

Please provide the feasibility studies or data by which you determined the lack of feasibility?

Response

Not applicable.

Question No. 23

Have you employed stealth technology including flush mounting, combined antenna arrays (single antennas which will serve LTE, PCS and 850Mhz), and close centerline to centerline antennas (close meaning < 8ft)? If so, which of these technologies and where?

Response

As discussed at length in the Application, the proposed Branford South Facility will be disguised as a rustic water tank. The faux tank structure will conceal all three wireless carriers' antennas. Alternative stealth structures were considered by the SHPO and the SRAC before settling on the rustic water tank design. Cellco has, at several other cell site locations around the State, utilized stealth tower technology, including flagpoles (Milford, CT and New Haven, CT), tree towers (Winchester, CT and Shelton, CT) and flush-mounted antennas (Washington, CT). Cellco does not utilize combined antenna arrays nor does it typically reduce its centerline to centerline separation distance to less than ten feet.

Question No. 24

Is there a particular standard or decibel signal strength which you believe is necessary for adequate coverage for PCS (1900MHz) service in the target coverage area? For 850MHz service? For 700 MHz?

Response

See Cellco's response to Council Interrogatory No. 5.

Question No. 25

What particular dBm signal strength do you believe is necessary for in-vehicle coverage for PCS (1900MHz), 700 MHz and 850MHz in the target area?

Response

See Cellco's response to Council Interrogatory No. 5.

Question No. 26

In the proposed coverage maps submitted by the Applicant, what loss margin was assumed in the modeling?

Response

Information regarding loss margin included in Cellco's Geo Plan propagation modeling tool is proprietary information and can not be disclosed.

Question No. 27

For any signal strength predicted by your coverage modeling, what percent-of-locations is assumed for reliability? (e.g: 85% of locations, 95%?)

Response

It is Cellco's goal to provide service at reliable signal levels (-85 dBm or better) to 100% of its coverage objective in a particular area. A number of factors including area terrain, site location, the availability of property, technological and environmental constraints and other factors often make it difficult to achieve this goal.

Question No. 28

Are you assuming that your target coverage is 'reliable service' or "adequate coverage"? Do these two terms differ? How do you define these two terms for the purposes of meeting the goals of the Telecommunications Act of 1996?

Response

Cellco seeks to provide its customers with "reliable" wireless service which it describes as service provided at or above a -85 dBm signal strength. This company-wide standard allows Cellco to satisfy its obligation, as a licensed wireless service provider, to provide high quality wireless service throughout its network.

Question No. 29

How many residences (as opposed to acres) will have year round views of the proposed towers? Seasonal views?

Response

Please refer to the Application, Tab 9 (*Visual Resource Evaluation Report*, dated November 2010, prepared by VHB). Page 6 of this report includes a table identifying the number of residential properties anticipated to have either year-round or seasonal views of the facility.

Question No. 30

Your visual impact analysis indicates that a portion of the visibility of the tower will occur over open water. Did you simulate any of the views from open water or in any way determine the impact to the scenic views of tourists and residents using the open water for recreation?

Response

Please refer to the Application, Tab 9 (*Visual Resource Evaluation Report*, dated November 2010, prepared by VHB). Views 1 and 2 (and their corresponding simulations) are from locations on Long Island Sound over open water.

Question No. 31

What is the percentage of dropped calls and ineffective attempts, as compared to the remainder of the Market Trading Area for Branford?

Response

The dropped call and ineffective attempt statistics provided in Cellco's response to Council Interrogatory No. 7, are for those sectors of adjacent cell sites in Branford and Guilford that have sectors of antennas directed toward the Branford South search area. Such data for other cell sites in Branford and adjacent towns is not relevant to this Application.

Question No. 32

What is the lowest height you can construct a tower to improve coverage (with and without co-located carriers)?

Response

As discussed in Cellco's response to Council Interrogatory No. 3, Cellco has determined that its antennas must be installed 90 feet above ground level at the proposed location, in order to satisfy its coverage objectives. This is the case whether the proposed facility is shared with other wireless carriers or not.

Question No. 33

Can you provide separate proposed and existing coverage maps depicting the coverage from the target levels up to -88dBm with the levels at -3dBm intervals (e.g.: -74 to -77dBm, -77dBm to -80dBm, etc)?

Response

As mentioned above, Cellco's design threshold for reliable wireless service is -85 dBm. Coverage maps depicting reliable wireless service from Cellco's existing adjacent facilities and the proposed Branford South Facility at -85 dBm are included in the Application behind Tab 6. Coverage maps depicting signal strength greater than -85 dBm are of no relevance since those areas would not expand the coverage footprint for the proposed facility. Coverage plots showing existing and proposed coverage at a signal threshold of -88 dBm are included behind Tab 1.

Question No. 34

Please identify how many other future sites will be necessary, at a minimum to accomplish adequate coverage for Branford.

Response

See Cellco's response to the Town's Interrogatory No. 14 above.

Question No. 35

Please identify any sites in addition to the Proposed Facility at which you intend to seek permission from the Siting Council to construct or modify a facility in the Branford area (Branford and adjacent towns)?

Response

See Cellco's response to the Town's Interrogatory No. 14 above.

Question No. 36

Will construction practices for the proposed facility conform to local building and zoning ordinances and regulations?

Response

If the Branford South Facility is approved, the proposed stealth telecommunications tower and related equipment structure will comply with all appropriate and applicable provisions of the Connecticut State Building Code. Compliance with local zoning regulations is not required.

Question No. 37

Can you provide coverage propagation maps and isolated propagation maps for the proposed facility on clear plastic overlays using a scale that matches that of the Application?

Response

No.

Question No. 38

What is the minimum dBm signal strength to accomplish hand off of a call to an adjacent cell for 700Mhz, 850 MHz and 1900 MHz?

Response

Negative 85 dBm.

Question No. 39

What are the coordinates, antenna heights, antenna types, orientations, tilt, EIRP for all of your existing wireless facilities in Branford and adjacent towns which are directed into Branford?

Response

The information provided below relates to those cell sites that will interact with the proposed Branford South Facility. Information regarding other facilities in Branford or surrounding towns is not relevant to the Docket No. 413 proceeding.

	<u>Site</u>	<u>Coordinates</u>	<u>Antenna Height</u>	<u>Azimuth</u>	<u>Tilt</u>	<u>Antenna – ERP</u>
1.	Guilford S	41°-26'-44" 72°-69'-53"	85'	20°-160°-280°	0°	DB846F65ZAXY – 475 W BXA 185063 – 398 W LPA 80063 – 379 W
2.	Guilford 2	41°-30'-35" 72°-70'-81"	122'	10°-140°-250°	0°	DB846F65ZAXY – 498 W LPA 185063 – 372 W DB846H80E – 446 W
3.	Branford 3	41°-29'-31" 72°-76'-89"	116'	30°-150°-270°	2°	DB844H80-XY – 340 W LPA 185090 – 213 W LPA 80063 – 498 W ALP 868013 – 373 W

CERTIFICATION

I hereby certify that on this 13th day of April, 2011, a copy of the foregoing was sent,
postage prepaid, to the following parties and intervenors:

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TAB 1

Docket No. 413
 Response to Intervenor (Town of Branford) Interrogatory Question #33
 Existing Verizon Wireless Cellular Coverage At -88 dBm
 With Proposed Facility At 90 Feet AGL
 Branford, Connecticut and Surrounding Area
 (*Map Scale is 1:30,000)
 Coverage plot assumes 55% site loading on the Cellco system



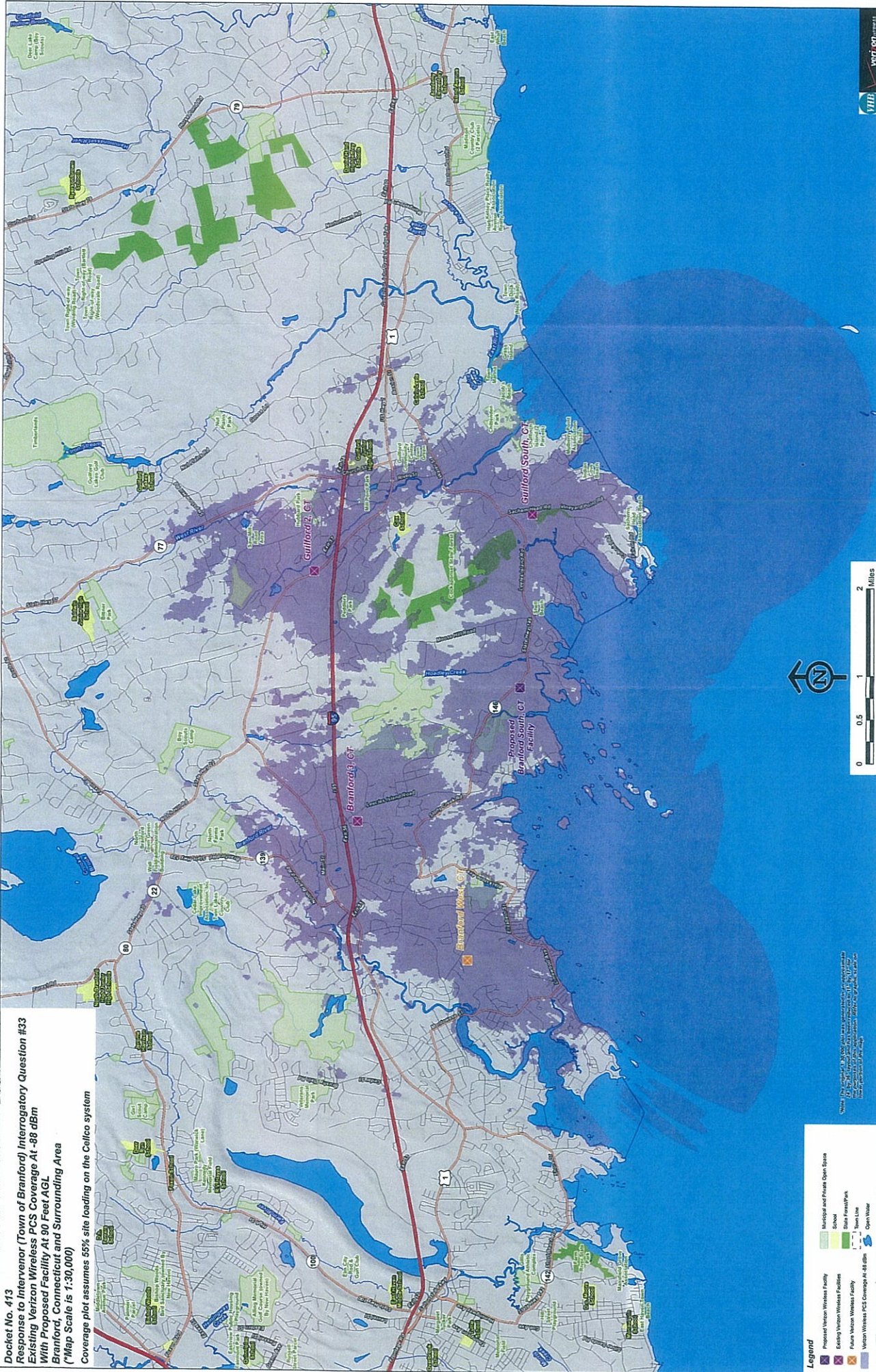
Legend

- Proposed Verizon Wireless Facility
- Existing Verizon Wireless Facilities
- Future Verizon Wireless Facility
- Verizon Wireless Cellular Coverage At -88 dBm
- Modified and Private Open Space
- School
- State Facilities
- Town Lake
- Open Water

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Docket No. 413
 Response to Intervenor (Town of Branford) Interrogatory Question #33
 Existing Verizon Wireless PCS Coverage At -88 dBm
 With Proposed Facility At 90 Feet AGL
 Branford, Connecticut and Surrounding Area
 (*Map Scale is 1:30,000)
 Coverage plot assumes 55% site loading on the Cellico system



- Legend**
- Proposed Verizon Wireless Facility
 - Existing Verizon Wireless Facility
 - Future Verizon Wireless Facility
 - Verizon Wireless PCS Coverage At -88 dBm
 - Municipal and Private Open Space
 - School
 - State Forest/Park
 - Town Line
 - Open Water

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