Pursuant to Section C of the Public Utilities Regulatory Authority's ("Authority") Small Cell Application Instructions and Form, Cellco Partnership d/b/a Verizon Wireless ("Cellco" or "Verizon") hereby provides "an explanation of why the location and specific pole was selected, including the need for the facility and a suitability analysis of nearby utility poles" and an explanation of "why the proposed use of the ROW is in the public interest."

The following outlines the process conducted by Cellco to evaluate the need to construct a small cell antenna installation and select the site of the installation.

The processes for identifying locations where improved wireless coverage and/or capacity relief is needed are slightly different. A coverage need location is identified if call/dropped metrics are elevated within a particular sector (direction) of an existing cell site. Once this problem is identified, field test drive data and failure location data are combined to pinpoint the exact location or area where improvements are needed, as described in more detail below. Typically, poor radiofrequency ("RF") signal strength (a signal strength below the company's minimum standard) and dropped-call metrics that do not comply with company minimum standards trigger required coverage improvements.

In the case of capacity, a location requiring improvements can be identified if one of four (4) exhaust metrics is elevated within a given sector of an adjoining cell site, as described in more detail below. These metrics tend to result in throughput speeds below Cellco's established rates of 5 megabits per second ("Mbps") on the download, and 2 Mbps on the upload which in turn lowers the quality of service for the end user. Reviewing the adjacent sector or sectors in exhaust, Cellco can determine the distance of the usage from the transmit point, as well as what times the sector suffers the most, to help pinpoint an exact area where the need exists and identify the type of installation that will allow Cellco to resolve these capacity problems.

Radio traffic engineers run planning tool software ("Verizon Planning Instruments" or "VPI") monthly to project exhaust conditions to determine exhausted sectors. VPI determines exhaust dates for 4 key performance indicators ("KPI"): Forward Data Volume,[1] Average Scheduled Eligible Users,[2] Average Active Connected Users,[3] and Max Active Connected Users.[4]

Each KPI has its own triggering threshold (Verizon Proprietary), which is either a given number of users, or a total amount of data that is passed to the end users. Each of the KPIs then gives an exhaust date, whether future or past dates, and can only be relieved by a "carrier

[1] Forward Data Volume refers to how much data is being consumed by the end users at a given time.

[2] Average Scheduled Eligible Users relates to the number of users that are scheduled to use the finite amount of radio spectrum available to Cellco's customers. This is a true blocking metric that could keep users from accessing the network.

[3] Average Active Connected Users is an average of how many customers are using network resources at a given time.

[4] Maximum Active Connected Users are total number of customers using network resources at a given time.

addition" to the existing exhausted sector (i.e., AWS (advanced wireless services) or PCS (personal communications services) carrier add projects that will increase radio resources to the site in order to allow more users to use the network during peak periods), or by deploying a new transmit location such as a Macro Build (a new multi-sector multi-carrier cell site), or a Small Cell Build (single-sector, multi-carrier cell site). Radio traffic engineers determine if carrier additions (new frequencies) to existing installations, optimization measures or new transmitter locations are needed based on projected offload and the type of exhaust that occurs at the location.

The NHV EROCK 310 CT site is a capacity site that will provide additional support to the gamma sector of the New Haven 4 CT rooftop macro site located at 780 State Street in New Haven.

Prior to creating a new transmit location, RF design engineers examine all options, including carrier additions and optimization, to offload exhaust-creating radio traffic and control network development costs. Carrier additions are used to help offload users to another frequency, in effect doubling or tripling a site's capacity, and improving customer quality of service. Optimization is used to improve noise levels by limiting overlap with other sectors, and shrinking signal footprints, in effect removing customers from the edge of service area so there is more capacity for those users within the new coverage area. If it is determined that the combination of offload from carrier additions and optimization is not sufficient to improve service, RF design engineers will then move on to design a new cell site location.

RF design engineers evaluate distance histograms of the exhausted sector, and that of other sectors that may also serve an area, in order to determine the area of a new transmit point location. A distance histogram shows the distance between system use sources and a cell. Each radial distance (measured in miles) from a cell has a given percentage of the total radio traffic. This helps start the determination process for new transmit point locations. RF design engineers, with help of radio traffic engineers, review data on usage spikes, and hours when capacity is exhausted to help see patterns and further target transmit point locations.

Once the area for a transmit point location is determined, RF design engineers then plan for macro-cell or Small Cell ("SC") installations with feedback from radio traffic engineers, if needed. A macro-cell installation is chosen if cell density in this particular area is low. These are typically rural or suburban areas. A SC is chosen if cell density is high. These are typically dense urban or suburban areas. A SC is also chosen if the intended coverage is very specific or targeted.

If a macro-cell installation is chosen, RF design engineers look for existing structures including rooftops, existing monopoles or lattice towers, or other similarly tall structures. If a SC is chosen, RF design engineers look for utility poles in the public right-of-way, followed by rooftop locations and privately-owned utility poles as siting options. Note that RF design engineers look first to utility poles in a public right of way consistent with its previously negotiated Master License Agreements with the pole owners.

Once RF design engineers have identified an area of service, they establish a search area and pass that information along to Cellco's real estate consultants. The real estate consultant visits the area and compiles a search candidate package containing possible candidate locations to achieve the project goals. The RF engineer evaluates each candidate location presented and selects the best possible location to meet project goals.

Once a particular site or location is selected, the real estate consultant begins the property leasing or pole licensing process. During the candidate evaluation process, Cellco conducts feasibility studies based on guidelines and criteria established by the structure owners, and historic, environmental, and cost studies. The results of any one of the above-referenced studies may take the approved RF candidate off the table and the site selection process begins again. If none of the identified candidates successfully make it through the evaluation process, RF engineers send the real estate consultants back out to look for other candidates.

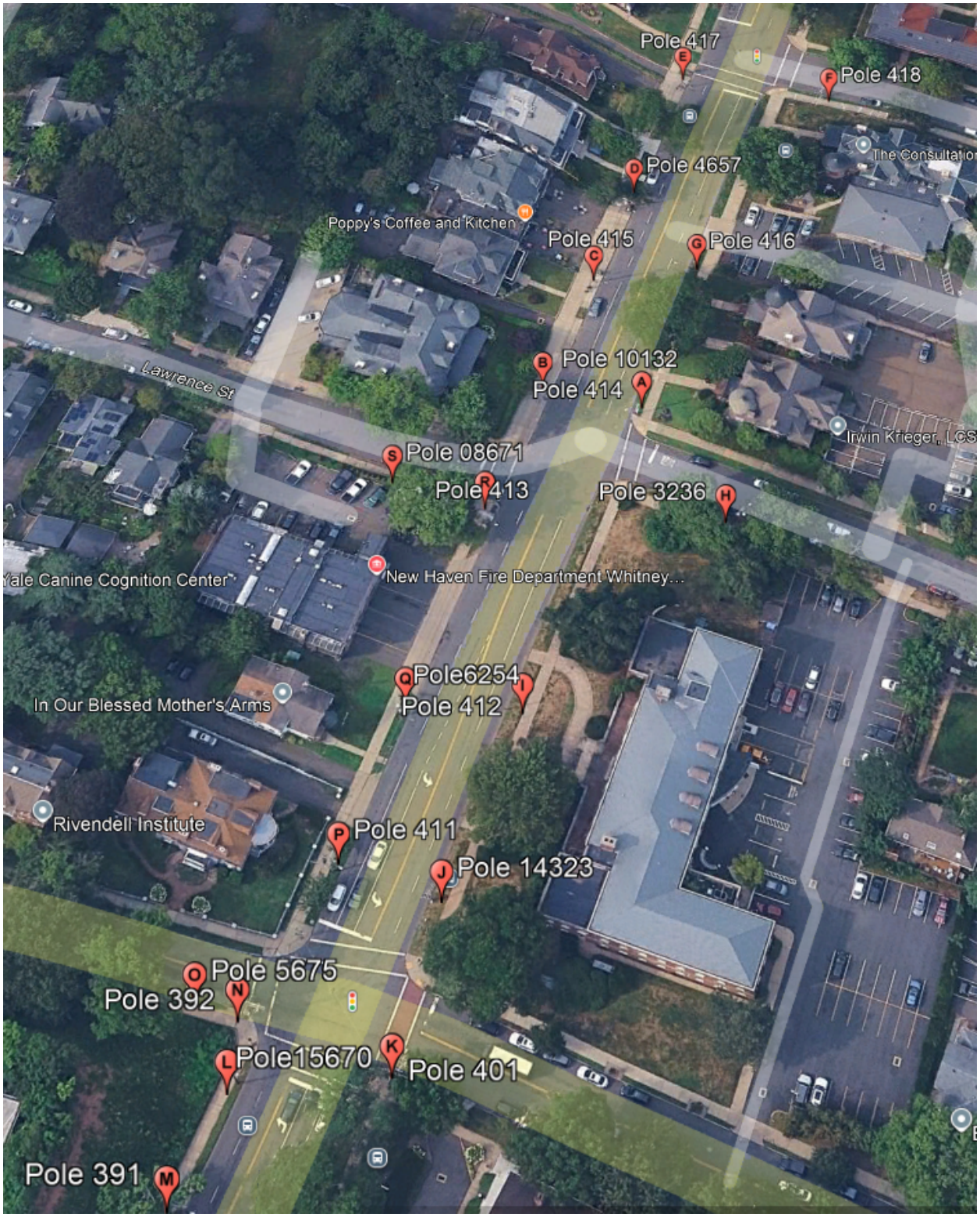
Cellco conducted a search for utility poles available to the proposed small cell attachment using the pole owner attachment criteria, and the Cellco system coverage and/or capacity location requirements. A utility pole selected for a small cell wireless antenna project must not present attachment conflicts with existing equipment on the pole. For example, pole owners require that Cellco avoid junction poles and poles supporting transformers, risers, and other utility related appurtenances. Cellco also seeks to avoid poles that support streetlights and guy wires that extend onto private property.

The use of existing utility poles in the public right-of-way allows for the rapid deployment of these advanced wireless technologies. Cellco has entered into Master License Agreements with each utility pole owner and has established procedures through which pole attachments are approved by both the pole owners and the Authority.

The candidate poles evaluated by Cellco for the proposed facility are within or close to a designated search area established by the RF design engineers. Poles in or near a particular search area are evaluated to determine if any conflicts exist that would render the pole unusable. Poles that satisfy the pole owners attachment criteria and meet the RF design engineers wireless service objectives are pursued.

Cellco's RF design engineers identified a need for additional coverage in the vicinity of the proposed facility. The utility pole was selected for Cellco's proposed small cell attachment because it is located in the area of need and is available for use. Other utility poles in the area were determined not viable after review by Cellco's RF design engineers or not available for use due to utility pole owner criteria.

A list of the utility pole candidates considered, a map showing the location of all poles considered, and a description of the utility poles is below. Candidate A, the proposed small cell installation, is presented to the Authority in this Application.



Candidate	Pole Number	Description
A	414	Selected pole.

B	10132	Pole is not available due to utility pole owner requirements because it is a primary power junction pole.
C	415	Pole is not available due to utility pole owner requirements because it supports a transformer.
D	4657	Pole is not available due to utility pole owner requirements because it supports a transformer.
E	417	Pole is not available due to utility pole owner requirements because it supports primary jumpers.
F	418	Pole not selected because it does not meet the RF coverage objective and supports a steel riser.
G	416	Pole not selected because it does not meet the RF coverage objective and is a lower pole than the selected pole.
H	3236	Pole is not available due to utility pole owner requirements because it supports a transformer.
I	412	Pole is not available due to utility pole owner requirements because it supports a primary attachment.
J	14323	Pole is not available due to utility pole owner requirements because it supports primary jumpers and a riser.
K	401	Pole is not available due to utility pole owner requirements because it supports primary fuses.
L	15670	Pole is not available due to utility pole owner requirements because it supports a transformer.
M	391	Pole is not available due to utility pole owner requirements because it supports primary jumpers and a riser.
N	392	Pole is not available due to utility pole owner requirements because it is a primary junction pole.
O	5675	Pole is not available due to utility pole owner requirements because it supports a riser.
P	411	Pole is not available due to utility pole owner requirements because it is a primary junction pole.
Q	6254	Pole is not available due to utility pole owner requirements because it supports a transformer.
R	413	Pole is not available due to utility pole owner requirements because it supports primary fuses.
S	08671	Pole not selected because it does not meet the RF coverage objective and is a lower pole than the selected pole.