Isotrope WIRELESS
Thinking outside the sphere

Newbury Coverage Analysis Description

Isotrope was engaged by the Town of Newbury to support the Planning Board in updating the wireless bylaw. The process included an analysis of the current wireless coverage in town, followed by analysis of how to achieve better coverage in underserved portions of town. This memorandum explains the coverage analysis provided in accompanying documents.

Isotrope performed a "drive test" of the major carriers' service in Newbury. This data was collected and mapped. Drive test maps accompanying this narrative show received signal strength on the roads, appearing like worm-trails of varying colors. These colors represent signal strength (light green, yellow, light blue).

Existing cell sites were identified and set up on a radio frequency propagation modeling application, providing an estimate of the coverage from each known cell site in the area. The computer estimation (sometimes called "heat maps") provides an area-wide coverage footprint for the cell sites modeled. In the attached maps, this coverage is shown as a single color representing the typical design threshold the carriers use to predict good service (dark green). Some maps show a drive test overlaid on the computer modeling.

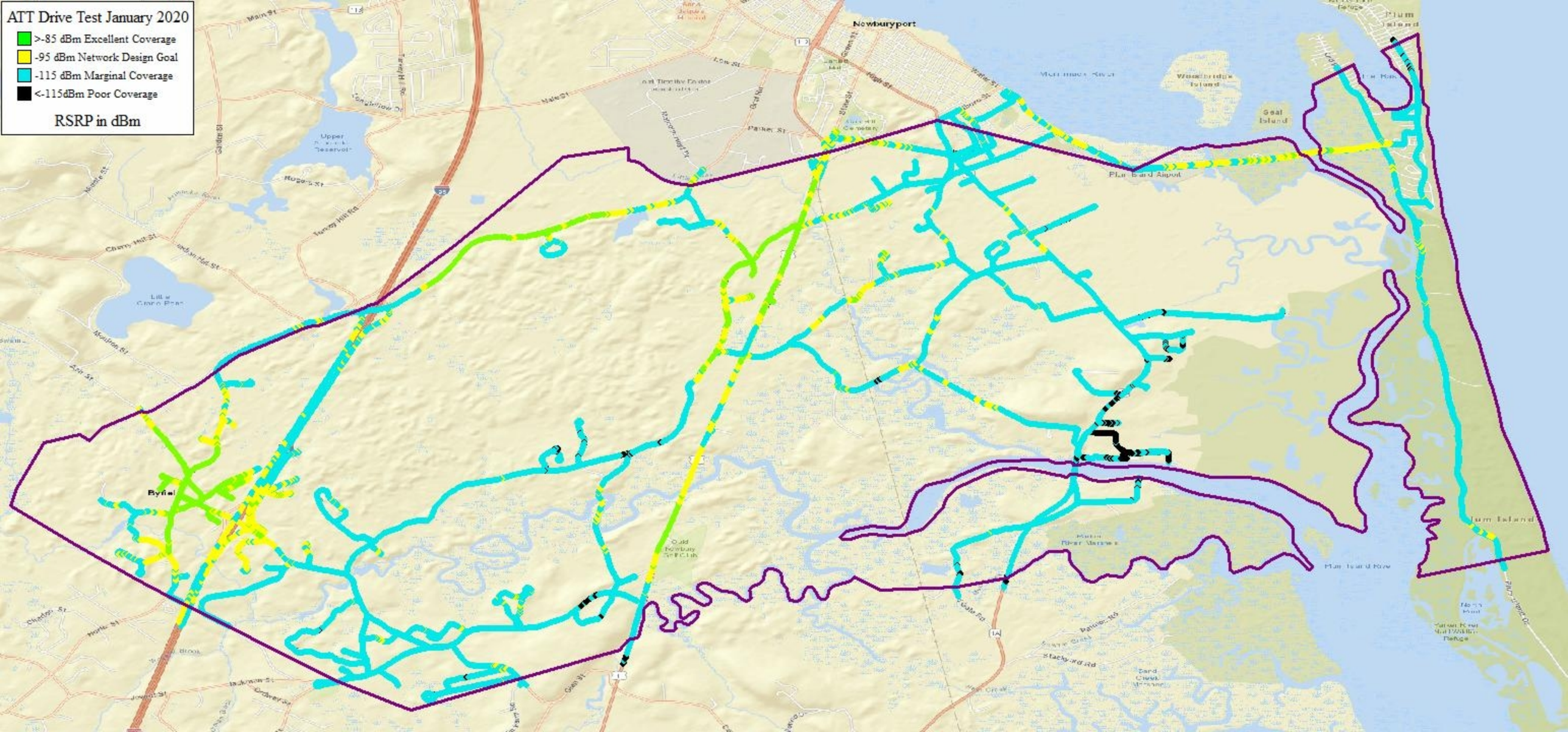
Carriers do not occupy all the same cell sites, but often collocate with at least one other carrier. The following sites have been identified:

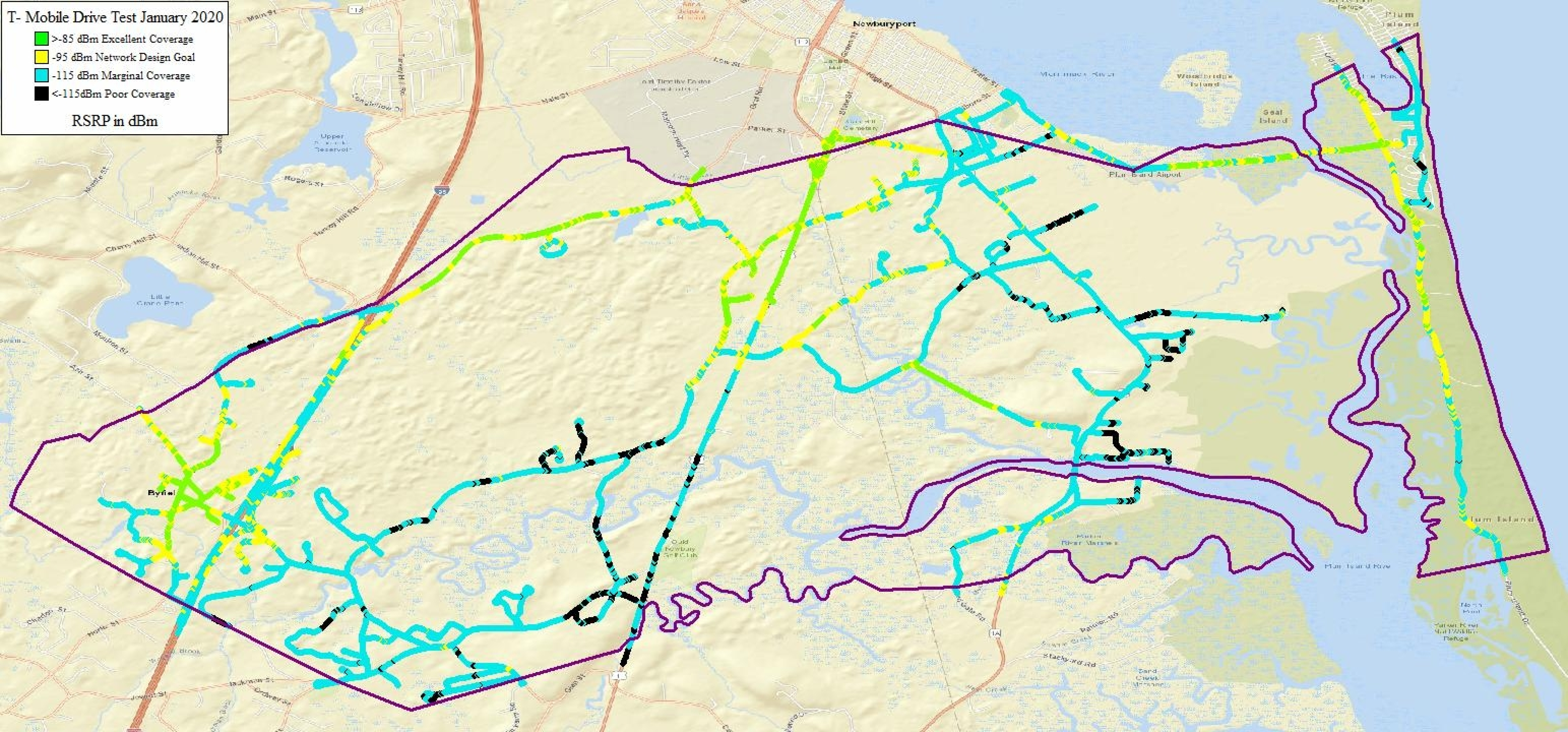
Cell Site	ATT	T-Mobile	Verizon
Byfield Water tower	Y	Y	Y
Sled Rd tower at Newburyport Turnpike	Y	Y	Y
319 Newburyport Turnpike "unipole"	Y		Y
196 Scotland Rd Salter Companies Bus Yard Towers	Y	Y	
200 Scotland Rd State Police tower			Y
Newburyport 50 Parker St tower		Y	Y
588 Main St Rowley tower (0.8 mi south of Newbury)	?	?	?

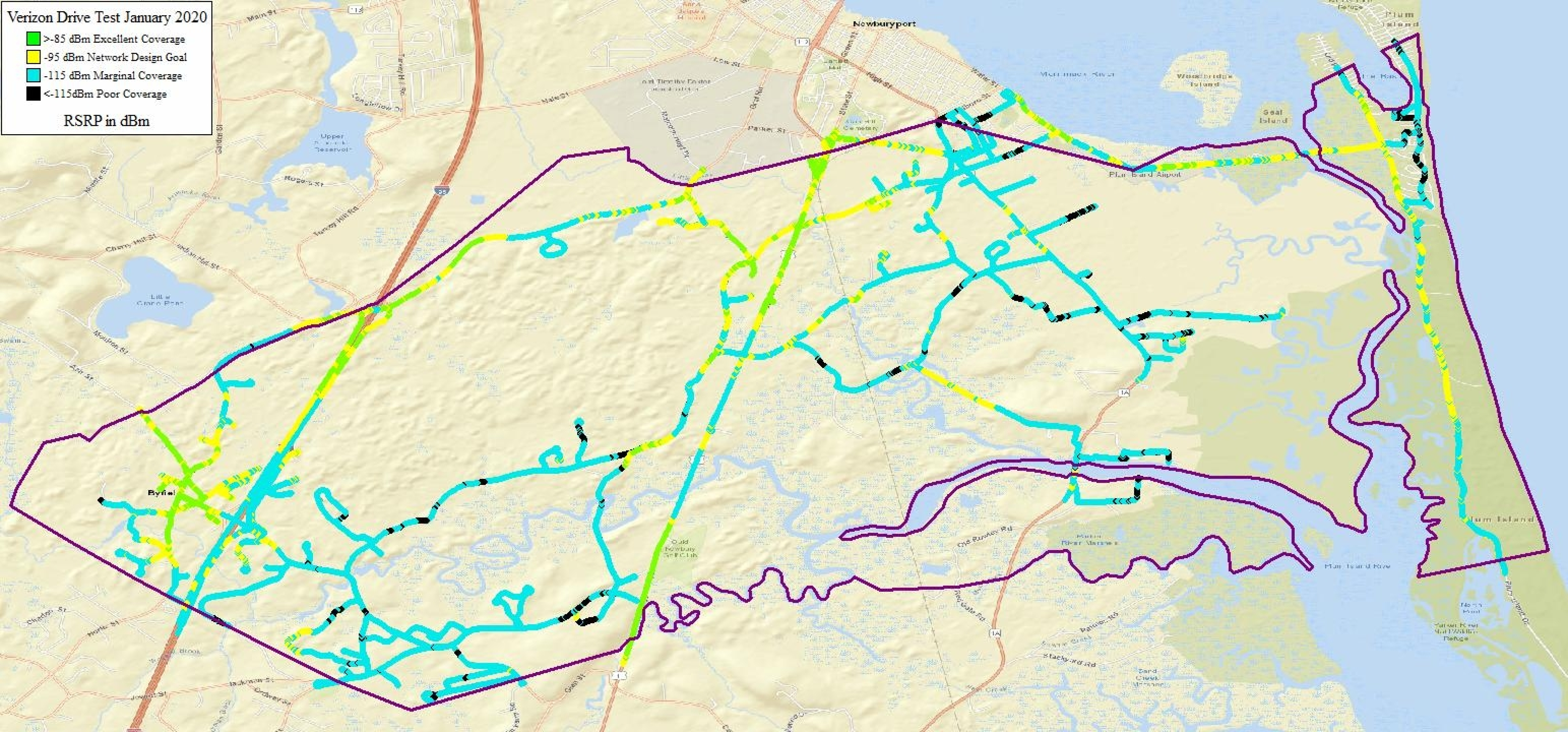
Note 1: Sprint not included for two reasons – a) Merger with T-Mobile imminent; b) Drive test yielded miserable results, suggesting they are not as well deployed to existing cell sites as the others.
Note 2: Rowley tower has three carrier arrays. Coverage to Newbury town line (Parker River) exists but is marginal.

The Estimated Existing Low-Band Coverage maps present a genericized form of existing coverage to highlight where the weak areas in town are. Hypothetical cell sites are added to illustrate ways to improve coverage in town. Low band represents the best coverage available from each carrier, because low band penetrates vegetation best.

March 4, 2020

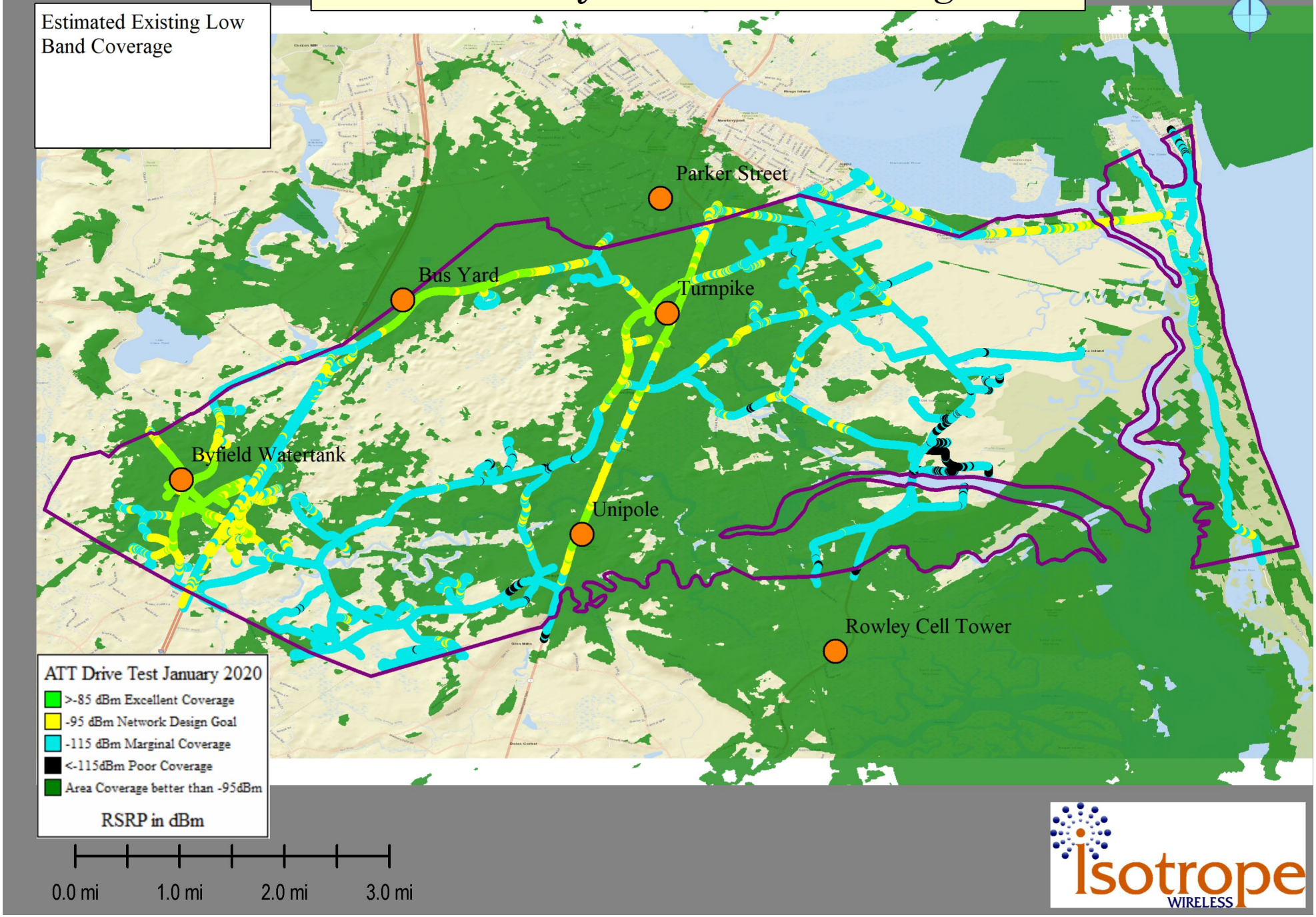

ATT Drive Test January 2020
>-85 dBm Excellent Coverage
-95 dBm Network Design Goal
-115 dBm Marginal Coverage
<-115dBm Poor Coverage
RSRP in dBm
Newburyport
Plum Island
Plum Island Airport
Byfield


T- Mobile Drive Test January 2020
>-85 dBm Excellent Coverage
-95 dBm Network Design Goal
-115 dBm Marginal Coverage
<-115dBm Poor Coverage
RSRP in dBm
Newburyport
Merrimack River
Plum Island Airport
Plum Island
Byfield
Plum Island River



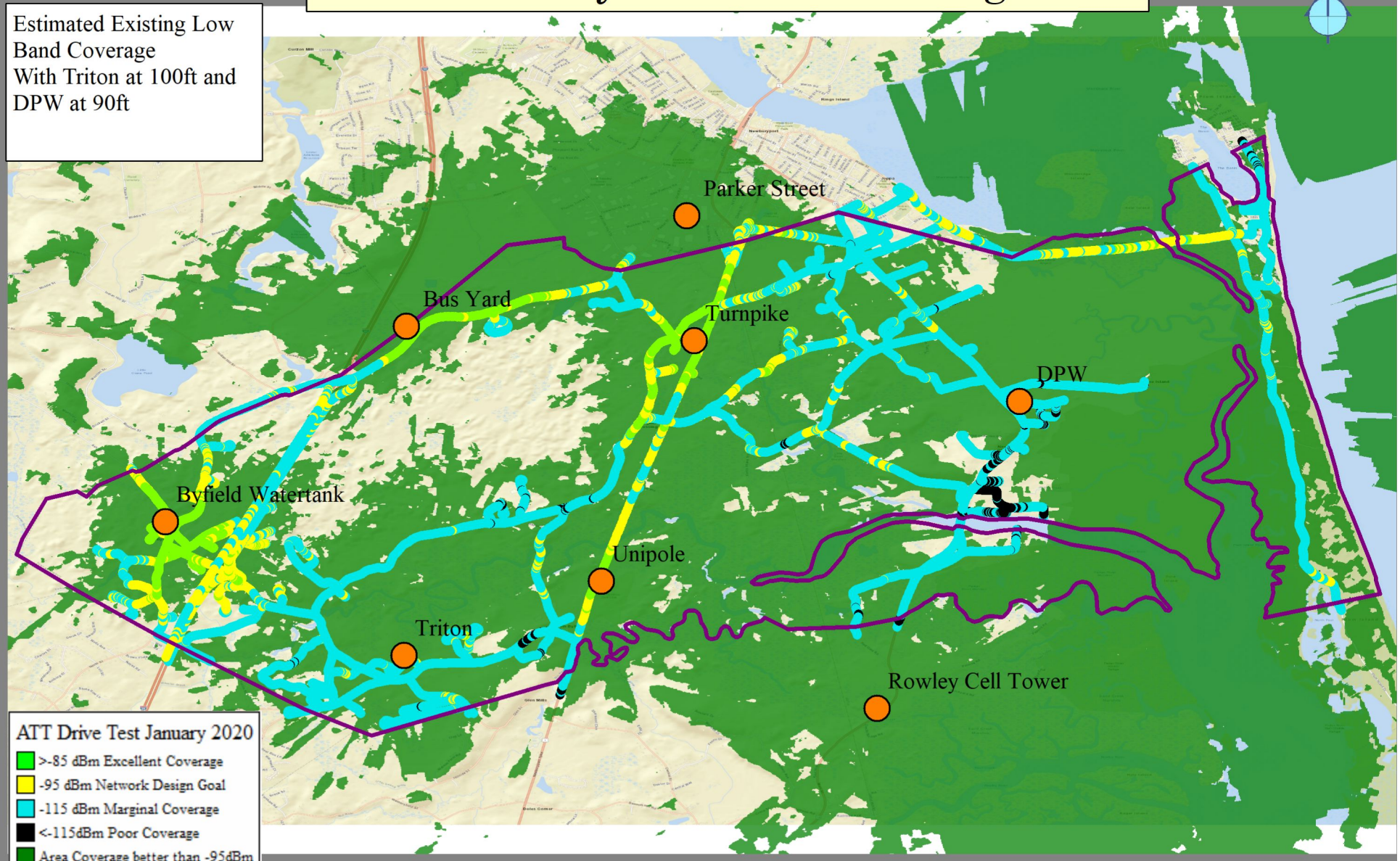
Verizon Drive Test January 2020
>-85 dBm Excellent Coverage
-95 dBm Network Design Goal
-115 dBm Marginal Coverage
<-115dBm Poor Coverage
RSRP in dBm
Newburyport
Merrimack River
Woodbridge Island
Seal Island
Plum Island Airport
Plum Island
Upper Artichoke Reservoir
Little Crane Pond
Byfiel
Plum Island Rive

Newbury Wireless Coverage



Newbury Wireless Coverage

Estimated Existing Low Band Coverage
With Triton at 100ft and DPW at 90ft



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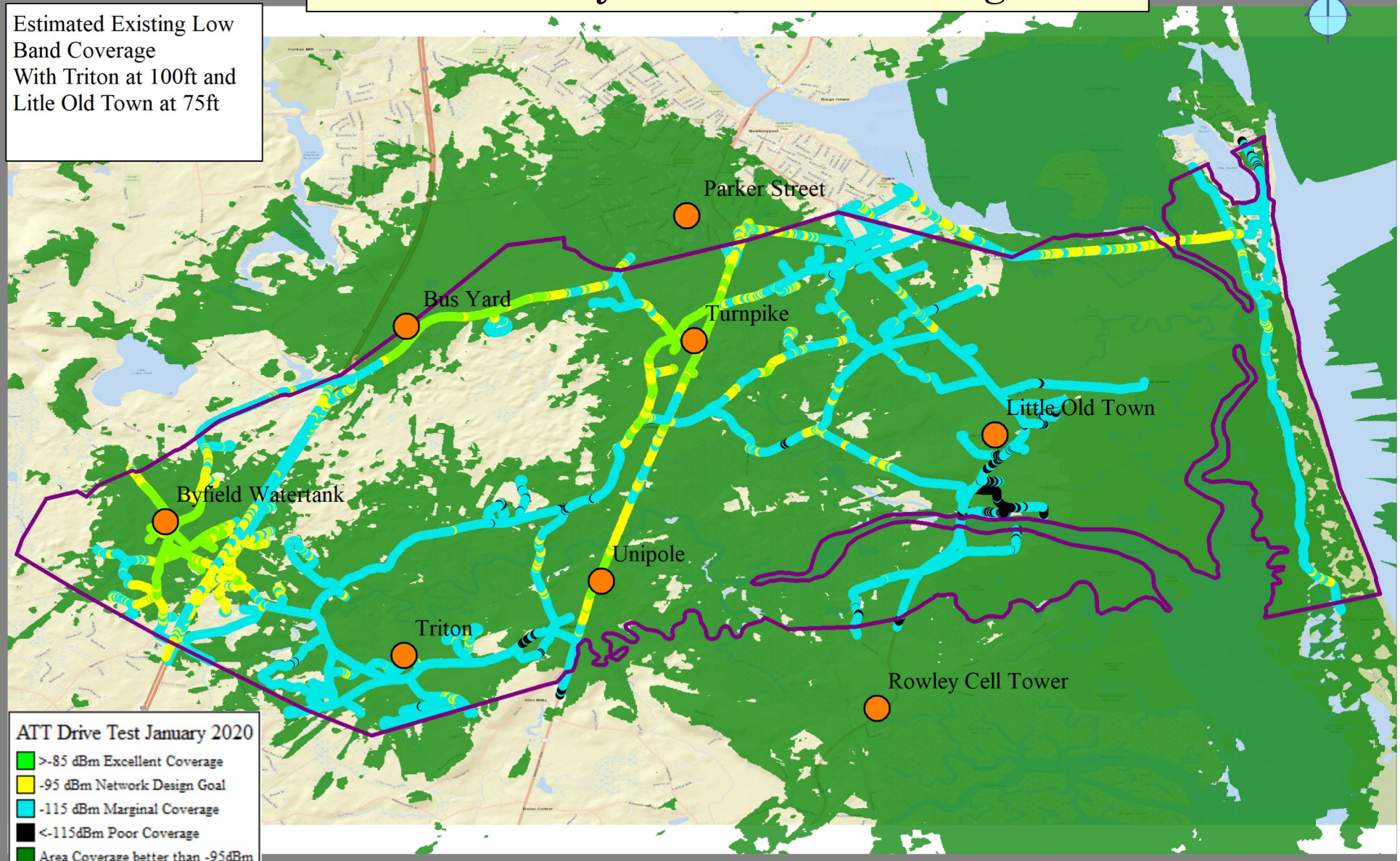
Newbury Wireless Coverage

Estimated Existing Low Band Coverage
With Triton at 100ft and Litle Old Town at 75ft



Isotrope WIRELESS

Newbury Wireless Coverage

Estimated Existing Low Band Coverage
With Triton at 100ft and Plum1 at 35ft