Town of Queen Creek
Wireless Service Provider Summary

Multi-Carrier RF Benchmark Testing, and Results

November

4

2020

Summary

Town of Queen Creek

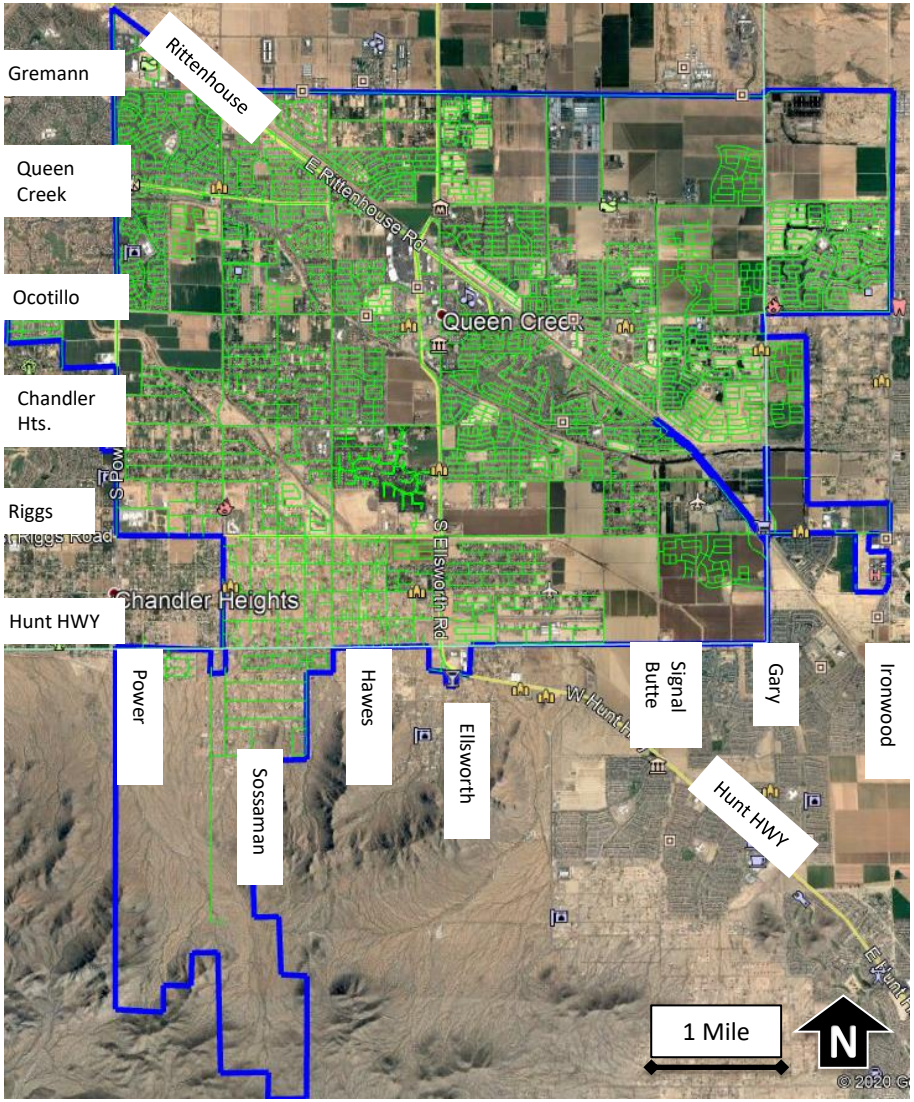
Engineering Wireless Services (EWS) has been commissioned to collect and measure the wireless signal strength for each carrier across the Town of Queen Creek. EWS has completed similar 5G smart city projects for the Town of Paradise Valley, Valencia College, for each wireless carrier, and tower leasing companies. EWS completed the drive on August 18, 2020.

EWS spent 7 days driving 650+ miles across the Town Queen Creek. We used a PCTel scanner to measure and collect AT&T, Sprint, T-Mobile, and Verizon network information. EWS is providing the top 2 channels for each Wireless Service Provider for on-street signal strength.

The following report outlines the on-street coverage for each Wireless Service Provider for the Town of Queen Creek.

Town Of Queen Creek

Drive Area



Signal Strength Assessment

Town of Queen Creek

The following plots reflect the on-street signal strength by each Carrier. For our analysis we are using industry standard -100dbBm as a coverage threshold by carrier.

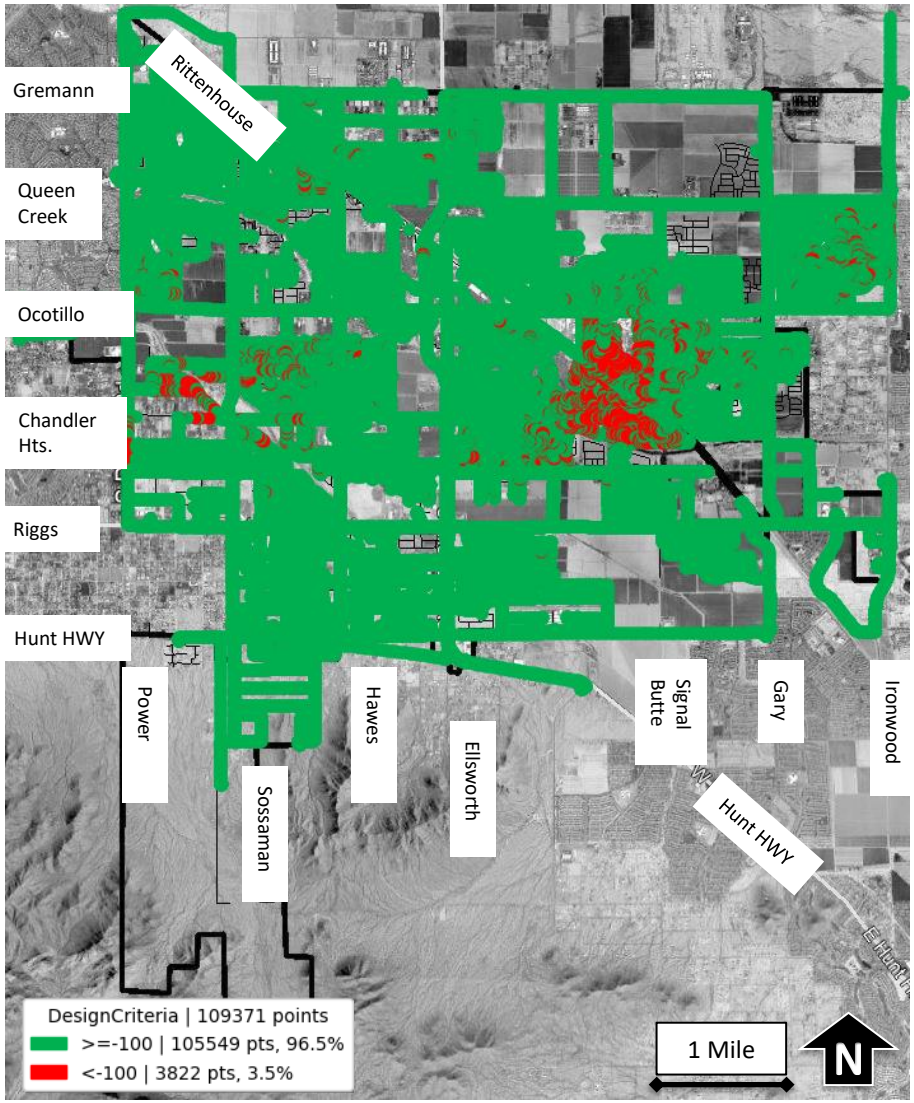
- Green = Stronger than -100db you should see between 2 to 4 bars on your phone.
- Red = Weaker than -100dBm you should see between 0 to 2 bars on your phone.
- In-Building signal can be between 5dB to 12dB weaker than on-street signal.

Bars on your phone is not an exact measure “like your car’s gas gauge” as Phone components, brands, are all different.

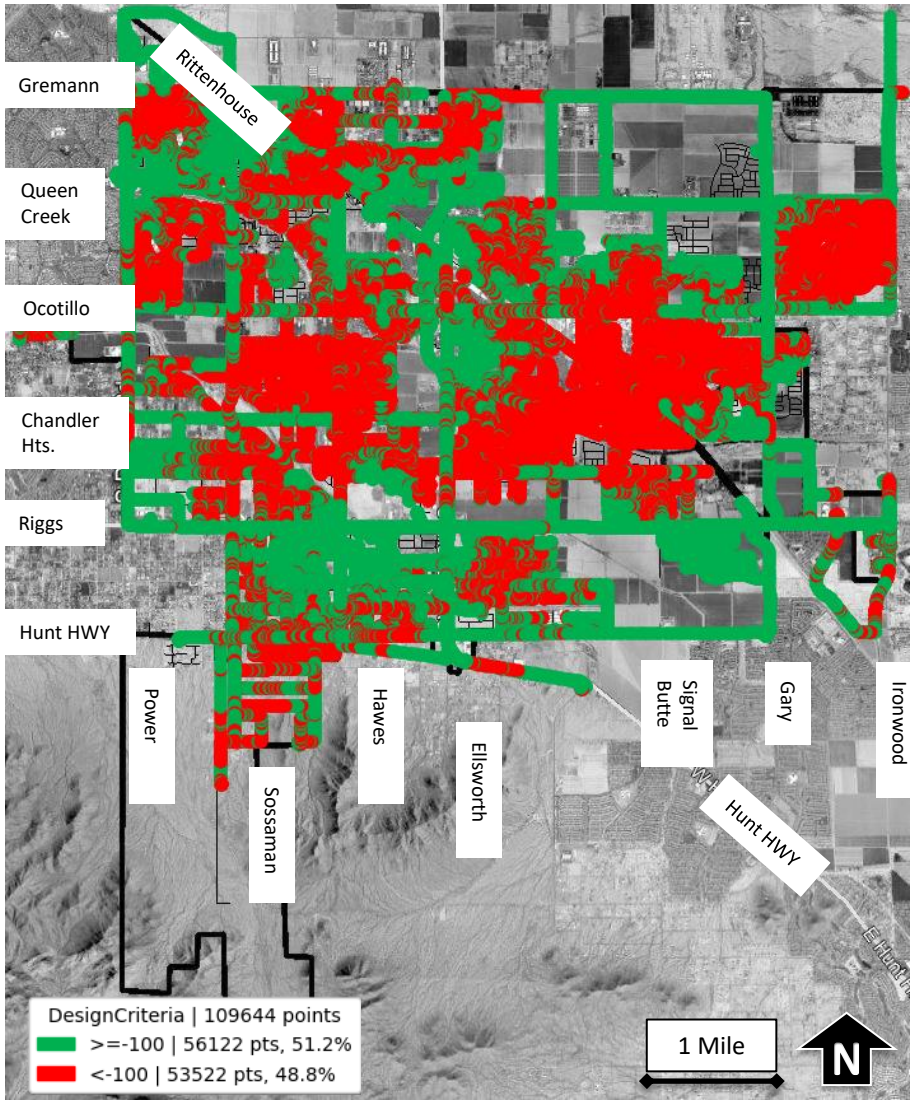
Received Signal Level (dBm)	Phone Bar Representation	Signal Quality
-90	4	Excellent
-91 to -105	3	Good
-106 to 110	2	Fair
-111 to -119	1	Poor
-120	0	No usable coverage

AT&T Signal Strength

Low Band

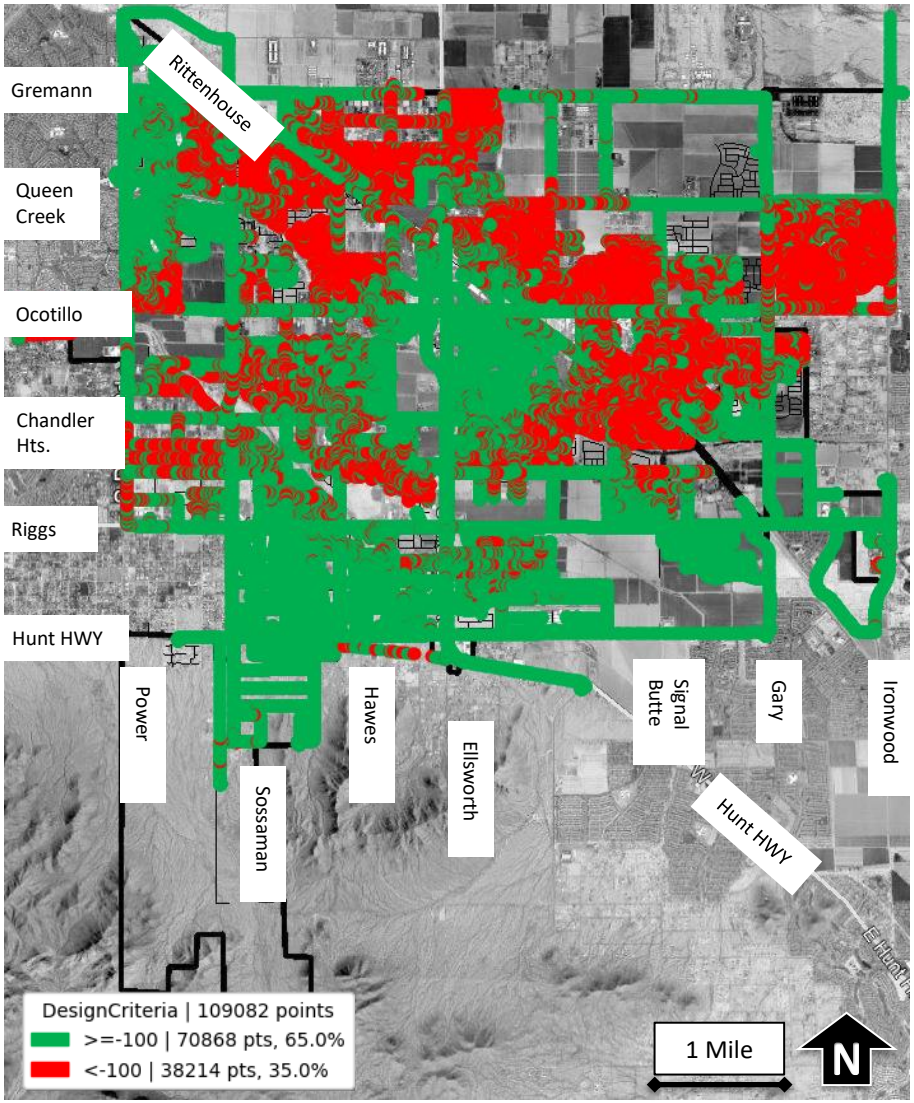


Mid Band

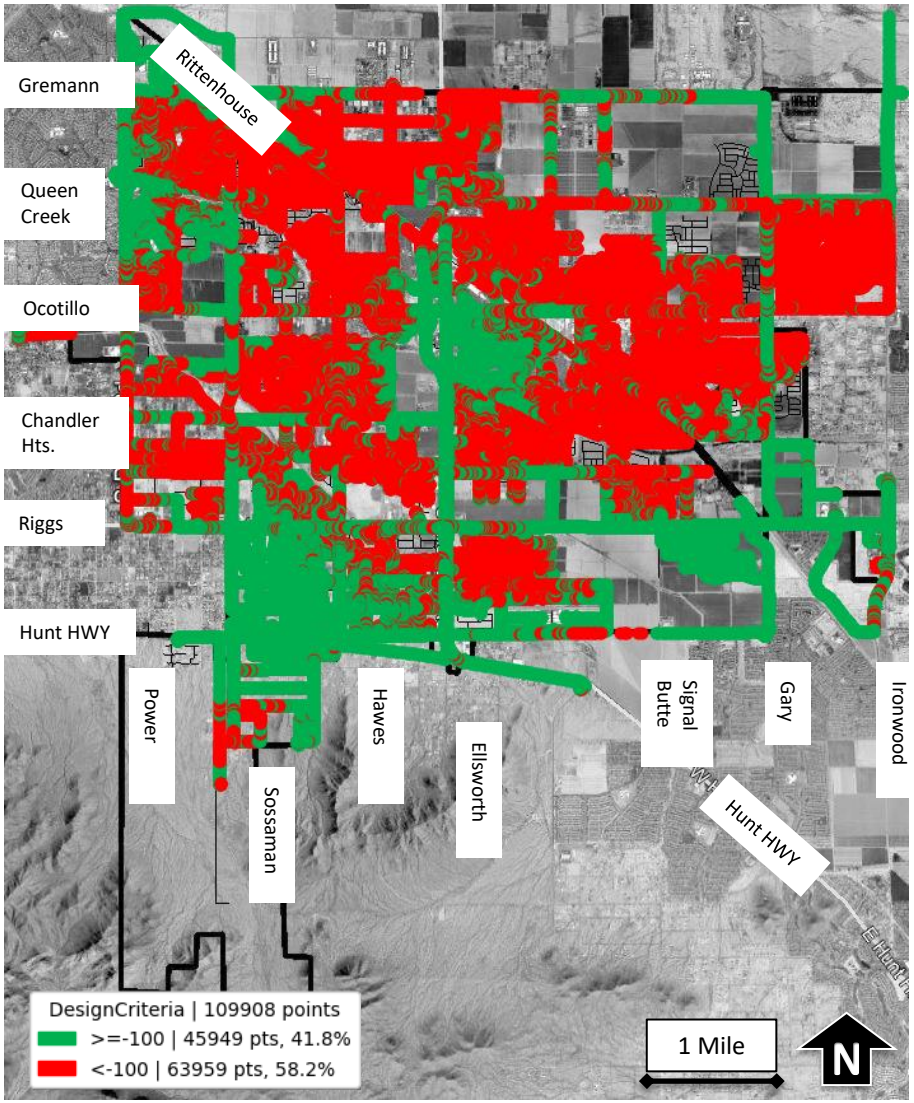


Sprint Signal Strength

Low Band

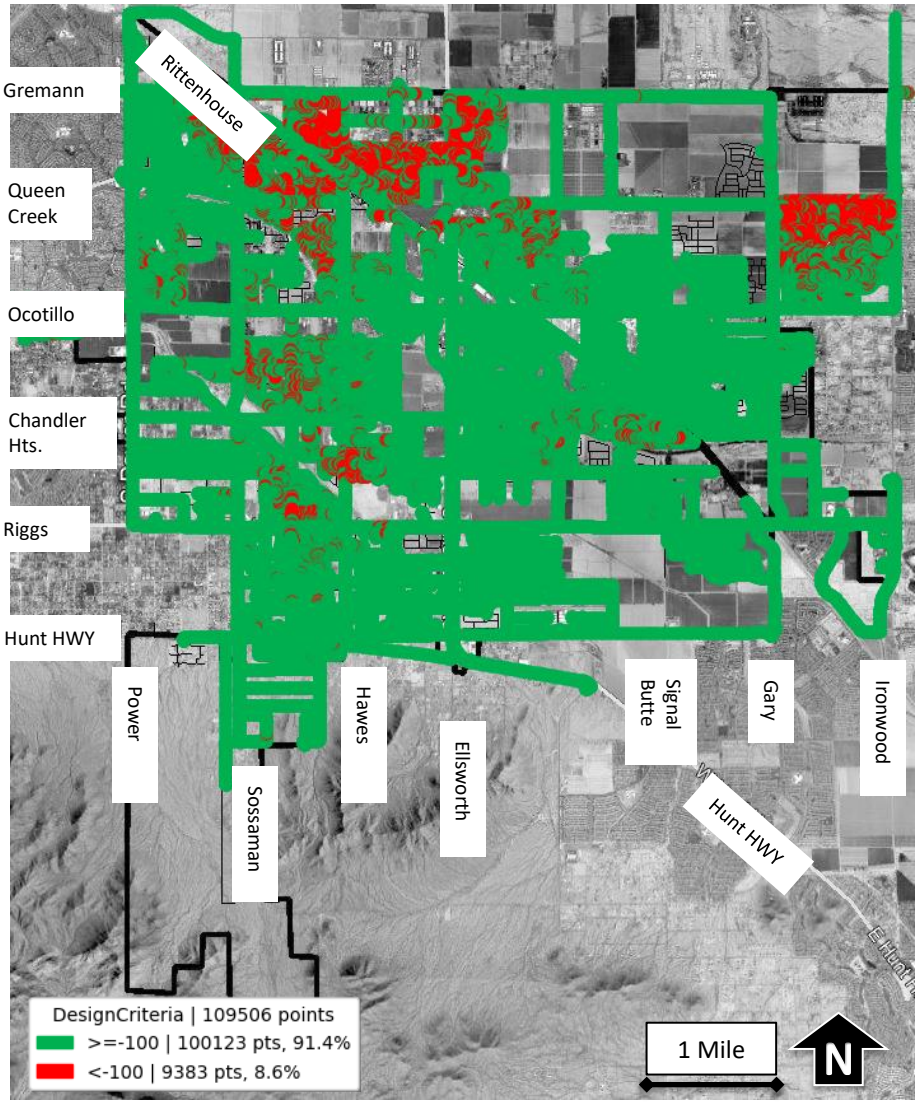


Mid Band

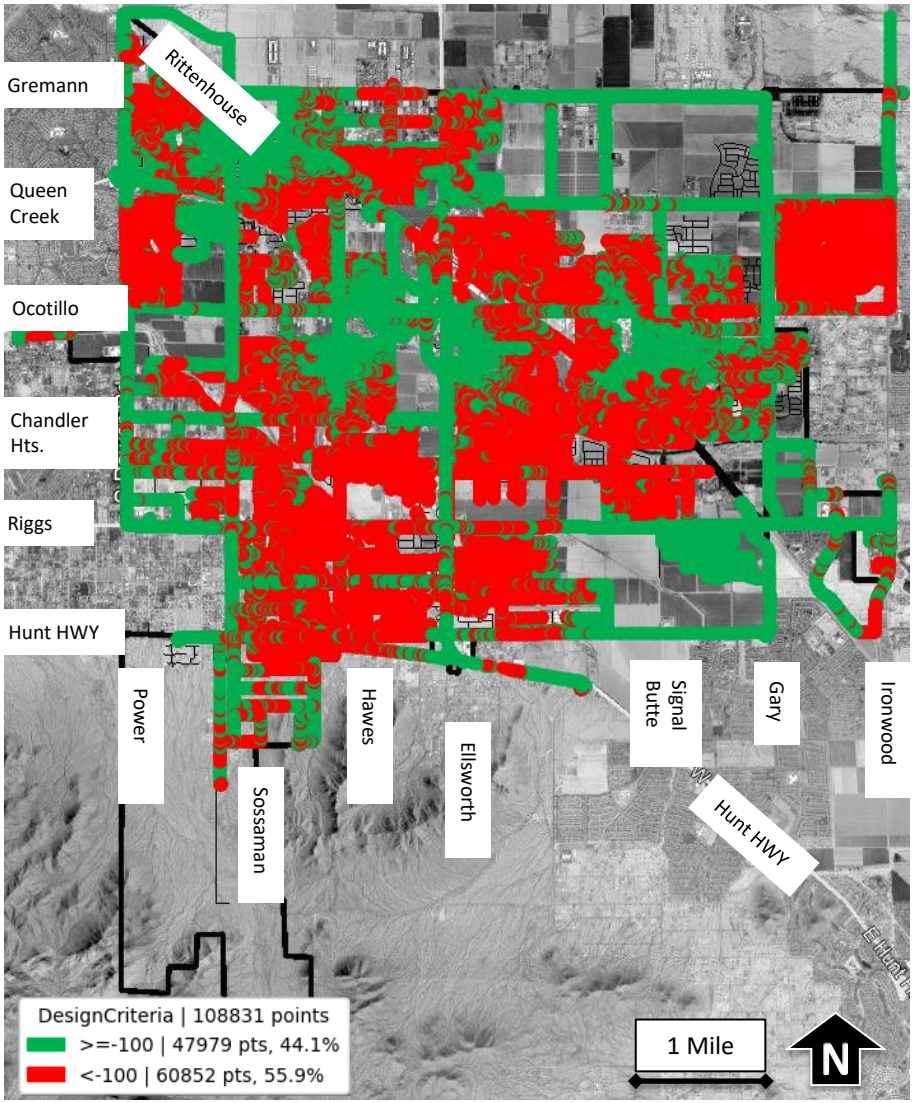


T-Mobile Signal Strength

Low Band

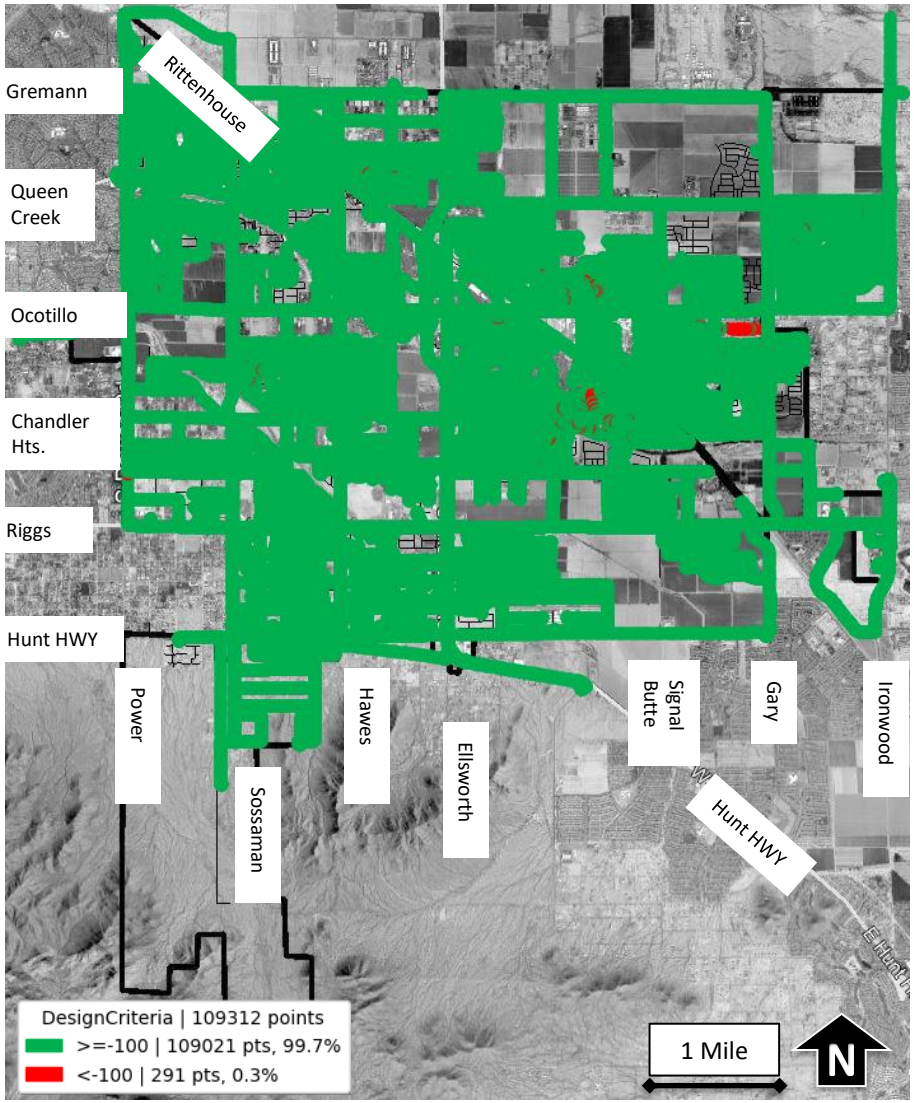


Mid Band

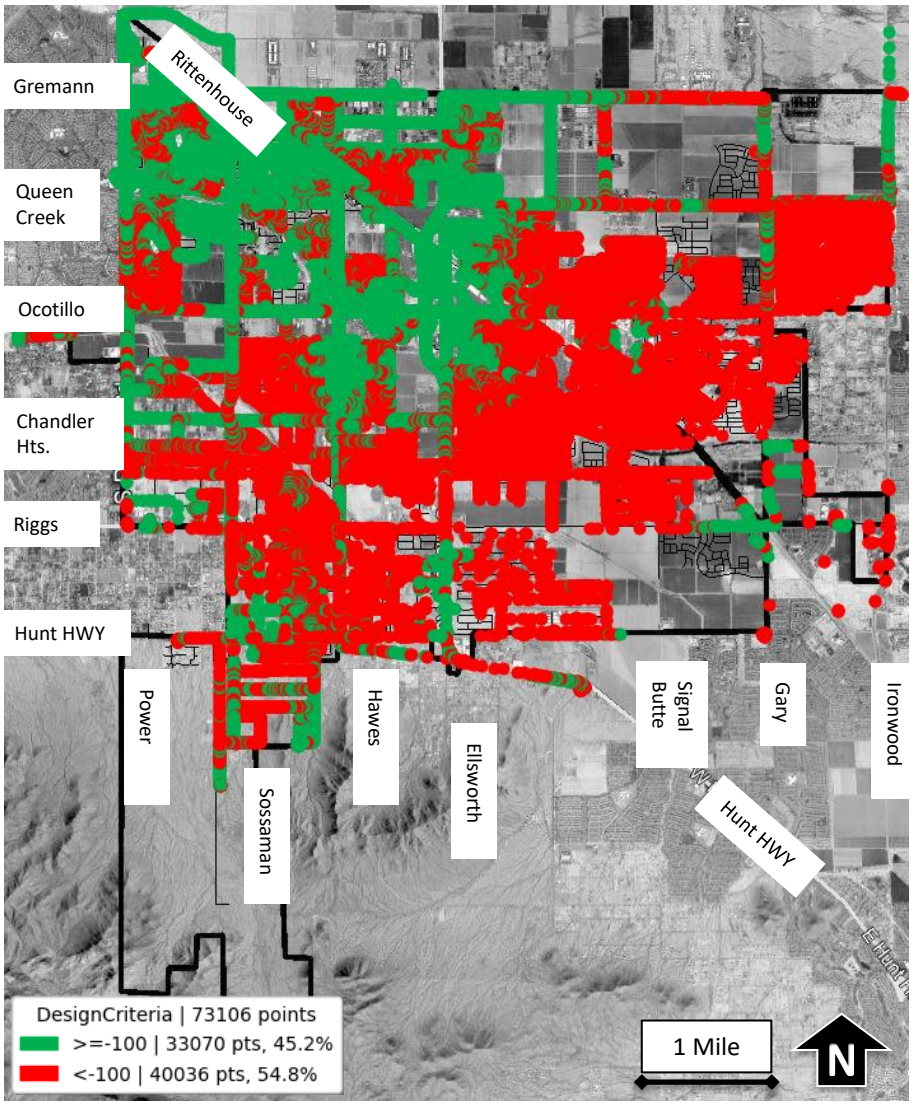


Verizon Signal Strength

Low Band



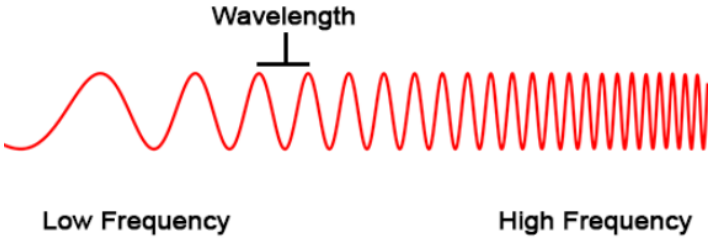
Mid Band

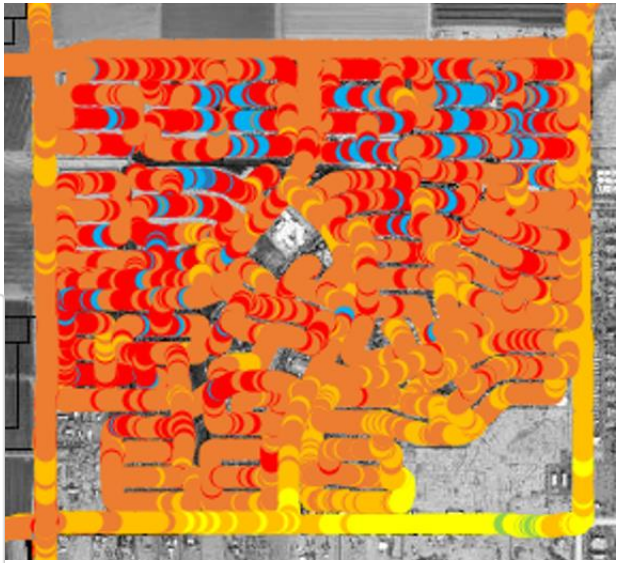


Verizon Signal Strength @ Ironwood Crossing

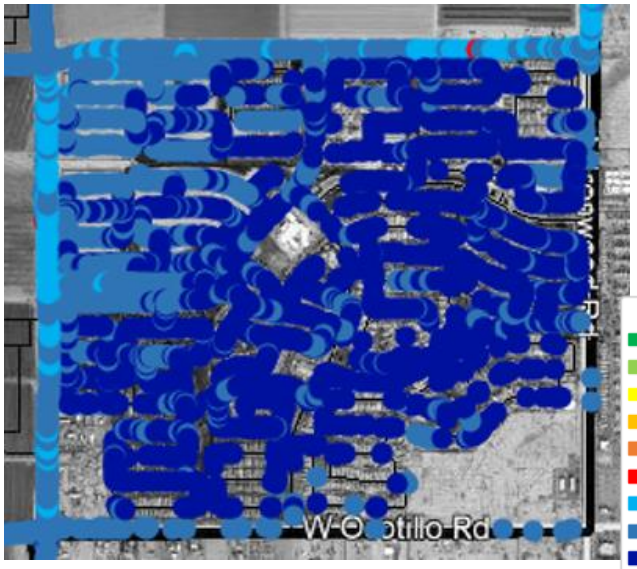
Low Band / Mid Band

Difference in on-Street signal strength between Low Band and Mid Band Frequencies ~ Mid Band requires a higher site density than Low band.





RSRP | 28531 points
>=-50 | 207 pts, 0.7%
[-60, -50) | 1062 pts, 3.7%
[-70, -60) | 3000 pts, 10.5%
[-80, -70) | 7354 pts, 25.8%
[-90, -80) | 12297 pts, 43.1%
[-95, -90) | 3496 pts, 12.3%
[-100, -95) | 990 pts, 3.5%
[-115, -100) | 125 pts, 0.4%
<-115 | 0 pts, 0.0%



RSRP | 20765 points
>=-50 | 4 pts, 0.0%
[-60, -50) | 80 pts, 0.4%
[-70, -60) | 600 pts, 2.9%
[-80, -70) | 1446 pts, 7.0%
[-90, -80) | 2520 pts, 12.1%
[-95, -90) | 1927 pts, 9.3%
[-100, -95) | 2513 pts, 12.1%
[-115, -100) | 7570 pts, 36.5%
<-115 | 4105 pts, 19.8%

Observations and Recommendations

Town of Queen Creek

Observation:

- Low Band coverage provides Longer Range, Better Building Penetration, but Slower Data.
- Low Band coverage is stronger and provides solid coverage across the town for indoors and outdoors for AT&T, T-Mobile, and Verizon. Sprint is a distant 4th place.

Recommendation:

- Optimization of existing towers (Antenna tilts)
- Strategically place new structures in poor coverage areas.

Observation:

- Mid Band coverage provides Shorter Range, Worse Building Penetration, Faster Data.
- Mid Band coverage DOES exist but is much weaker than desired for all carriers. Residents are not able to take advantage of services available due to weak signal.

Recommendation:

- Optimization of existing towers (Antenna tilts)
- Increase tower density in residential areas
  - New stealth structures / Small Cells in commercial and residential areas.
  - Streamline permitting process and timeline.

Contact Information

Office Location:

Southwest Region

2175 West 14th Street, Tempe, Arizona 85281

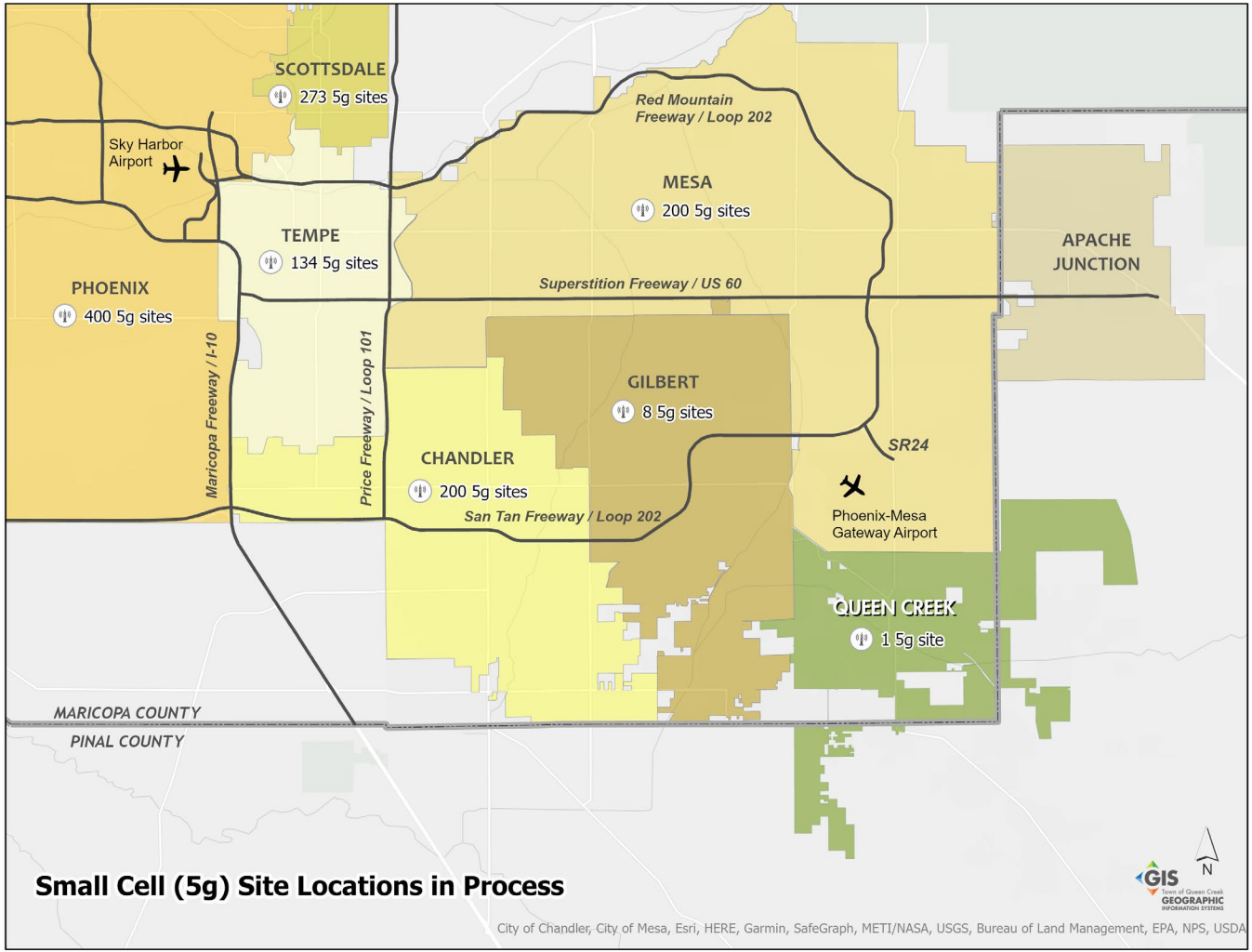
NAME	ROLE/COVERAGE	EMAIL	MOBILE #
Chris Donnelly	Regional Engineering Manager	chris.donnelly@engineeringwireless.com	(602) 570.0101
Russell Stradling	Manager, Systems Architecture & Technology	russell.stradling@engineeringwireless.com	(480) 522.9280
Ray Trujillo	National Engineering Director	ray.trujillo@engineeringwireless.com	(469) 360.0000
Jon Szeliga	National Sales Director	jon.szeliga@engineeringwireless.com	(480) 315.8000
Chelsea Hood	General Manager	chelsea.hood@engineeringwireless.com	(480) 789.3262
Ken Clark	Founder & President	ken@engineeringwireless.com	(480) 443.4000

Small Cell (5g)

- Bruce Gardner, Assistant Town Manager
- Shawny Ekadis, GIS Coordinator
- Steven Ester, Planner II


FIRE STATION NO. 1


20727

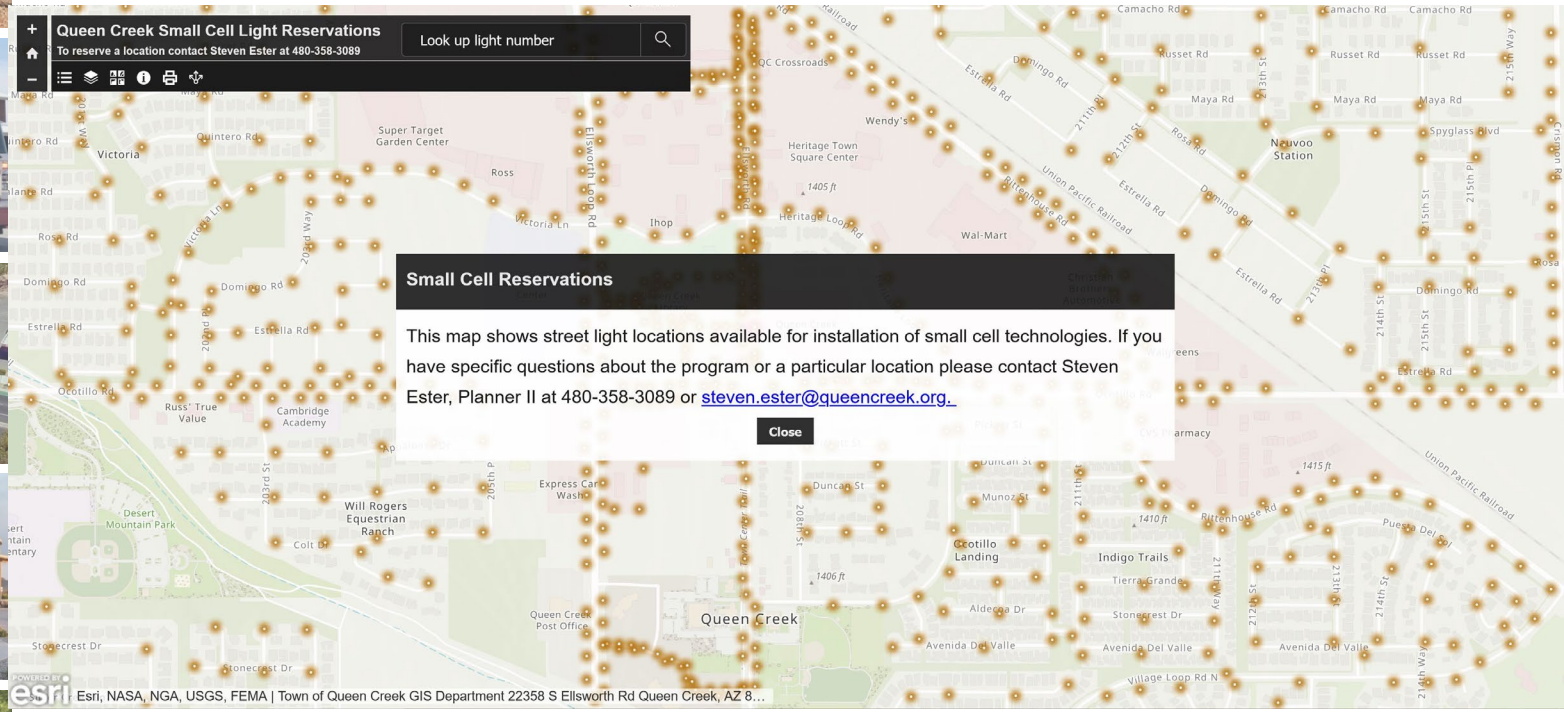

SCOTTSDALE
273 5g sites
Sky Harbor Airport
Red Mountain Freeway / Loop 202
MESA
200 5g sites
TEMPE
134 5g sites
APACHE JUNCTION
PHOENIX
400 5g sites
Superstition Freeway / US 60
Maricopa Freeway / I-10
Price Freeway / Loop 101
GILBERT
8 5g sites
SR24
CHANDLER
200 5g sites
San Tan Freeway / Loop 202
Phoenix-Mesa Gateway Airport
QUEEN CREEK
1 5g site
MARICOPA COUNTY
PINAL COUNTY
Small Cell (5g) Site Locations in Process
N
GIS
City of Chandler, City of Mesa, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

Queen Creek Streamlined Process

- Reserve a Location (Up to one year)
- When ready, request a Preliminary Site Review
- Submit a Building and Encroachment Permit
- Assigned to Technology Ombudsman (Steven Ester) in Planning for Processing
- Staff required to approve within 60 days, including building, planning and engineering
- Sign Lease Agreement
- Construction of Small Cell

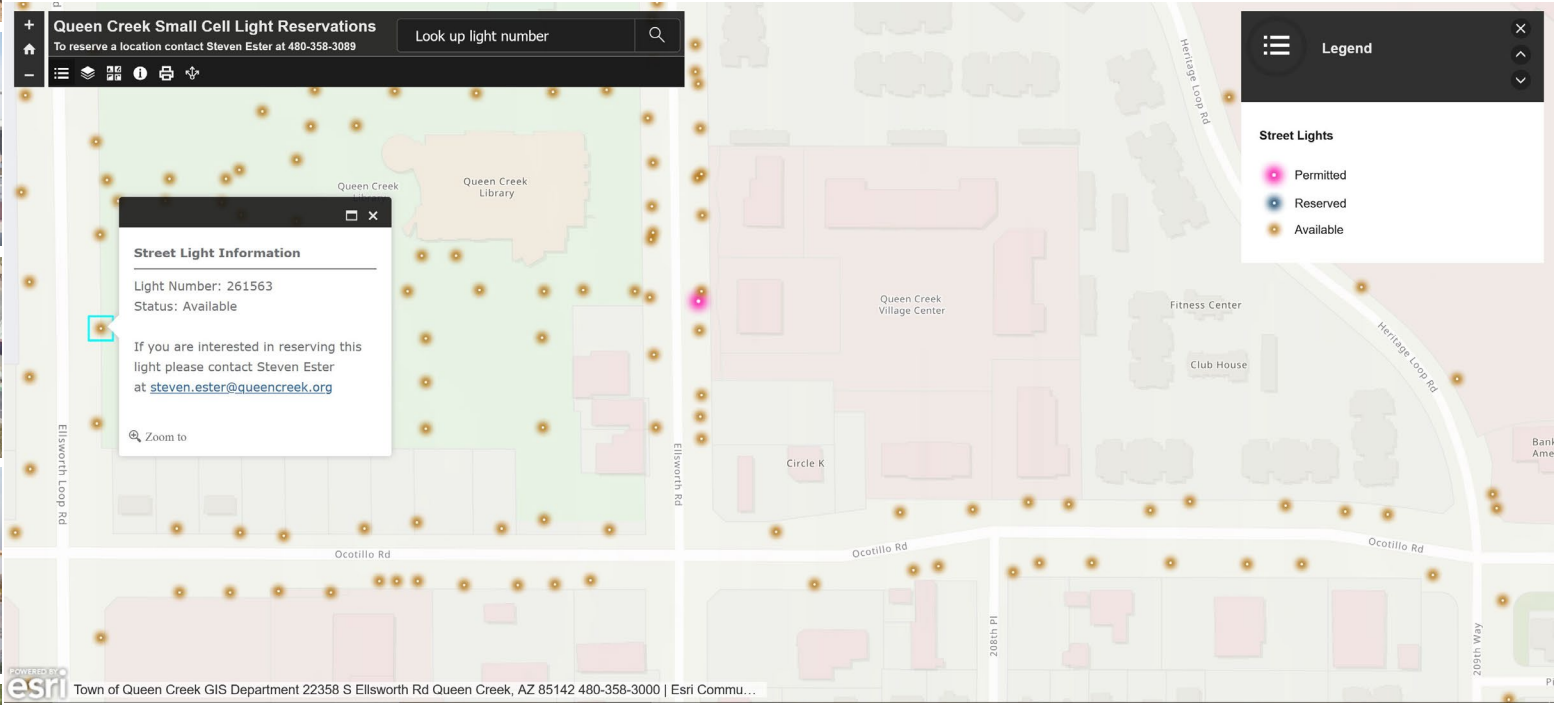

FIRE STATION NO. 1


20727


Queen Creek Small Cell Light Reservations
To reserve a location contact Steven Ester at 480-358-3089
Look up light number
Small Cell Reservations
This map shows street light locations available for installation of small cell technologies. If you have specific questions about the program or a particular location please contact Steven Ester, Planner II at 480-358-3089 or steven.ester@queencreek.org.
Close
Esri, NASA, NGA, USGS, FEMA | Town of Queen Creek GIS Department 22358 S Ellsworth Rd Queen Creek, AZ 8...

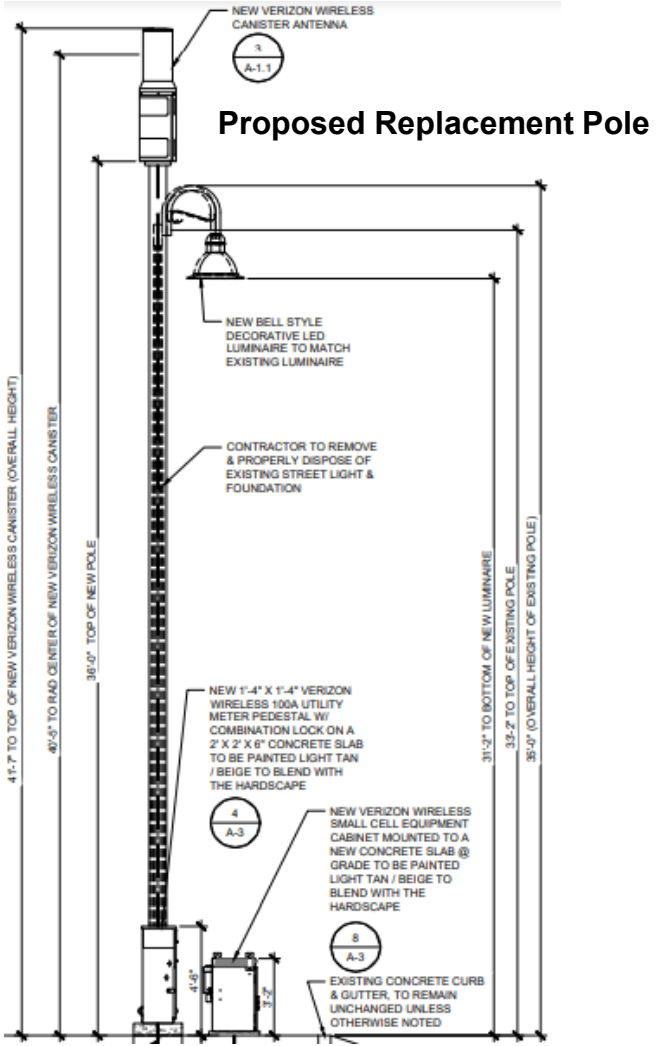

FIRE STATION NO. 1


20727


Queen Creek Small Cell Light Reservations
To reserve a location contact Steven Ester at 480-358-3089
Look up light number
Legend
Street Lights
Permitted
Reserved
Available
Street Light Information
Light Number: 261563
Status: Available
If you are interested in reserving this light please contact Steven Ester at steven.ester@queencreek.org
Zoom to
Queen Creek Library
Queen Creek Village Center
Fitness Center
Club House
Circle K
Heritage Loop Rd
Ellsworth Loop Rd
Ellsworth Rd
Ocotillo Rd
208th Pl
209th Way
Town of Queen Creek GIS Department 22358 S Ellsworth Rd Queen Creek, AZ 85142 480-358-3000 | Esri Commu…

Aerial Photo


Existing pole to be replaced


Proposed Replacement Pole
NEW VERIZON WIRELESS CANISTER ANTENNA
1
A-1.1
NEW BELL STYLE DECORATIVE LED LUMINAIRE TO MATCH EXISTING LUMINAIRE
CONTRACTOR TO REMOVE & PROPERLY DISPOSE OF EXISTING STREET LIGHT & FOUNDATION
NEW 1'-4" X 1'-4" VERIZON WIRELESS 100A UTILITY METER PEDESTAL W/ COMBINATION LOCK ON A 2' X 2' X 6" CONCRETE SLAB TO BE PAINTED LIGHT TAN / BEIGE TO BLEND WITH THE HARDSCAPE
4
A-3
NEW VERIZON WIRELESS SMALL CELL EQUIPMENT CABINET MOUNTED TO A NEW CONCRETE SLAB @ GRADE TO BE PAINTED LIGHT TAN / BEIGE TO BLEND WITH THE HARDSCAPE
8
A-3
EXISTING CONCRETE CURB & GUTTER, TO REMAIN UNCHANGED UNLESS OTHERWISE NOTED
41'-7" TO TOP OF NEW VERIZON WIRELESS CANISTER (OVERALL HEIGHT)
40'-6" TO RAD CENTER OF NEW VERIZON WIRELESS CANISTER
36'-0" TOP OF NEW POLE
31'-2" TO BOTTOM OF NEW LUMINAIRE
33'-2" TO TOP OF EXISTING POLE
35'-0" (OVERALL HEIGHT OF EXISTING POLE)
4'-6"
3'-2"