RF Usage and Facility Justification

Moorfield

Prepared by Verizon Wireless RF Engineering

Amanda Lam

March 15, 2016

verizon✓

Introduction:

There are two main drivers that prompt the need for a new cell site. One is coverage and the other is capacity.

Coverage is the need to expand wireless service into an area that either has no service or bad service. The request for service often comes from customers or emergency personnel. Expansion of service could mean improving the signal levels in a large apartment complex or new residential community. It could also mean providing new service along a newly built highway.

Capacity is the need for more wireless resources. Cell sites have a limited amount of resources to handle voice calls, data connections, and data volume. When these limits are reached, user experience quickly degrades. This could mean customers may no longer be able to make/receive calls nor be able to browse the internet. It could also mean that webpages will be very slow to download.

Capacity is the amount of resources a cell site has to handle customer demand. We utilize sophisticated programs that use current usage trends to forecast future capacity needs. Since it takes an average of (1-3) years to complete a cell site project, we have to start the acquisition process several years in advance to ensure the new cell site is in place before the existing cell site hits capacity limits.

Location, Location, Location. A good capacity cell site needs to be in the center of the user population which ensures even traffic distribution around the cell. A typical cell site is configured in a pie shape, with each slice (aka. sector) holding 33% of the resources. Optimal performance is achieve when traffic is evenly distributed across the 3 sectors.

verizon

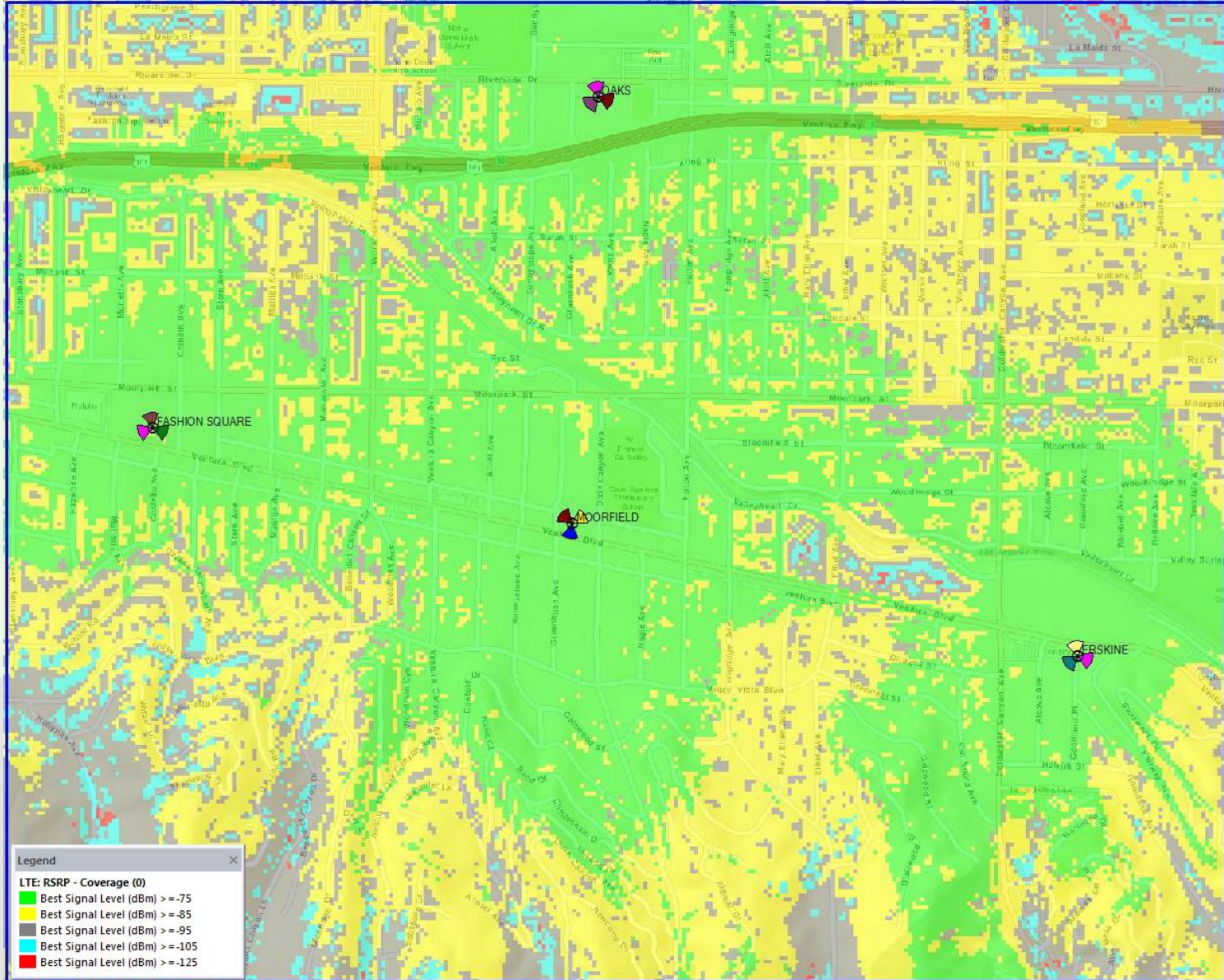# Capacity Forecast: Fashion Square site is at capacity limit already

verizon✓
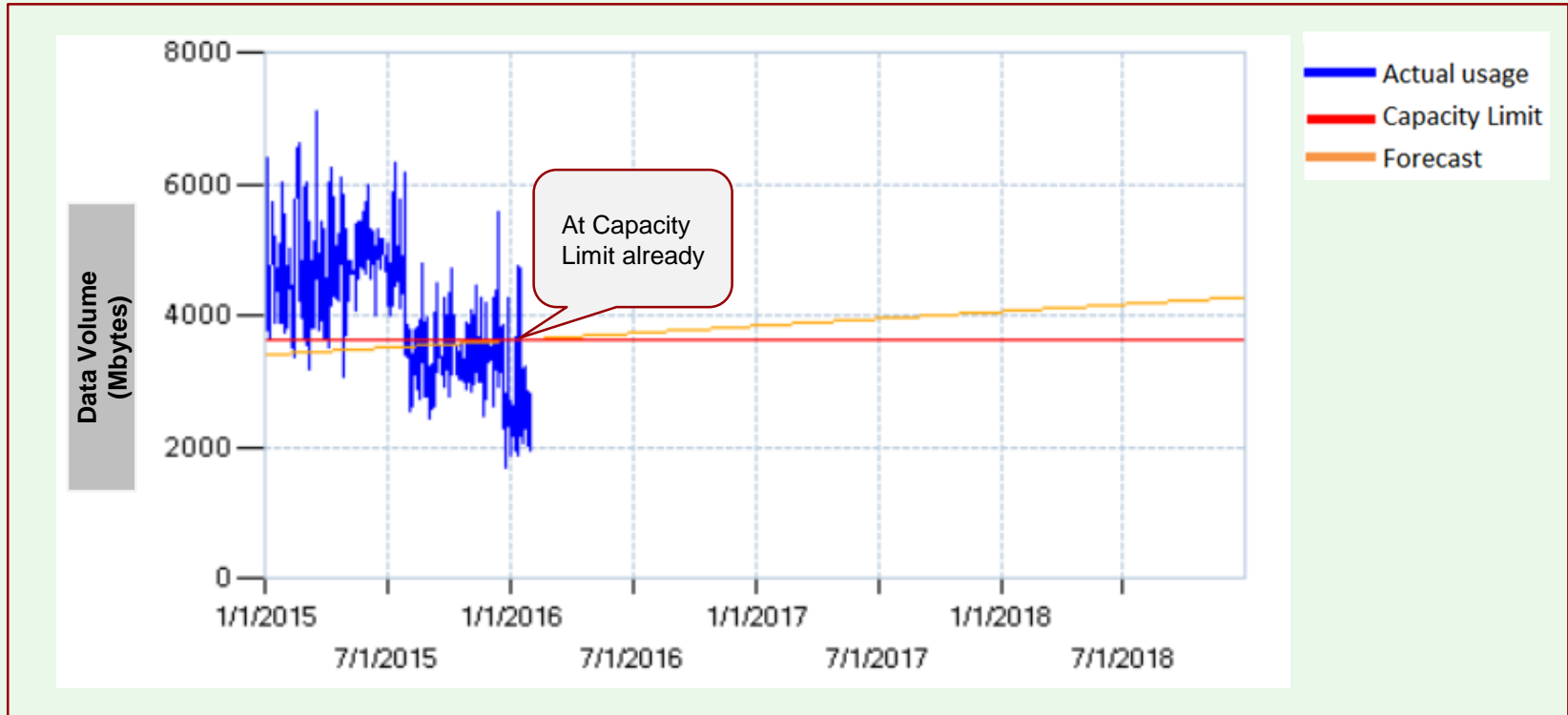
Coverage Area of Existing Site

The proposed Moorfield site is a capacity site.
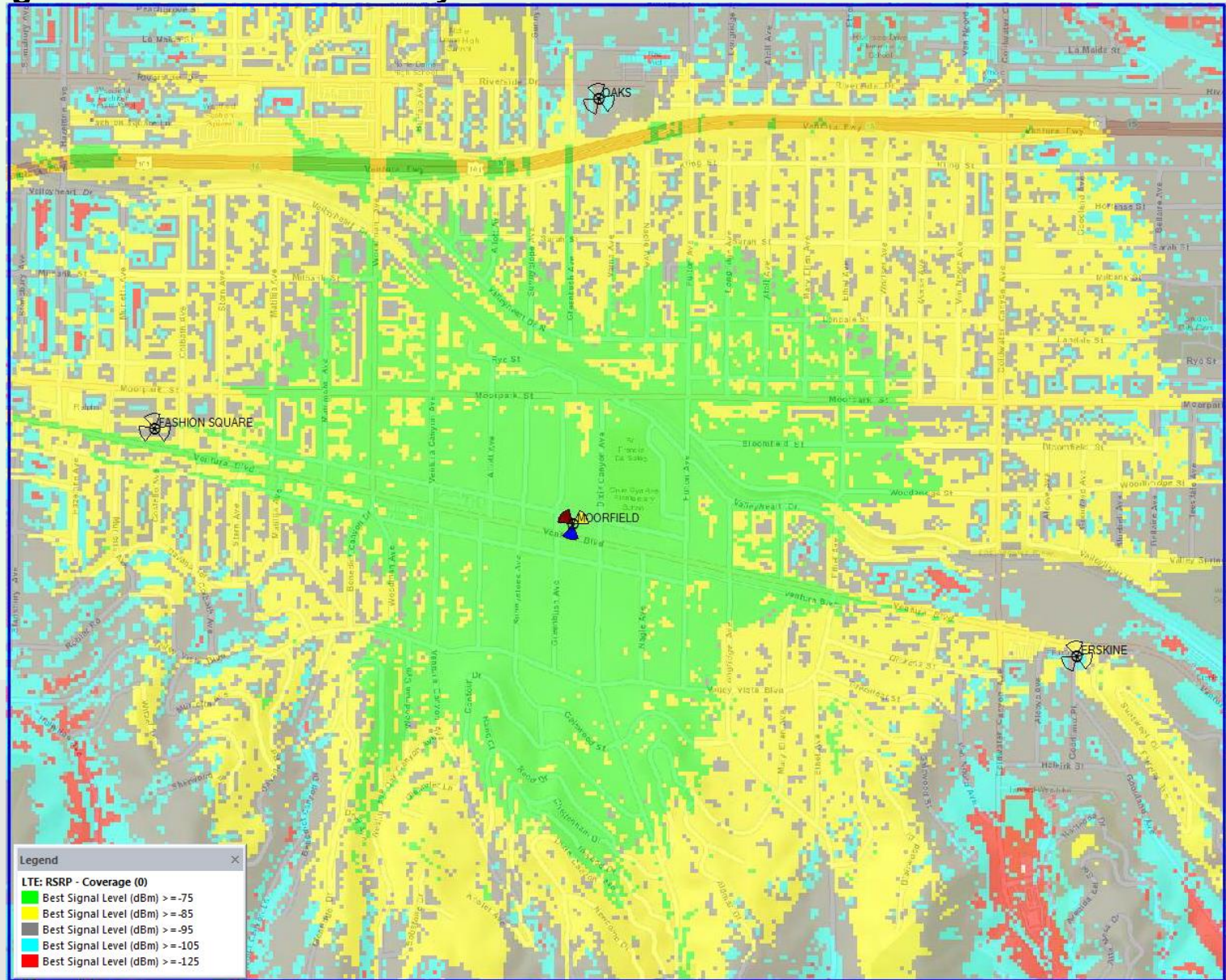This site will offload the existing site Fashion Square.

verizon√
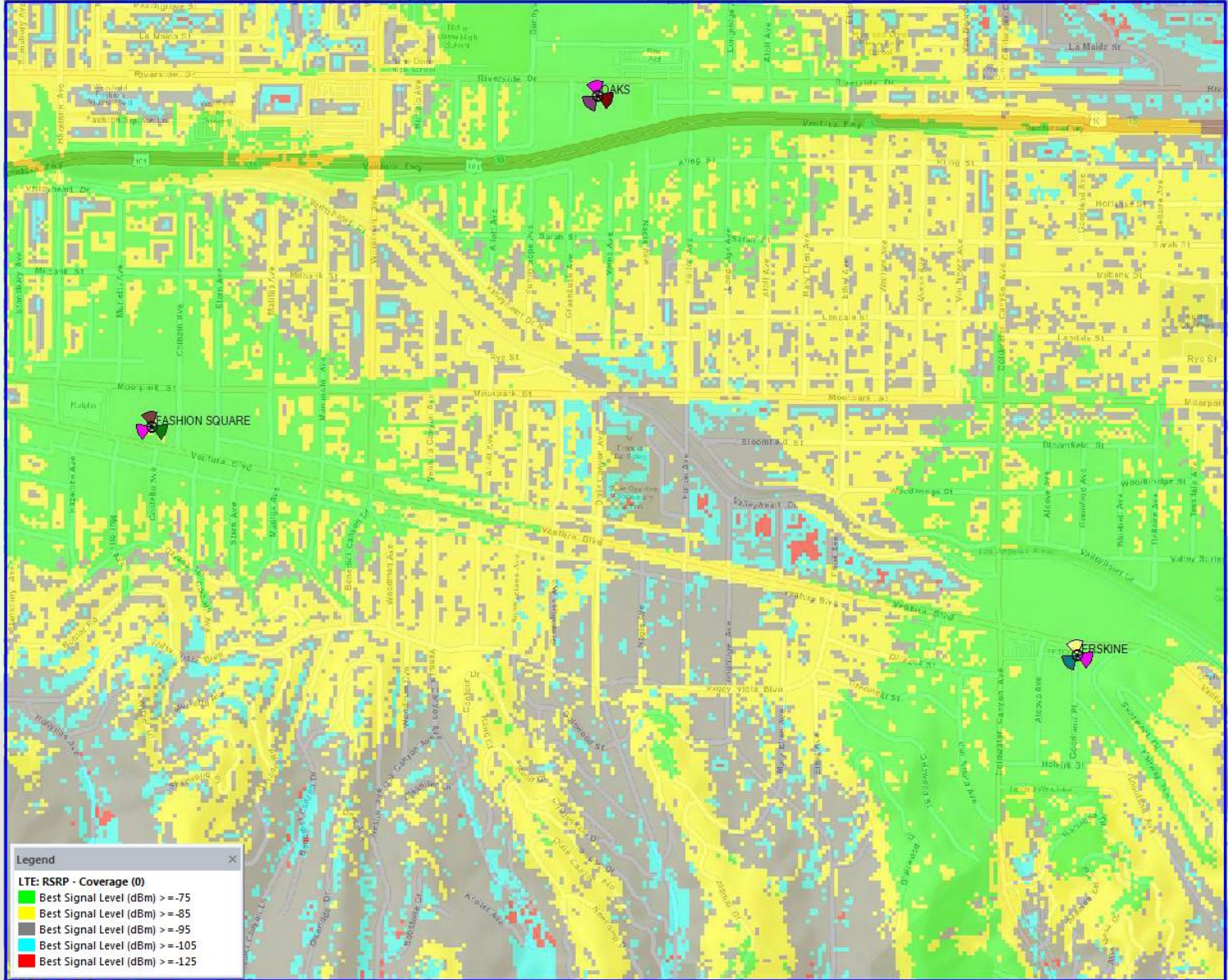
Coverage Area Offloaded by New Site

The proposed Moorfield site is a capacity site.
This site will offload the existing site Fashion Square.

Legend

LTE: RSRP - Coverage (0)

🟩	Best Signal Level (dBm) > =-75
🟨	Best Signal Level (dBm) > =-85
⬜	Best Signal Level (dBm) > =-95
🟦	Best Signal Level (dBm) > =-105
🟥	Best Signal Level (dBm) > =-125

verizon✓

Coverage with Moorfield Site Only

Legend

LTE: RSRP - Coverage (0)
- Best Signal Level (dBm) >=-75
- Best Signal Level (dBm) >=-85
- Best Signal Level (dBm) >=-95
- Best Signal Level (dBm) >=-105
- Best Signal Level (dBm) >=-125

verizon√

EME (optional, include if required)

A common question we hear on our wireless site projects is "Are the radio emissions safe?"

We go to great effort to ensure that all our projects meet the regulations set by the FCC to ensure safety of the public and our employees.

There are a number of questionable sources of information available on this subject that are not supported by science. Below are links to three organizations that have performed extensive reviews of the science available on this subject and have good educational articles on the results of their research.

World Health Organization (7 pages of detailed and well written information with most in simple english)
http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html

America Cancer Society
http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/cellular-phone-towers

FCC Radio Frequency Safety
http://www.fcc.gov/general/radio-frequency-safety-0

verizon✓

Need Case for: Moorfield

Summary: The existing Fashion Square site cannot carry the data traffic that exists in the area it serves e

Detail below:

- Exact data about sites is proprietary and cannot be disclosed due to competitive reasons.

- The existing cell site Fashion Square is already at capacity and customers are already experiencing drop calls and slower or no internet for download and streaming information.

- The new cell site Moorfield will provide additional resources to vicinity of Fashion Square. It will offload some users of Fashion Square, which will alleviate the capacity constraint on this existing cell site.

- This will improve customer experience (faster webpage downloads and fewer drop calls).

- Without the new site Moorfield, Fashion Square is already negatively impacting customer's ability to make/receive calls and browse the internet.