AT&T Mobility Radio Frequency Statement
590 2nd Avenue, San Francisco, CA

STATEMENT OF MICHAEL CANIGLIA

I am the AT&T radio frequency engineer assigned to the proposed wireless communications facility at 590 2nd Avenue, San Francisco, CA ("Property"). Based on my personal knowledge of the Property and with AT&T's wireless network, as well as my review of AT&T's records with respect to the Property and its wireless communications facilities in the surrounding area, I have concluded that the work associated with this permit request is needed to close a significant service coverage gap in an area roughly bordered by Anza Street to the north, Arguello Boulevard to the east, Cabrillo Street to the south, and 3rd Avenue to the west.

The service coverage gap is caused by inadequate infrastructure in the vicinity of the Property. As explained further in Exhibit 1 and below, existing sites do not provide sufficient in-building service in the gap area. The proposed facility is necessary to improve signal strength and signal quality in the area, which will improve overall coverage and increase data rates necessary for customers to receive consistently reliable wireless service. Any areas that do not meet these minimal standards represent a service coverage gap that must be closed. The proposed facility will also help to offload network traffic carried by existing nearby facilities during current and future peak demand periods.

In addition to improving overall coverage, increasing data speed is critical to providing the mobile experience customers demand and to manage the unprecedented increase in mobile data usage on AT&T's network. AT&T estimates that since introduction of the iPhone in 2007, mobile data usage has increased 470,000% on its network. AT&T forecasts its customers' growing demand for mobile data services to continue. The increased volume of data travels to and from customers' wireless devices and AT&T's wireless infrastructure over limited airwaves — radio frequency spectrum that AT&T licenses from the Federal Communications Commission ("FCC").

AT&T uses industry standard propagation tools to identify the areas in its network where signal strength is too weak to provide reliable in-building service quality. This information is developed from many sources including terrain and clutter databases, which simulate the environment, and propagation models that simulate signal propagation in the presence of terrain and clutter variation. AT&T designs and builds its wireless network to ensure customers will receive reliable in-building service quality. This level of service is critical as customers increasingly use their mobile phones as their primary communication devices. More than 75% of California households exclusively or primarily rely on

wireless services for their communications needs, and rely on their mobile phones to do more (E911, video streaming, GPS, web access, text, etc.). In fact, the FCC conservatively estimates that 72% of 911 calls are placed by people using wireless phones.

The proposed facility at the Property is also a part of AT&T's commitment to supporting public safety through its partnership with FirstNet, the federal First Responder Network Authority. The proposed facility will provide new service on Band 14, which is the dedicated public safety network for first responders nationwide. The proposed facility is designed to be part of FirstNet and will provide coverage and capacity for the deployment of the FirstNet platform on AT&T's LTE network. Deployment of FirstNet in the subject area will improve public safety by providing advanced communications capabilities to assist public safety agencies and first responders.

Exhibit 2 to this Statement is a map of the existing LTE service coverage (without the proposed installation at the Property) in the area at issue. It includes LTE service coverage provided by existing AT&T sites. The green shaded areas of the map depict acceptable in-building coverage. In-building coverage means customers are able to place or receive a call on the ground floor of a building. The yellow shaded areas depict areas within a signal strength range that provide acceptable in-vehicle service coverage. In these areas, an AT&T customer should be able to successfully place or receive a call within a vehicle. The blue shading depicts areas within a signal strength range in which a customer might have difficulty receiving a consistently acceptable level of service. Any unshaded areas of the map are areas where the signal strength does not meet the outdoor signal level threshold. The quality of service experienced by any individual customer can differ greatly depending on whether that customer is indoors, outdoors, stationary, or in transit. Any area in the yellow, blue, or unshaded category is considered inadequate service coverage and constitutes a service coverage gap.

Exhibit 3 to this Statement is a map that predicts LTE service coverage based on signal strength in the vicinity of the Property if antennas are placed as proposed in the application. As shown by this map, placement of the equipment at the Property closes the significant service coverage gap.

My conclusions are based on my knowledge of the Property and with AT&T's wireless network, as well as my review of AT&T's records with respect to the Property and its wireless telecommunications facilities in the surrounding area. I have a B.S.E.E. Degree in Electrical Engineering from the University of California, Davis, and have worked as an RF engineer in the wireless communications industry for more than 25 years.

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EXHIBIT 1

Prepared by AT&T Mobility

AT&T's digital wireless technology converts voice or data signals into a stream of digits to allow a single radio channel to carry multiple simultaneous signal transmissions. This technology allows AT&T to offer services such as secured transmissions and enhanced voice, high-speed data, texting, video conferencing, paging and imaging capabilities, as well as voicemail, visual voicemail, call forwarding and call waiting that are unavailable in analog-based systems. With consumers' strong adoption of smartphones, customers now have access to wireless broadband applications, which consumers use at a growing number.

Increasing data speed is critical to providing the mobile experience customers demand and to manage the unprecedented increase in mobile data usage on AT&T's network. AT&T estimates that since introduction of the iPhone in 2007, mobile data usage has increased 470,000% on its network. AT&T forecasts its customers' growing demand for mobile data services to continue.

Mobile devices using AT&T's technology transmit a radio signal to antennas mounted on a tower, pole, building, or other structure. The antenna feeds the signal to electronic devices housed in a small equipment cabinet, or base station. The base station is connected by microwave, fiber optic cable, or ordinary copper telephone wire to the Network Core, subsequently routing the calls and data throughout the world.

The operation of AT&T's wireless network depends upon a network of wireless communications facilities. The range between wireless facilities varies based on a number of factors. The range between AT&T mobile telephones and the antennas in this portion of San

Francisco, for example, is particularly limited as a result of topographical challenges, buildings, and other obstructions as well as limited capacity of existing facilities.

To provide effective, reliable, and uninterrupted service to AT&T customers in their cars, public transportation, home, and office, without interruption or lack of access, coverage must overlap in a grid pattern resembling a honeycomb.

In the event that AT&T is unable to construct or upgrade a wireless communications facility within a specific geographic area, so that each site's coverage reliably overlaps with at least one adjacent facility, AT&T will not be able to provide adequate personal wireless service to its customers within that area. Some consumers will experience an abrupt loss of service. Others will be unable to obtain reliable service, particularly if they are placing a call inside a building.

Service problems can and do occur for customers even in locations where the coverage maps on AT&T's "Coverage Viewer" website appear to indicate that coverage is available. As the legend to the Coverage Viewer maps indicates, these maps display *approximate* coverage. The "Learn more" link states "There are gaps in coverage that are not shown by this high-level approximation" and "Actual coverage may differ from map graphics and may be affected by terrain, weather, network changes, foliage, buildings, construction, signal strength, high-usage periods, customer equipment, and other factors." The website states that AT&T does not guarantee coverage and its "coverage maps are not intended to show actual customer performance on the network or future network needs or build requirements inside or outside of existing AT&T coverage areas."

It is also important to note that the signal losses, slow data rates, and other service problems above can and do occur for customers even at times when certain other customers in the same

vicinity may not experience any problems on AT&T's network. These problems can and do occur even when certain customers' wireless phones indicate coverage bars of signal strength on the handset.

The bars of signal strength that individual customers can see on their wireless phones are an imprecise and slow-to-update estimate of service quality. In other words, a customer's wireless phone can show coverage bars of signal strength, but that customer can still, at times, be unable to initiate voice calls, complete calls, or download data reliably.

To determine where new or upgraded telecommunications facilities need to be located for the provision of reliable service in any area, AT&T's radio frequency engineers rely on far more complete tools and data sources than just signal strength from individual phones. AT&T uses industry standard propagation tools to identify the areas in its network where signal strength is too weak to provide reliable service quality. This information is developed from many sources including terrain and clutter databases, which simulate the environment, and propagation models that simulate signal propagation in the presence of terrain and clutter variation. AT&T creates maps incorporating signal strength that depict existing service coverage and service coverage gaps in a given area. AT&T designs and builds its wireless network to ensure customers receive reliable in-building service quality.

To rectify this significant gap in its service coverage, AT&T needs to locate a wireless facility in the immediate vicinity of the Property.

Exhibit 2 - Existing LTE 700 Coverage

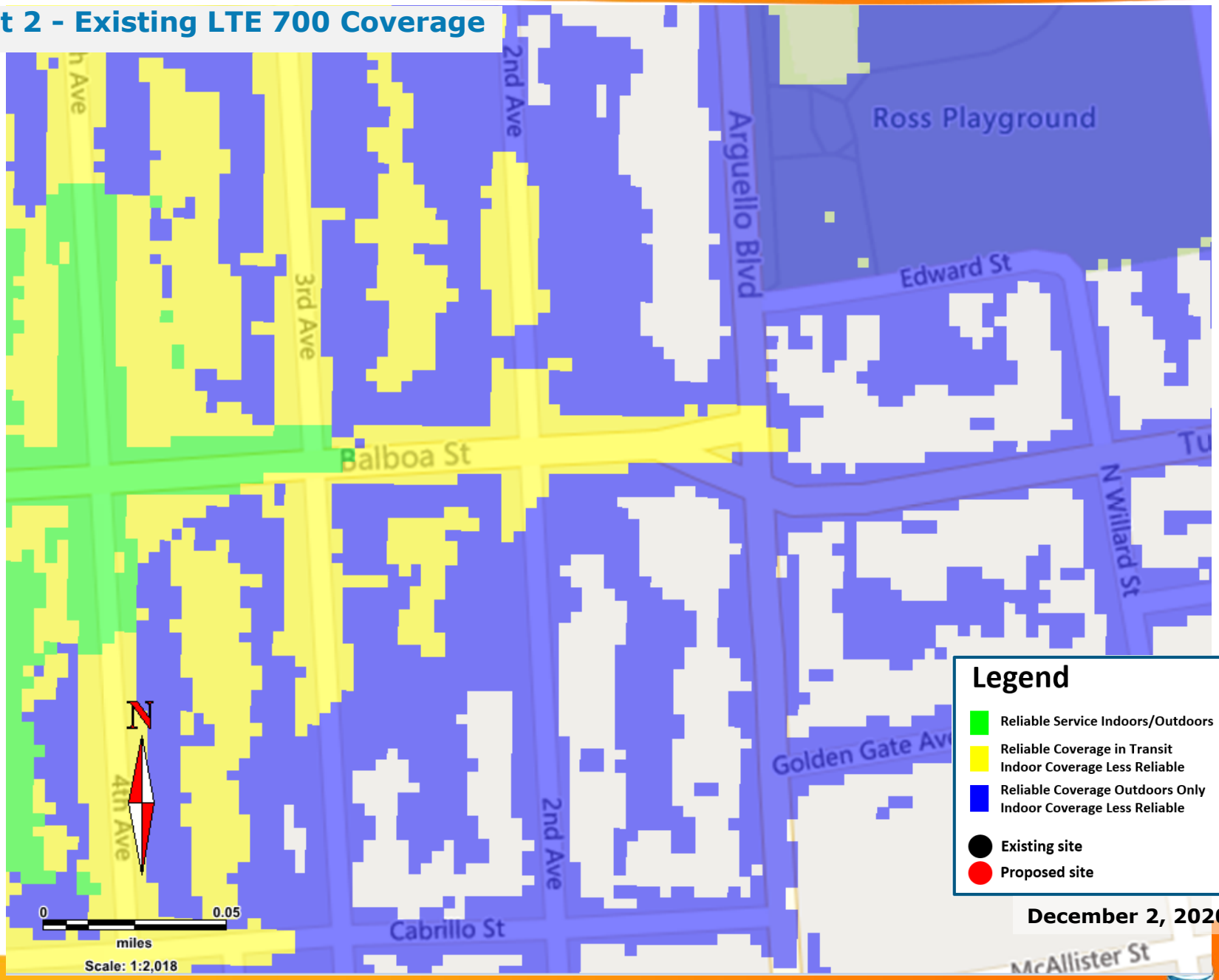

Exhibit 3 – LTE Coverage @ 590 2nd Ave with rad center at 50’