Testimony of Lowell Handy
Director of Network Operations for Verizon Wireless
Before the Assembly Utilities and Commerce Committee and
Joint Committee on Emergency Response
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Good Afternoon Mr. Chairman and Members of the Joint Committee:

My name is Lowell Handy and I am the Verizon Wireless Director of Network Operations for the Southern California Region. My office is located in San Diego's North County and my family and I live in the City of San Diego. I have made San Diego my home for the last 25 years. My wife and I both graduated from San Diego State University, raised our three children here, and we are active members of our community. In addition to myself, Verizon Wireless employs a significant number of personnel in the San Diego Region.

Verizon Wireless has a great deal of experience in managing our networks during emergency and disaster situations and I was in charge of our response to the September 8th blackout in San Diego. As the Operations Director, I assumed direct responsibility for ensuring that our network was up and operating to serve our customers and community during this crisis.

Our nationwide wireless network is at the core of our business, which is why we have invested over $65 billion in the network since our company formed – at least $6 billion on average every year – to increase the coverage and capacity of the network and to add new services.

Verizon Wireless also plans strategically for emergencies and has an established Business Continuity/Disaster Recovery Program. This program is just one part of our overall philosophy to provide high quality services for our customers 24/7.

The main focus of our Business Continuity/Disaster Recovery Program is to minimize the impact of disruption to our customers, employees, infrastructure, and business operations. We accomplish this objective by focusing on the following activities:

- **Identify critical functions, infrastructure and risks**
- **Implement strategies to minimize the risk of a disruption**

- **Develop Business Continuity, Disaster Recovery and Crisis Management plans to recover operations in the event of a disruption**
- **Test our plans to validate our response capabilities**

Although no plan is 100% foolproof, we are continuously refining and improving our responses and recovery capabilities due to the increasing variety of services we provide and the ever-changing level of potential threats to these services.

I am pleased to report to the Committee that overall Verizon Wireless' network performed very well during the September 8th blackout, and was up and running with reasonable efficiency given the circumstances.

In the first hours of the blackout, when our customers needed Verizon Wireless' service the most, our network was up and running, processing calls and text messages – every cell site was on the air. All this happened during the busiest hour for wireless traffic -- 5 to 6 pm. Our switching centers in the San Diego area experienced 3 to 7 times more calls than normal. This resulted in some calls not going through immediately, but, to be clear, the network was not down and was performing as expected.

Later in the evening of the 8th, we had some individual cell sites go off the air in San Diego County – yet our larger system remained up and running during the blackout, serving our customers during the emergency. Our central office switches saw tremendous increases over normal traffic and handled that traffic as designed remaining in-service and operational throughout the power outage.

We were pleased to partner with the City of San Diego, first responders, and San Diego Gas & Electric during the blackout. We appreciated their cooperation, communication, and coordination.

To recap what we observed, commercial power in much of Southern California failed around 3:40 pm, Thursday, Sept. 8. Within a short time, the massive scope of the outage became clear and many businesses sent their employees home. The resulting vehicle traffic without stop lights or freeway meters created gridlock – and a large spike in usage on our wireless network. Ten years ago, this type of massive traffic surge would have overwhelmed a wireless network. That's not what happens today and is not what happened on Sept. 8th.

Over the years, as technology has changed, we've worked with our vendors to develop safeguards that are not unlike the freeway on-ramp meter lights – regulating the amount of traffic that can go through at the same time while preventing debilitating congestion. Our switches regulate and permit new calls as capacity becomes available rather than becoming overloaded.

For a relevant analogy, imagine waiting in your car at a freeway on-ramp. Traffic is moving but the meter is red. You can't enter until someone down the road exits and opens up space. Then the light turns green and you enter the freeway. In the case of the network switch, your call attempt is completed.

At the same time our switches were protecting themselves against an overload, they were also handling up to 3 times the normal messaging traffic with a very high success rate. Text messages were going through even when some voice calls required multiple attempts before a call was completed.

To carry the traffic analogy through, this would be akin to finding an alternate, less congested route to your destination. In fact, many wireless carriers encourage their subscribers to use text messaging as an effective means of communication in emergency situations.

We engineer our network around the busiest hour of the busiest day and then build in extra capacity beyond that as a safeguard.

It would not be possible to engineer for a worst case scenario where every single call goes through immediately under emergency circumstances, anymore than it would be possible to build a freeway system so that there was never a traffic jam and everyone moved at a constant 65 miles an hour during an emergency like a mandatory evacuation.

Apply that same requirement to the wireless network, and we'd have to build our switches at least seven times bigger than we do today and have 7 times the number of cell sites. That would be like widening the 805 Freeway in San Diego to 70 lanes in some parts.

Our network is resilient by design and we are driven by the desire to provide our customers with an extremely high level of service. We do this by implementing redundancy on critical paths and components so that a failure of one component in the network does not significantly affect our customers.

We have thousands of cell sites across our nationwide network and take extra precautions to protect and keep these cell sites operational at all times. Again, this includes redundancy in the equipment, automatic power back-up systems, automatic fire detection systems, microwave dishes on key sites to ensure reliable and continuous cell site to switch connectivity, stringent physical security systems and extensive alarm monitoring and response systems.

In the real world, there is no way to build a network that is 100% flawless in every scenario. What we work diligently to provide, however, is the best system possible to ensure network performance day-in and day-out as well as in emergencies. This approach to network reliability means that we must have fixed generators for every switch and cell site possible to ensure their availability in emergency circumstances and microwave connectivity as needed to ensure back-up connectivity between cell sites and switches.

In this regard, we seek continued positive cooperation with the City of San Diego, adjacent municipalities, and State agencies to allow us to put fixed generators in place so that we are "ready to go" when back-up power is required and to maintain adequate height and microwave dishes at key sites to support our microwave network.

From our nationwide experience with disasters such as recent wildfires, earthquakes, hurricanes, and region-wide power outages, we know that having fixed generators as our primary source of back-up power in place to support our critical systems and infrastructure is the best insurance possible to ensure that we can support the communities we serve, including the San Diego region, when disaster strikes.

I appreciate the opportunity to testify before you today, and would be pleased to answer questions from the Committee.

Thank You.