

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking Regarding  
Emergency Disaster Relief Program

Rulemaking 18-03-011

**COMMENTS OF COMCAST PHONE OF CALIFORNIA, LLC (U-5698-C) ON  
ASSIGNED COMMISSIONER'S RULING AND PROPOSAL**

**(PUBLIC VERSION)**

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**PUBLIC VERSION**

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Comcast Phone of California, LLC (U-5698-C) (“Comcast”) respectfully submits these comments in response to the March 6, 2020 Assigned Commissioner’s Ruling and Proposal (“Proposal”) in the above-captioned proceeding and pursuant to the Assigned Administrative Law Judge’s E-Mail Ruling of March 25, 2020 extending the deadline for filing comments to April 3, 2020.

**I. EXECUTIVE SUMMARY**

Comcast is committed to protecting the safety of our customers, employees, and the communities we serve in California—a commitment that has been battle-tested during the ongoing COVID-19 emergency. We strive to exceed our customers’ needs and expectations and take great pride in providing them with the highest quality experience—every day and in emergencies. As part of that commitment, Comcast has deployed multiple backup power sources—including fixed and portable generators, battery backup systems, and solar projects—throughout our footprint in California to ensure that portions of our network that support vital infrastructure remain operational during power outages. In addition, Comcast is acutely aware of the extreme fire danger in California and takes very seriously its responsibility to help prevent wildfire ignition. During recent wildfires and public safety power shutoff (“PSPS”) events—as well as the ongoing COVID-

19 emergency—Comcast’s dedicated employees have worked day and night to maintain critical services, respond to customers’ communications needs, and coordinate with emergency officials and other governmental authorities dedicated to protecting Californians.

As the nation responds to COVID-19, Comcast has made it a top priority to protect the safety of its customers and employees, and to ensure reliable access to communications services as more Californians work remotely and shelter in place. This has been an all-hands-on-deck effort involving Comcast’s network operations team, field technicians, retail stores, and customer service employees, including many front-line personnel directly involved in network resiliency and emergency response. Throughout this challenging and uncertain time, Comcast has demonstrated its commitment to the public, just as it has during prior times of emergency and disaster recovery.

Unfortunately, the Proposal would harm rather than help California consumers and has other serious practical, legal, and public policy flaws. If adopted, the Proposal would effectively require Comcast to re-engineer its California cable systems to provide an unprecedented amount of backup power throughout its network during extreme wildfire risk conditions deemed too dangerous for the electric companies to provide power. ***Authorizing electric utilities to shut down the power grid while proposing to require communications service providers to maintain uninterrupted power to their network facilities in the same fire-prone areas would be poor public policy.*** Indeed, the Proposal’s 72-hour backup power mandate for a broad range of communications service provider facilities goes well beyond rules adopted—but later abandoned—by the Federal Communications Commission (“FCC”) more than a decade ago after the federal Office of Management and Budget disallowed those rules as excessively burdensome.

By requiring an immediate, massive deployment of generators and alternative energy sources to thousands of cable network locations across California, the Proposal would disrupt

neighborhoods and thousands of California homes, create new environmental hazards that conflict with state and federal environmental laws, add to fire danger in many communities, and could materially increase the cost of communications services—*all with little or no benefit to Comcast’s customers during wildfires or PSPS events, given that most customers do not have an independent power source in their home that can provide anywhere close to 72 hours of backup power to keep their devices running.*

Consider the following real-world scenarios:

- An apartment resident in Mill Valley subscribes to Comcast’s broadband service. To comply with the Proposal’s backup power mandates, Comcast deploys diesel, natural gas, or gasoline-powered generators at each point in its network that requires commercial power, including in a nearby parking lot. (Massively increasing the backup power supply via batteries or renewable energy sources is simply not possible at this location with current technology.) During a PSPS event, the backup generator runs continuously, producing noise and exhaust emissions. Notwithstanding these efforts to maintain power in Comcast’s network, because the customer’s apartment building also loses power and the customer has no backup power, the customer’s Internet router and Wi-Fi gateway stop working and her broadband service remains unavailable. Although Comcast’s cost of compliance with statewide backup power mandates using traditional (non-green) backup power technology is a couple hundred dollars per customer (some or all of which may be passed through to customers), her best option to browse the web for power restoration status still is a mobile wireless device.
- A family in the suburbs of Sacramento subscribes to Comcast’s voice over Internet protocol (“VoIP”) service and lives next to a field cabinet housing a power supply for Comcast network equipment. To minimize fire risk from portable generators and comply with the Proposal’s clean energy mandates, Comcast installs a 19 kilowatt (“kW”) solar array of 55 panels measuring five feet by three feet each, occupying almost 500 square feet of land area—nearly the size of three parking spaces. This increases the footprint of the existing field cabinet by a factor of 50 or more, despite opposition from the local homeowners’ association. The current per-customer cost for this type of green energy solution is significantly higher than the estimate in the prior example and similarly may be passed through to the family’s bill. And despite this cost and disruption to its neighborhood, the family still will not have 72 hours of access to 911 during an extended PSPS event, even if it had opted to purchase a backup battery providing 24 hours of standby power for its VoIP equipment (which the vast majority of customers do not).
- In Santa Clara, Comcast considers options to ensure 72 hours of backup power at its headend without the use of diesel generators. After consultation with experts, Comcast determines that it would require more than 10,000 solar panels (each five feet by three

feet), as well as large banks of batteries, to generate and store the 3.5 megawatts (“MW”) of electricity required to fully power the headend at any given time of the year. This solar array would require about 92,000 square feet of land area—the equivalent of more than 500 parking spaces or 8½ football fields. Comcast does not own anywhere near enough property surrounding the headend to accommodate such an installation and would have to purchase and clear adjacent lots for the better part of a city block (assuming such property, permits, and zoning approvals could be obtained at all). Alternatively, Comcast would require two large wind turbines producing a combined 3.8 MW to power the headend, each about 380 feet tall and occupying 1.5 acres of ground space. Again, this would require Comcast to purchase nearby properties and seek permits and zoning approvals that would almost certainly be opposed by surrounding residents and businesses. The only realistic option to keep the headend running during extended PSPS events will be the continuous operation and refueling of diesel generators. And, as noted above, even that solution would not ensure uninterrupted service to the large majority of customers who do not possess the in-home backup power required to keep their equipment operational when electric utility power is shut off.

As these and other examples make clear, adoption of the Proposal would not advance the Commission’s goals in this proceeding and would almost certainly do more harm than good.

Accordingly, the Proposal should not be adopted for several important reasons:

- *First*, even if Comcast could maintain power throughout its network for 72 hours following a power outage, the vast majority of customers do not have *any amount* of backup power in their homes. Where disasters or PSPS events also disrupt utility power to customers’ homes, Comcast’s investment in 72 hours of network backup power would be a massive waste of resources with little benefit to consumers. It also bears noting that any customers in the same geographic area who do *not* lose power also would see little benefit from the Proposal because the same utility power available at their homes likely would continue powering Comcast’s network without the use of backup power.
- *Second*, Comcast cannot deploy backup batteries that would last beyond 24 hours due to a variety of technological and siting constraints. The Proposal therefore would effectively require Comcast to deploy *tens of thousands* of generators throughout its network in high fire threat areas during fire-prone conditions, posing an unacceptable safety risk to its employees and surrounding communities.
- *Third*, the Proposal’s further prescription that solar, wind, and other alternative energy sources be used is simply not practical in most areas, because these technologies would require immense physical scale to generate on-site power at anywhere near the levels required for our facilities and are cost-prohibitive.
- *Fourth*, because generators cannot be attached to utility poles, they would need to be mounted on concrete pads. The placement of tens of thousands of new generators and solar panels throughout California would entail ripping up areas surrounding many thousands of homeowners’ properties to install large, unsightly, and frequently noisy backup power

sources, creating overwhelming practical, siting, and permitting challenges. Many of these installations would have to be located in easements on private property, which often come with restrictions on permissible uses. The consumer backlash and uproar would be substantial against such unsafe, unhealthy, unprepossessing, and unhelpful backup power encumbrances.

- *Fifth*, the Proposal would have adverse environmental impacts, including those stemming from exhaust emissions, fuel transportation and storage, hazardous materials, and noise. Due to the need for widespread use of diesel backup generators that the Proposal effectively mandates, the Proposal would run afoul of California’s implementation of the federal Clean Air Act (“CAA”), which has called for the elimination of the use of diesel generators in many areas due to their high toxicity. Because of all these environmental impacts, adoption of the Proposal would constitute a “project” under the California Environmental Quality Act (“CEQA”). Before adopting any such mandate, the Commission must at a minimum perform an appropriate review of those impacts as required under CEQA.
- *Sixth*, even if the Proposal were technically feasible—which it is not—and even if it could be implemented without creating major public safety and environmental risks—which it cannot—it would conflict with federal law and policy and unlawfully burden services over which the Commission has very limited regulatory authority.
- *Finally*, it is simply not the time to divert resources—people and financial—away from the communications providers who are working day and night to meet the challenges posed by the COVID-19 emergency. Right now, Comcast is laser-focused on ensuring that our customers—our residential customers, students throughout the state who are learning remotely, healthcare and police and safety organizations, and all the businesses striving to work remotely—are supported by robust Internet services. Maintaining capacity and performance in the face of skyrocketing usage, while keeping customers and our employees safe, has involved unprecedented effort. And the company is achieving this at a time when it is contending with a dispersed workforce largely working from home; employees facing their own and family member illnesses, as well as risks to their own health and safety to keep services running; limitations on transportation and work completion due to shelter-in-place requirements; supply chain challenges; and other serious difficulties as well as financial challenges. Imposing new, burdensome, and unprecedented backup power obligations in the near term—and it is not clear how long that term will be—will irresponsibly create unreasonable strains for businesses providing connectivity to all Californians. That is not to say that the current crisis relieves companies from taking steps to ensure that their facilities are as safe and resilient as possible to contend with fire and PSPS challenges: this is simply not the time to impose stringent and costly obligations on companies striving already to protect and serve the public.

In light of the foregoing, the Commission should abandon the Proposal and consider a different and better approach: to allow communications service providers to adopt individualized approaches for their networks that optimize outcomes for their customers, communities and

employees. However, if the Commission ultimately decides to adopt network resiliency rules, it should adopt a set of rules that is appropriate for each class of communications service provider. Additionally those rules should be narrowly tailored to “aid first responders” and “allow the public to communicate in a reliable manner during disasters or PSPS events.”<sup>1</sup> The following alternate two-part network resiliency proposal meets these objectives for wireline providers.<sup>2</sup> The details of this alternate resiliency proposal are provided in response to Question 4(d).

*(1) Uninterrupted Service to Critical Facility Customers.* It is important to ensure that first responders and other critical facilities have access to reliable service during an emergency. Therefore, notwithstanding limits on the Commission’s regulatory jurisdiction, Comcast supports a framework that would ensure that wireline communications service providers are able to deliver uninterrupted service to fire stations, police stations, hospitals, and emergency command and dispatch centers.

*(2) Maintain Connectivity to Wireless Carrier Customers.* Wireless services are critical during PSPS and wildfire events as well as other emergencies because customers may be displaced from their homes during such events or, even if they can remain in their homes, their homes often lack an independent power source to keep their devices running. The importance of wireless services during emergencies is borne out by the fact that more than 80 percent of 911 calls originate from mobile phones.<sup>3</sup> As the Commission is well aware, wireless networks rely on wireline networks to provide backhaul and to connect their switches to the public switched telephone network (“PSTN”). Comcast, for example, uses its wireline facilities to provide backhaul service

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<sup>1</sup> Proposal, Appendix A at 1.

<sup>2</sup> Comcast anticipates that the Commission would adopt a different set of network resiliency rules for wireless given the different architecture and use of wireless networks.

<sup>3</sup> See <https://www.nena.org/page/911Statistics>.



to hundreds of cell towers in California. Accordingly, notwithstanding limits on the Commission's regulatory jurisdiction, Comcast supports a framework that would ensure that wireline providers that provide backhaul to wireless networks are able to maintain service to their wireless carrier customers during power outages.

\* \* \*

In sum, the proposed 72-hour backup power mandate is unsafe, environmentally unsound, arbitrary, overbroad in scope, unhelpful to consumers, and ultimately ineffective. A better approach would be to allow communications service providers to adopt individualized approaches for their networks that optimize outcomes for their customers, communities, and employees. However, if the Commission ultimately decides to adopt network resiliency rules, it should adopt the two-part alternate network resiliency proposal for wireline providers set out in response to Question 4(d).

## **II. INTRODUCTION AND OVERVIEW OF COMCAST'S NETWORK**

Comcast's comments are supported by declarations from four individuals with expertise in key subject areas: Jeffrey Votaw, Comcast's Regional Vice President for Engineering and Construction in California; Steven Branoff, an environmental engineer and expert consultant; Michael Rohde, a fire safety and wildfire ignition expert consultant; and Kevin Corbusier, a Project Specialist with Comcast's Office of Sustainability.

### **A. Comcast Goes to Great Lengths to Keep Customers Connected—Every Day and in Emergency Situations.**

Providing customers with reliable access to high-quality communications services is not only the right thing to do, but also crucial to Comcast's success in a competitive market. Comcast therefore has every incentive to design, operate, and maintain its network in California in ways that promote resiliency and protect public safety. In recent years, Comcast has made a major effort

to enhance the resiliency of its network during power outages, including significant investments to upgrade the backup power capabilities at its key facilities in California.<sup>4</sup> Comcast has deployed multiple backup power sources—including fixed and portable generators, battery backup systems, and solar arrays—to ensure that the portions of its network that support vital infrastructure remain operational during power outages.<sup>5</sup>

During recent wildfires and PSPS events, Comcast’s dedicated employees have worked tirelessly to maintain critical services, respond to customers’ communications needs, and coordinate with emergency officials. In addition to its compliance with the mandates of Decision (“D.”) 19-08-025,<sup>6</sup> Comcast voluntarily implements additional measures to keep its customers connected to its network and to support the operations of first responders. These measures include opening public Wi-Fi hotspots for use by anyone in the affected areas for free (whether or not they are Comcast customers); providing shelters with Wi-Fi and charging stations so that displaced Californians can have free Internet access during an evacuation; and providing connectivity to emergency responders at field locations. Moreover, when Comcast customers are displaced from their homes during emergencies, if they have access to an Internet connection, they can access their voice, video, and e-mail services remotely using the Comcast app on a mobile device, tablet, laptop, or desktop computer—at no extra cost.

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<sup>4</sup> Votaw Declaration ¶ 5.

<sup>5</sup> *Id.*

<sup>6</sup> *See, e.g.*, Advice Letter No. 148 of Comcast Phone of California, LLC (Oct. 14, 2019) (setting forth Comcast’s customer outreach plan to disseminate information concerning post-disaster emergency protections for communications service customers); Advice Letter No. 149 of Comcast Phone of California, LLC (Nov. 12, 2019) (demonstrating Comcast’s compliance with emergency customer protections for customers affected by the October 27, 2019 statewide Emergency Proclamation “due to ... extreme fire weather conditions” that resulted in PSPS events in portions of Comcast’s service territory). Communications Division staff has accepted without modification all of the advice letters filed by Comcast pursuant to decisions in this proceeding.

In large-scale disasters that can be predicted in advance, such as hurricanes and related flooding, Comcast engages in proactive planning for maintenance and restoration of service.<sup>7</sup> Comcast's emergency preparation plans include pre-positioning materials and equipment; testing and refueling backup generators; setting up local command centers; and ensuring that employees and contractors have current credentials and access letters so they are not delayed in reaching critical locations and equipment once an event has passed.<sup>8</sup> During extended power outages following such disasters, Comcast also institutes an emergency fuel plan, including mobilizing fuel trucks to secure staging areas within range of affected communities. As in all disasters, Comcast collaborates with emergency management officials to share information, ensure that crews have access to key facilities, help secure plant and equipment, and avoid fiber cuts that hinder recovery efforts.<sup>9</sup>

#### **B. The Proposal Is Infeasible for Comcast's Highly Distributed Network.**

A brief overview of Comcast's network (which is largely the same architecture as other cable operators' networks) will help frame the myriad problems presented by the Proposal. The major components of Comcast's hybrid fiber-coaxial ("HFC") network are headends, hubs, and power supplies, which in turn feed a multitude of nodes, amplifiers, and line extenders. A headend is a centralized facility for receiving and processing television signals for distribution over a cable TV system; it also includes equipment needed to enable broadband and VoIP services. A headend typically serves a broad geographic area (*e.g.*, a medium-sized city or a section of a large city).

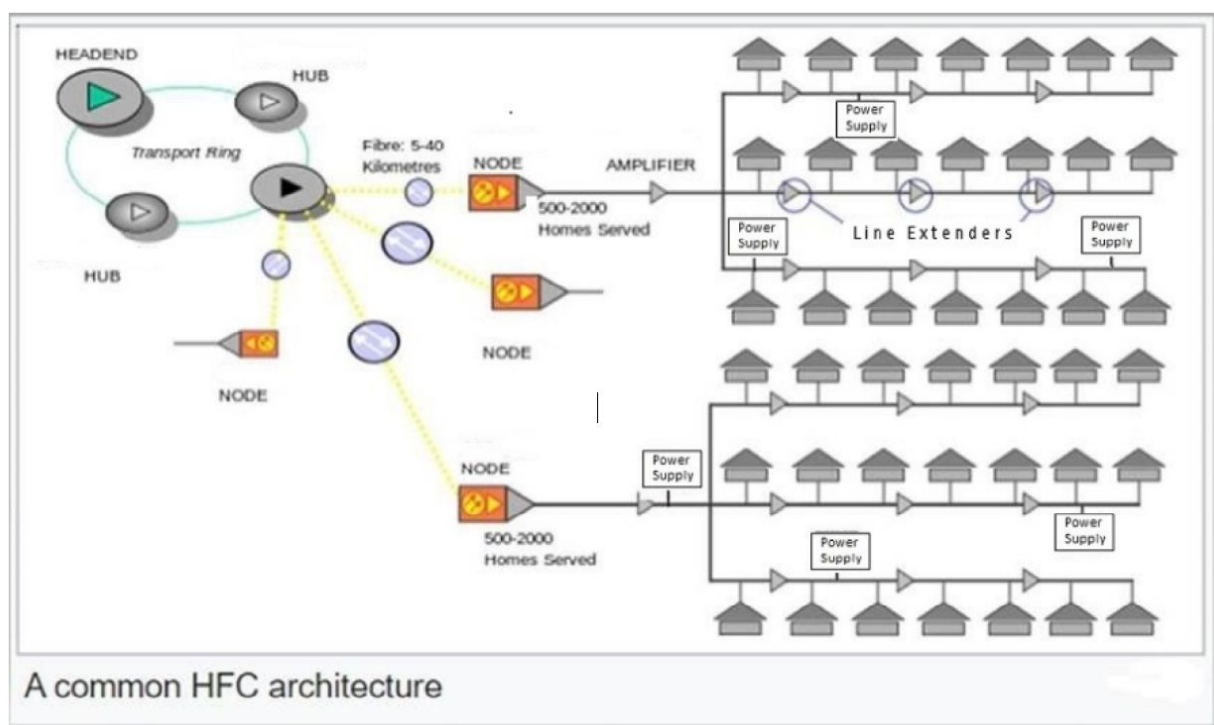
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<sup>7</sup> See Comments of Comcast Corporation, FCC PS Docket No. 18-339 (Dec. 17, 2018), at <https://ecfsapi.fcc.gov/file/12171477206526/2018-12-17%20AS%20FILED%20Comcast%20Hurricane%20Michael%20Comments.pdf> (detailing Comcast's extensive preparations and response efforts in the Gulf Coast during Hurricane Michael).

<sup>8</sup> Votaw Declaration ¶ 6.

<sup>9</sup> *Id.* ¶ 7.

Hubs distribute optical signals from headends throughout the service area. Nodes convert the optical signals to electric (radio frequency) signals for distribution over coaxial cable, while line extenders and amplifiers boost the signal as needed to reach each subscriber's home. All of these devices require commercial power for normal operation.<sup>10</sup> A simplified diagram of a typical HFC network is shown below.



Headends and Hub Sites. Comcast has backup power systems at its 129 headends and hubs in California. In 2018 and 2019, Comcast made significant investments to upgrade the power network and backup power capabilities at these facilities. All Comcast headends and hub sites have either a direct current (“DC”) battery backup system or a fixed alternating current (“AC”) generator (typically diesel fueled) and, in most cases, have both systems. Comcast also has trailer-based portable AC generators that can be rapidly deployed to headends and hub sites that have no

<sup>10</sup> *Id.* ¶ 8.

fixed generator. The DC battery backup systems at headends and hubs typically have the capacity to operate for approximately four to 12 hours. The AC generators can continue to provide power as long as they can be safely refueled. Comcast monitors the fuel consumption of these generators and schedules refueling once the fuel level reaches 50 percent, which typically occurs after approximately 24 hours of operation, depending upon operating load.<sup>11</sup>

Other Network Components. Between Comcast's headends and subscribers' homes, *there are nearly 19,000 power supplies that rely on commercial power in California.* These power supplies, in turn, feed power to *approximately 250,000 nodes, amplifiers, and line extenders.* A typical power supply is equipped with three backup batteries for an average of six hours of operation total without commercial power, depending on the electrical load.<sup>12</sup>

Customer Premises Equipment. Equipment needed to deliver VoIP, broadband, and cable video service also requires commercial power at each customer's home. *Even if Comcast's cable network could run indefinitely on backup power—an unrealistic assumption for reasons explained below—Comcast's services would only be available to customers affected by commercial power shutoffs who have an independent power source at home.*<sup>13</sup> This point bears emphasis because it illustrates the degree to which imposing backup power requirements on wireline providers as outlined in the Proposal would be an unreasonable, and unjustifiable, burden, when weighed against its elusive benefits. Consistent with FCC rules, Comcast offers its voice customers the option to purchase backup batteries for VoIP equipment (offering either eight or 24 hours of backup power),<sup>14</sup> but the vast majority of customers decline even those options—which

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<sup>11</sup> *Id.* ¶ 9.

<sup>12</sup> *Id.* ¶ 10.

<sup>13</sup> *Id.* ¶ 11.

<sup>14</sup> See 47 C.F.R. § 9.20(b).

in all events are far short of the 72 hours the Proposal would require of providers. As noted above, many other consumer devices (*e.g.*, cable modems, Wi-Fi routers, cordless phones, and desktop computers) do not have backup batteries at all and are unlikely to have a reliable source of backup power regardless of any mandate for service provider networks.<sup>15</sup>

If adopted, the Proposal would effectively require Comcast to re-engineer its California cable systems to provide an unprecedented amount of backup power throughout its network during wildfire-prone conditions deemed too dangerous for the electric companies to provide power. The only way to meet the proposed requirement would be to deploy thousands of fossil-fuel powered generators to thousands of locations across California. Not only would such massive deployment be infeasible, but it also would pose significant risks to public safety and to the environment.<sup>16</sup> These dynamics and problems would be replicated and thus compounded across *all* other cable systems and their communities throughout California. Moreover, the effort would be wasted for most customers during extended PSPS events because, as explained above, backup power in the network does not power the VoIP equipment, cable modems, Wi-Fi routers, and other devices in their homes.

**C. Any Backup Power Plan Must Prioritize Critical Facilities and Take Account of Differences in Network Architecture.**

Comcast's network, like any modern cable network, relies on commercial power to operate. Unlike cell towers—which are spread out geographically but relatively self-contained—Comcast's cable network infrastructure is widely distributed over many physical connections and network components between Comcast's headends and customers' homes and businesses. Comcast's cable

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<sup>15</sup> Votaw Declaration ¶ 12.

<sup>16</sup> *Id.* ¶ 13.

systems also are located largely in the public rights-of-way, unlike cell towers that usually are on private property.<sup>17</sup>

As noted, Comcast has *nearly 19,000* network components in California that require commercial power for normal operation. Although Comcast has deployed battery backup at thousands of points throughout its California footprint, these batteries were not designed to replace commercial power on a long-term basis. For longer electrical outages, Comcast relies on generators where it is safe to do so, and the fixed generators at Comcast's headends and other protected locations can generally remain operational for as long as they can safely be refueled.<sup>18</sup>

PG&E's PSPS events of October 2019, however, were unprecedented in scope and duration and created unique challenges for continuity of communications services. Because these power outages are initiated on short notice during extreme fire weather conditions, safety considerations have significantly limited Comcast's ability to widely deploy portable generators and other backup power sources. As detailed below, portable generators can themselves pose a fire ignition hazard, and keeping those generators running for extended periods in wildfire evacuation areas can present an unacceptable risk to the community and our employees. Therefore, Comcast has sought to prioritize backup power at key points in its network, including headends and hubs serving large geographic areas; backhaul facilities that serve cell towers; vital network infrastructure serving hospitals and evacuation centers; and other locations supporting first responders.<sup>19</sup>

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<sup>17</sup> *Id.* ¶ 14.

<sup>18</sup> *Id.* ¶ 15.

<sup>19</sup> Votaw Declaration ¶ 16.

The Proposal makes passing reference to the fact that “[c]ommunications networks are complex and diverse and there may not be a ‘one size fits all’ approach to ensuring resiliency.”<sup>20</sup> But in practice, the Proposal would impose exactly such inflexible, impractical backup power mandates on a broad range of communications providers without regard to their network technology or role in maintaining critical communications during emergencies. Unfortunately, the Commission abandoned its prior commitment to hold public workshops<sup>21</sup> to better inform its understanding of communications network and backup power technologies.<sup>22</sup> In addition, the Commission has not reconsidered its decision to forego any evidentiary hearings, which are clearly necessary given the expanded scope of this proceeding, the complexity of the technical issues under consideration, the public safety risks, and the significant impact of the proposed regulations. Instead, even if with the best of intentions, the Commission appears to be moving forward with a flawed proposal that will do more harm than good. As Comcast has proposed herein, the Commission should consider a more flexible and targeted approach that focuses on wireless providers, critical communications services, and the wireline facilities that support such providers and services.

### **III. RESPONSES TO QUESTIONS IN THE ASSIGNED COMMISSIONER’S RULING**

#### **1. Applicability of Requirements**

**The Proposal states that the requirements shall be applicable to all companies owning, operating, or otherwise responsible for infrastructure that provides or otherwise carries 9-1-1, voice, text messages, or data.**

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<sup>20</sup> Proposal, Appendix A at 2.

<sup>21</sup> See R.18-03-011, *Assigned Commissioner’s Phase 2 Scoping Memo and Ruling* (Jan. 21, 2020) at 5 (scheduling a workshop for March 20, 2020).

<sup>22</sup> See R.18-03-011, March 16, 2020 Email Ruling of ALJ Rizzo (“there will be no workshops for Phase II of this proceeding”).



**1(a) Is this definition of applicability reasonably tailored to ensure regulatory compliance over all communications service providers? Why or why not?**

**COMCAST’S RESPONSE:**

No, this definition of applicability is not reasonably tailored, as explained below. To the contrary, the proposed definition of covered “Providers” is vague, overbroad, and exceeds the Commission’s regulatory authority. The Proposal would appear to cover any provider (wireline or wireless) of voice, text messaging, or broadband Internet access service (“BIAS”). But by attempting to subsume any other company “responsible for infrastructure that ... carries” those services, the Proposal would extend even further and could, on its face, encompass tower owners, data centers, power companies, and public safety answering points (“PSAPs”). At a minimum, this definition raises numerous factual and legal questions as to what entities might also be covered and whether those entities fall under the Commission’s jurisdiction. Indeed, as discussed below in response to Question 8, the Commission lacks regulatory jurisdiction over many of the services subject to the Proposal.

**1(b) Which types of providers, if any, should be excluded from these requirements because their services are not essential to reliable access to 9-1-1 and the distribution of essential emergency information?**

**COMCAST’S RESPONSE:**

The Commission should begin by asking a more fundamental question: Which types of providers should be excluded because the Commission may not lawfully enforce the Proposal against entities outside of its regulatory jurisdiction or in ways that conflict with federal law? After that threshold analysis, the Commission can determine which entities that are within its regulatory jurisdiction should be included from a public policy perspective.

As Comcast has stated previously, the first priority in an emergency should be to ensure that portions of communications networks that support vital infrastructure can continue to operate,

including wireless towers and associated backhaul routes.<sup>23</sup> More than 80 percent of 911 calls originate from wireless devices, and customers evacuating wildfire areas must rely on mobile wireless devices to stay connected, as do first responders and other emergency service workers.<sup>24</sup> As noted above, displaced Comcast customers can also use apps on their mobile devices to access their accounts and many of the services they enjoy at home. Even if the Proposal could lawfully be applied to wireline VoIP and/or BIAS providers—which it cannot, as explained below in response to Question 8—those wireline, residential services may not be as vital to consumers or first responders during PSPS and wildfire events. In all events, these wireline services cannot operate (for more than a limited period in a few cases) without commercial power at customers’ homes, making backup power for wireline providers’ networks largely ineffective.

## **2. Alternative Applicability**

**Alternatively, D.19-08-025 defined communications service providers into the following categories: (1) facilities-based and non-facilities-based landline providers include 9-1-1/E9-1-1 providers, LifeLine providers, providers of Voice Over Internet Protocol [VoIP], Carriers of Last Resort [COLRs], and other landline providers that do not fall into the aforementioned groups; (2) wireless providers include those that provide access to E9-1-1 and/or LifeLine services; (2A) facilities-based wireless providers; and (2B) non-facilities-based wireless providers, include resellers and mobile virtual network operators [MVNOs].**

**2(a) For purposes of Phase II, should the Commission apply the definition from D.19-08-025, instead of the proposed definition in the Proposal?**

### **COMCAST’S RESPONSE:**

No. While not as vague and ambiguous as the definition in the Proposal, the definition from D.19-08-025 would similarly exceed the Commission’s regulatory authority and conflict with federal law and policy. As explained below in response to Question 8, it was legal error for the

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<sup>23</sup> See Letter from John Gauder, Regional SVP, Comcast California Region, to Marybel Batjer, President, CPUC at 1 (Nov. 18, 2019).

<sup>24</sup> See <https://www.nena.org/page/911Statistics>.

Commission to include interconnected VoIP among the services subject to D.19-08-025. While the Commission may have authority to regulate certain “landline providers” and 911 service providers as public utilities, any application of the Proposal to VoIP providers on the theory that they are heavily regulated “telephone corporations” would conflict with federal law and be subject to preemption.

Furthermore, while it makes sense for the Commission to prioritize maintaining power and connectivity to wireless networks during emergencies, it would make no sense to apply the Proposal to mobile virtual network operators (“MVNOs”). By definition, MVNOs have no network infrastructure of their own and provide service over networks operated by third parties. MVNOs have no control over backup power at cell sites or backhaul routes used by their network providers and could not separately provision backup power for only their own customers. To the extent it is considering network resiliency requirements for wireless carriers, the Commission’s focus should be on facilities-based providers.

### **3. Definition of Resiliency**

**The Proposal defines resiliency as the ability to recover from or adjust easily to adversity or change and is achieved by Providers through utilizing a variety of strategies. The proposal lists an array of strategies and provides definitions for each one.**

- 3(a) Please provide comments on the definition of resiliency in the context of communications service resiliency strategies and their definitions.**
- 3(b) Please comment on any recommendations or modifications that should be considered to the proposed resiliency definition and the resiliency strategies. Please provide a complete discussion for any proposed recommendations or modifications.**

## **COMCAST’S RESPONSE:**

The Proposal sets out a general definition of “resiliency”<sup>25</sup> and lists the following strategies for achieving resiliency: backup power, redundancy, hardening, temporary facilities, communication and coordination, and preparedness planning.<sup>26</sup> The definition is generally accurate, and communications providers frequently use the listed strategies to make their networks more resilient. Indeed, Comcast uses all of them at various times to help support its network and operations.<sup>27</sup> However, as a threshold matter, the purpose of the definition is unclear because it is not used elsewhere in the Proposal. Moreover, if the Commission were to begin to mandate the use of each strategy, the discussion is incomplete because it does not take into account factors that would have to be considered in determining whether each strategy could or should be deployed in particular circumstances, including feasibility, public safety, environmental impacts, permitting challenges, and cost.

In any event, the next section of the Proposal, titled “Backup Power Requirement,” renders the proposed definition of resiliency meaningless. The requirement of 72 hours of “on-site emergency backup power” subsumes all other strategies by imposing a sweeping, one-size-fits-all, statewide definition of what constitutes a “resilient” communications network. Comcast’s response to Question 4(d) offers an alternate approach for how the Commission should address this issue.

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<sup>25</sup> The Proposal defines “resiliency” as “the ability to recover from or adjust easily to adversity or change.” Proposal, Appendix A at 3.

<sup>26</sup> Proposal, Appendix A at 3.

<sup>27</sup> Votaw Declaration ¶ 17.

#### **4. Backup Power Requirement**

**The Proposal recommends that all Providers have:**

**on-site emergency backup power to support all essential communications equipment including but not limited to, switching centers, central offices, wire centers, head ends, network nodes, field cabinets, remote terminals, and cellular sites (or their functional equivalents) necessary to maintain service for a minimum of 72 hours immediately following a power outage. Service must be sufficient to maintain access for all customers to 9-1-1 service, to receive emergency notifications, and to access web browsing for emergency notices.**

**4(a) Please provide comments on the proposed backup power requirement.**

#### **COMCAST'S RESPONSE:**

Comcast appreciates the laudable goal of maintaining communications services to as many Californians as possible during power outages and other emergencies. However, a blanket 72-hour backup power mandate for all communications service providers would be unsafe, impracticable, illegal, and result in more harm than good. Every disaster and PSPS event is different in terms of service impacts, geographic scope, and priorities for restoration of service, and thus affected communications providers must have flexibility to respond to changing facts on the ground. When time is of the essence and resources are limited, it will not benefit first responders, Comcast's customers, or the public for the Commission to mandate impractically excessive backup power capabilities in all places at all times. Moreover, as discussed further below, the effective result of the 72-hour backup power mandate would be to create, rather than mitigate, public safety and environmental risks by requiring large-scale deployment of generators in areas with extreme fire danger.

In response to this question, we will explain the myriad problems arising from the proposed 72-hour backup power mandate, including the following:

- Backup battery systems cannot provide 72 hours of backup power, so Comcast would need to deploy a generator at each power supply. Many of these power supplies are located on utility poles and/or in easements on private property, where the addition of a pad-mounted generator may be prohibited or otherwise infeasible.
- These generators would need to be powered by one of three fossil fuels—natural gas, propane, or diesel—because “clean energy backup power” options are not viable at the scale required to power Comcast’s network.
- Fossil fuel generators raise a host of environmental and practical issues: wildfire ignition risk, permitting challenges, siting challenges, air pollution, public opposition, and fuel storage and transportation risks.
- Portable generators are not a safe or feasible solution for compliance with the proposed mandate.
- The requirement to deploy tens of thousands of fossil fuel generators would come at an astronomical cost, which the Public Utilities Code requires the Commission to weigh against the Proposal’s limited benefits to consumers, and which will hinder broadband deployment in California.

#### *Backup Battery Systems Cannot Provide 72 Hours of Backup Power*

Power supplies vary in size and backup power capability, but a “typical” power supply is configured with three backup batteries that provide power for an average of six hours combined (approximately two hours per battery) depending on the electrical load and other factors, including weather conditions.<sup>28</sup> To achieve 72 hours of backup power for a “typical” power supply, Comcast would need to install an additional 33 backup batteries on average, for a total of 36 batteries at each power supply.<sup>29</sup> But this cannot be done because of technical constraints. Power supplies include a component called an “inverter,” which, when commercial power is lost, converts DC power (supplied by backup batteries) to AC power (to power the network components). An inverter, however, can be connected to, ***at most, 12 batteries***—each providing about two hours of

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<sup>28</sup> This assumes the electronic devices receiving power from the power supply draw a current of six Amperes. Votaw Declaration ¶ 18.

<sup>29</sup> *Id.* ¶ 19.

backup power for a typical power supply. Because of this limitation, for a typical power supply, ***the maximum backup power duration that can be obtained from batteries is only 24 hours.***<sup>30</sup>

*Longer Duration Batteries.* DC batteries with longer life than conventional lead-acid batteries are not readily available on the massive scale contemplated by the Proposal and may pose other risks.<sup>31</sup> For example, while lithium batteries have a longer run time, they can overheat and ignite under certain conditions and, once ignited, can be difficult to extinguish.<sup>32</sup> In addition, although infrequent, lithium batteries are susceptible to thermal runaway, a chain reaction leading to a potentially explosive release of stored energy. Disposal of lithium batteries also entails environmental and fire risk—as demonstrated by reports of discarded lithium batteries causing fires at recycling facilities in California.<sup>33</sup> As a result, ***the use of lithium batteries to protect against PSPS events and wildfires could in fact increase the risk of triggering a wildfire.*** Finally, as explained below in response to Question 5(a), in Comcast’s experience, fuel cell technology (another form of battery power) has not developed to the point that it would be practical or reliable to depend on this technology for backup power in field equipment.

Power supplies can either be attached to a utility pole or mounted on a concrete pad. Slightly more than half of Comcast’s power supplies are pad-mounted and the remainder are pole-mounted. The major pole owners in Comcast’s service area will not allow generators to be

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<sup>30</sup> *Id.* ¶ 20.

<sup>31</sup> *Id.* ¶ 21.

<sup>32</sup> Rohde Declaration ¶ 7.

<sup>33</sup> See, e.g., Anne Stokes, San Mateo County Environmental Health Services, *A Little Battery, A Lot of Harm*, [https://www.smchealth.org/sites/main/files/file-attachments/a\\_little\\_battery\\_a\\_lot\\_of\\_harm.pdf?1556635931](https://www.smchealth.org/sites/main/files/file-attachments/a_little_battery_a_lot_of_harm.pdf?1556635931) (describing a Sept. 2016 fire at the Shoreway Environmental Center’s materials recovery facility in San Carlos that fire investigators attributed to a lithium battery). According to the California Product Stewardship Council, 83% of California waste facilities reported a fire within the past two years, 65% of those fires were started by batteries, and 40% of all battery fires were started by lithium batteries. *Id.*

attached to poles, so they must be mounted on concrete pads. For Comcast's existing (roughly 9,000) pole-mounted power supplies, Comcast would need to either (1) deploy a new generator on a concrete pad near the pole-mounted power supply to support the device or (2) replace the pole-mounted power supply with a new pad-mounted power supply equipped with a generator. For Comcast's existing (roughly 10,000) pad-mounted power supplies, Comcast would need to expand the footprint of the existing power supply to accommodate a new generator. ***Comcast would need to undertake this work at each of its nearly 19,000 power supplies in California.***<sup>34</sup>

In short, even assuming the Proposal would help consumers if it could be implemented—which it would not—72 hours of backup power cannot be achieved using batteries. Consequently, ***Comcast would need to deploy fossil-fueled generators to meet the 72-hour backup power requirement.***<sup>35</sup> However, as discussed in the next section, generators present a host of their own equally serious practical, safety, and environmental problems.

#### Challenges Associated with Fixed, Fossil Fuel Generators in the Field

Given that Comcast (and presumably other communications service providers) cannot achieve 72 hours of backup power across its network using batteries alone, fixed generators would be needed to comply with the Proposal's mandate of 72 hours of "on-site emergency backup power."<sup>36</sup> And because, as discussed below in response to Question 5(a), there are no commercially available "clean energy backup power options" realistically capable of producing backup power at the scale required at many Comcast facilities,<sup>37</sup> these generators will be powered by one of three fossil fuels: diesel fuel, natural gas, or propane.

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<sup>34</sup> Votaw Declaration ¶ 22.

<sup>35</sup> *Id.* ¶ 23.

<sup>36</sup> Proposal, Appendix A at 3.

<sup>37</sup> Proposal, Appendix A at 4.



To date, Comcast has installed fixed diesel generators at its 129 headends and hubs in California, generally in commercial buildings where there are parking lots or other protected places where a fixed generator can be safely located. However, installing fixed diesel generators at the thousands of power supplies in the field would raise numerous safety, environmental, and other concerns and challenges.<sup>38</sup>

Permits are needed from the local government to install generators on concrete pads. These permits can be difficult to obtain in a timely manner and, in some locations, are effectively impossible to obtain.<sup>39</sup> And some cities, such as San Francisco,<sup>40</sup> strictly limit the installation of such “street furniture.”

In most cases, generators would be located in the public rights-of-way—near or adjacent to California homes or businesses. Others would have to be located in easements on private property, which sometimes restrict the range of permitted uses. For example, an existing easement right permitting installation of a power supply on a utility pole may not entitle Comcast to install a concrete pad on the ground below to accommodate a generator. Moreover, property owners routinely oppose permits for pad-mounted equipment for aesthetic reasons, and *Comcast anticipates significant public outcry from the placement of tens of thousands of new generators that would be effectively mandated by the Proposal.*<sup>41</sup>

#### Diesel Fuel Generators at Power Supplies

Of the three types of fossil fuel generators, diesel fuel generators are Comcast’s least preferred option because of their exhaust emissions, siting challenges, wildfire ignition risk, and

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<sup>38</sup> Votaw Declaration ¶ 24.

<sup>39</sup> *Id.* ¶ 25.

<sup>40</sup> San Francisco Public Works Code, Article 27—Surface Mounted Facilities.

<sup>41</sup> Votaw Declaration ¶ 26.

refueling requirements.<sup>42</sup> While propane or natural gas-powered backup generators may help mitigate some of those problems, deployment of those generators at many of Comcast's nearly 19,000 power supplies is not a viable option for reasons discussed below. Thus, *Comcast conceivably would be required to deploy several thousand additional diesel generators to comply with a 72-hour backup power mandate. This would be highly problematic for a number of reasons.*

*Siting Challenges.* Fixed diesel generators must be installed on a concrete pad, usually in the public right-of-way. Given the size of the generator, available space can be a limiting factor. Rugged, hilly terrain also can make siting a challenge.<sup>43</sup>

*Wildfire Ignition Risk.* Diesel-powered generators create a risk of wildfire ignition unless deployed with the necessary safety precautions—precautions that are not always feasible in all locations.<sup>44</sup> For example, these generators must be (i) operated in a location where they will not contact ignitable windblown debris or vegetation; (ii) be placed level on surfaces such as bare ground that contains no combustible vegetation, irrigated/green lawn grass, or hard pavement; and (iii) located in an area in which they can be safely refueled and grounded for fuel transfer.<sup>45</sup> Diesel fuel generators also cannot be operated in confined spaces or below grade areas where hazardous vapors may accumulate and should not be operated within 15 feet of habitable structures, tents, or

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<sup>42</sup> *Id.* ¶ 27.

<sup>43</sup> *Id.* ¶ 28.

<sup>44</sup> Rohde Declaration ¶ 8.

<sup>45</sup> *Id.*

breathing air induction ports.<sup>46</sup> Vegetation maintenance around emergency generators is an ongoing challenge, especially at remote, unstaffed sites.<sup>47</sup>

A mandate that requires the use of any type of generators in areas most susceptible to fire, during the driest time of the year in California, is particularly unwise. Indeed, the electric investor-owned utilities were given the authority to de-energize their networks during high wind events specifically to lower the risk of wildfire ignition. *Addressing the problems created by this de-energization by requiring the installation of a large number of generators throughout high fire-threat areas would have precisely the opposite effect, thus entirely defeating the purpose of the de-energization authorization.*

*Fuel Storage and Transportation Risks.* There are also safety issues associated with stockpiling and transporting large amounts of fuel to hundreds or thousands of locations throughout northern and central California.<sup>48</sup> The scale of this type of undertaking would be enormous, requiring a fleet of diesel fuel trucks to travel to each generator location on a near-continuous basis to serve the fuel demand.<sup>49</sup> Diesel can be stored only six to 12 months under ideal conditions. Thus, Comcast will need to service these generators and remove and replace stored, unused fuel and then dispose of the unused fuel.<sup>50</sup> Comcast has significant concerns about the fire risk (and risk to its personnel) of having this number of trucks traveling to remote locations,

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<sup>46</sup> Rohde Declaration ¶ 9.

<sup>47</sup> Votaw Declaration ¶ 29.

<sup>48</sup> The tank associated with a typical 75 HP diesel generator would allow operation for up to 24 hours at 100 percent load. Thus, Comcast would need to refuel its diesel fuel generators at least two times to achieve 72 hours of backup power. *Id.* ¶ 30.

<sup>49</sup> *Id.* ¶ 31.

<sup>50</sup> *Id.* ¶ 32.

each surrounded by dry vegetation during and outside of PSPS events,<sup>51</sup> which are by definition classified as high fire risk events.

*Air Pollution.* The use of thousands of emergency backup diesel generators during a PSPS event poses potentially significant air quality concerns,<sup>52</sup> as does the operation of the fleet of trucks needed for refueling. *The health risks posed by air emissions from statewide continuous operation of diesel-fired generators during an emergency PSPS event could exceed allowable thresholds for acceptable health risks defined by the California Air Resources Board (“CARB”) and the Office of Environmental Health Hazard Assessment (“OEHHA”).*<sup>53</sup> CARB adopted a Diesel Risk Reduction Plan that identifies PM from diesel-fueled engines as a toxic air contaminant (“TAC”) and sets as a goal an 85 percent reduction in diesel PM emissions.<sup>54</sup> Diesel PM emissions are estimated to be responsible for about 70 percent of the total risk posed by air toxics in ambient air.<sup>55</sup>

*Conflict with Environmental Laws.* California’s State Implementation Plan (“SIP”), pursuant to the federal Clean Air Act (“CAA”), calls for the elimination of diesel generators in

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<sup>51</sup> Vehicles have been responsible for the ignition of multiple wildfires in California. For example, the U.S. Forest Service determined that the 2018 Ferguson Fire near Yosemite National Park started when superheated pieces of a vehicle’s catalytic converter contacted dry, roadside vegetation. See <https://wildfiretoday.com/2018/10/06/officials-release-the-cause-of-the-ferguson-fire-near-yosemite/>. Similarly, CAL FIRE concluded that the 2018 Carr Fire in Shasta and Trinity counties was ignited when a tire on a trailer blew, causing its rim to scrape the asphalt and ignite sparks, resulting in one of the state’s largest and most destructive wildfires on record. See <https://www.cnn.com/2018/08/04/us/carr-fire-week-wrap/index.html>.

<sup>52</sup> Diesel generators emit exhaust that includes nitrogen oxides (“NOx”), particulate matter (“PM”), and greenhouse gases (“GHG”). NOx impacts pose a particular concern, given the short-term (one-hour) average of the National Ambient Air Quality Standard (“NAAQS”) for this pollutant. Branoff Declaration ¶ 6.

<sup>53</sup> The thresholds for public notification and risk reduction are outlined in the 1987 Air Toxics “Hot Spots” Information and Assessment Act (AB 2588) and associated implementation guidance. *Id.* ¶ 7.

<sup>54</sup> *Id.* ¶ 8, citing <https://ww3.arb.ca.gov/diesel/documents/rrpapp.htm>.

<sup>55</sup> *Id.* ¶ 9, citing CARB, Mobile Source Strategy (May 2016) at 27, <https://ww3.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf>.

many areas.<sup>56</sup> The Proposal's effective requirement that thousands of new diesel generators be installed is therefore not only infeasible but also contrary to state and federal environmental laws.

The Proposal is in direct conflict with standards in California's federally-approved SIP. The South Coast Air Quality Management District's ("SCAQMD")<sup>57</sup> 2016 air quality management plan ("AQMP") (which forms part of California's federally-approved SIP)<sup>58</sup> sets forth measures to eliminate the use of diesel generators, including a measure to "reduce NOx emissions from traditional combustion sources, such as diesel back-up generators, by replacing older, high-emitting equipment with new, lower or zero-emitting equipment."<sup>59</sup> The AQMP calls for diesel generators and other traditional combustion sources to be replaced by "electrification, battery storage, alternative process changes, efficiency measures, or fuel cells for [combined heat and power]."<sup>60</sup> The AQMP describes SCAQMD's plans to undertake rulemakings to require zero emission equipment where cost-effective and feasible and near-zero emission equipment in all

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<sup>56</sup> The United States Environmental Protection Agency ("EPA") has established National Ambient Air Quality Standards ("NAAQS") setting the maximum permissible concentrations of criteria pollutants in ambient air. 42 U.S.C. § 7409. EPA has set NAAQS for pollutants including particulate matter ("PM") and nitrogen dioxide ("NO<sub>2</sub>"). EPA designates areas that fail to attain the NAAQS as "nonattainment areas." 42 U.S.C. § 7407(d)(1). To ensure compliance with the NAAQS, each state must submit to EPA a SIP that meets certain substantive requirements. *See* 42 U.S.C. § 7410. Specifically, each state is mandated under § 110(a) of the Act, 42 U.S.C. § 7410(a), to adopt a "plan which provides for implementation, maintenance, and enforcement" of the NAAQS and to submit its SIP to EPA for approval. Each SIP must include enforceable emission limitations and other control measures necessary to attain the NAAQS, as well as timetables for compliance. 42 U.S.C. § 7410(a)(2)(A). Branoff Declaration ¶ 10.

<sup>57</sup> Although Comcast does not operate in the SCAQMD, the issues discussed in this paragraph apply to other communications service providers who provide service in that region.

<sup>58</sup> Branoff Declaration ¶ 11, citing SCAQMD letter to CARB dated March 10, 2017 re the 2016 AQMP, <https://ww3.arb.ca.gov/planning/sip/planarea/scabsip/2016scletter.pdf>.

<sup>59</sup> *Id.*, citing SCAQMD 2016 AQMP at 4-13.

<sup>60</sup> *Id.* ¶ 12, citing SCAQMD 2016 AQMP at 4-14.

other applications.<sup>61</sup> As such, it would be infeasible to install diesel generators that the SCAQMD is in the process of prohibiting and could create conflicts with the CAA.

Similarly, the Bay Area Air Quality Management District's ("BAAQMD") 2017 Clean Air Plan ("CAP") (the BAAQMD's overarching blueprint for regulating air emissions) sets as one of its "four key priorities" decreasing demand for diesel and other fossil fuels.<sup>62</sup> Consistent with CARB's findings, the BAAQMD's CAP identifies diesel PM as the most significant source of carcinogenic risk, as compared to all other air pollutants: "[A] small subset of TACs account for approximately 95 percent of the total cancer risk from air pollutants in the Bay Area, [and] diesel PM in itself greatly dominates the cancer risk from TACs ..."<sup>63</sup> The CAP contains measures that specifically seek to reduce emissions from diesel backup generators.<sup>64</sup>

The Proposal could cause or contribute to an exceedance of the NAAQS under the CAA. The Proposal might require the installation of thousands of new diesel generators, which would result in highly material air quality impacts.<sup>65</sup> CARB explained to local air districts that it is not appropriate to use diesel generators as a backup to the loss of grid power:

Diesel-fueled engines are a significant source of emissions of oxides of nitrogen (NOx) and diesel particulate matter which is a toxic air contaminant. Diesel engine emissions are orders of magnitude greater than a gas-fired plant in terms of pollution produced per megawatt of electricity generated and their routine use can significantly elevate health risks experienced by nearby residents or workers.<sup>66</sup>

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<sup>61</sup> *Id.*

<sup>62</sup> *Id.* ¶ 13, citing BAAQMD 2017 CAP at E2-5, [https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a\\_-proposed-final-cap-vol-1-pdf.pdf?la=en](https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en).

<sup>63</sup> *Id.* ¶ 14, citing BAAQMD 2017 CAP at 2/21.

<sup>64</sup> *Id.*, citing BAAQMD CAP measure SS-32.

<sup>65</sup> *Id.* ¶ 15.

<sup>66</sup> See California Energy Commission Public Interest Energy Research Program, Air Quality Implication of Backup Generators in California at 28, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.386.2676&rep=rep1&type=pdf>.

A study performed for the California Energy Commission by the University of California, Riverside of the impacts of the potential widespread use in California of diesel generators to replace backup power (as happened during the 2001 California energy crisis) found that “increased NO<sub>x</sub> emissions will enhance production of ozone and secondary PM and will increase the probability of violations of the NAAQS for ozone and PM.”<sup>67</sup> The study concluded that diesel engines “have the potential to significantly affect California’s ability to meet its SIP requirements and achieve the NAAQS for NO<sub>2</sub>, ozone, PM<sub>10</sub> and PM<sub>2.5</sub>.”<sup>68</sup>

*Other Environmental Impacts.* Other environmental impacts from the installation and use of diesel generators could be significant.

- The installation of new generator pads involves ground disturbance, raising the possibility of erosion and runoff issues to protected waterways on federal lands, as well as possible wetlands or habitat issues, and archaeological, historic, or tribal cultural resource impacts.<sup>69</sup>
- Fuel storage also poses the risk of leaks, introducing a possible pathway for releases into soil and nearby waterways.<sup>70</sup>
- Diesel generators are often loud, introducing potential compliance issues with local noise ordinances.<sup>71</sup>

*Permitting Challenges.* There also are a host of issues and challenges associated with obtaining permits for fixed diesel generators, including the following:

- Fixed Generator Permit. Installation of new stationary diesel generators rated 50 HP and above requires an air permit from one of California’s Air Districts (*i.e.*, Air Pollution Control District or Air Quality Management District, depending on the

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<sup>67</sup> *Id.* at 39.

<sup>68</sup> *Id.* at 30. Note that PM<sub>10</sub> is particulate matter of 10 micrometers in diameter or less, and PM<sub>2.5</sub> is particulate matter of 2.5 micrometers in diameter or less.

<sup>69</sup> Votaw Declaration ¶ 33.

<sup>70</sup> *Id.* ¶ 34.

<sup>71</sup> Branoff Declaration ¶ 16.

jurisdiction).<sup>72</sup> Comcast's service area covers 16 of California's 35 Air Districts, each with its own air quality regulations and permitting standards.<sup>73</sup>

- Spill Control Plans. Depending on the amount of fuel stored at the site, new generators may require development of site-specific Spill Prevention, Control, and Countermeasure ("SPCC") plans prior to startup.<sup>74</sup>
- EPCRA and HMBP Requirements. New generators would trigger reporting requirements under the Emergency Planning and Community Right-to-Know Act ("EPCRA") Tier II program. In California, facilities comply with this program by creating (or revising) a Hazardous Materials Business Plan ("HMBP") for each site.<sup>75</sup>
- Fire Department Permits. Local fire departments typically have their own permit requirements, which vary greatly by city and county throughout California.<sup>76</sup>
- Zoning and Noise Permits. Backup generators often require the approval of the local zoning board, and could (depending on the scope of the Commission's environmental review of these regulations and type of local permit required) trigger the need for a site-specific CEQA review. Noise permits also may be required.<sup>77</sup>

Moreover, given the noise and emissions, diesel generators likely will be extremely difficult to permit (especially in residential neighborhoods) and will generate significant neighborhood opposition. *Even in the best-case scenario, obtaining multiple permits for hundreds or thousands of generators could take years.* In some cases, it simply will not be

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<sup>72</sup> Obtaining an air permit for new power generation can be a time-consuming process, involving demonstration of compliance with a number of requirements, including Best Available Control Technology ("BACT"), the purchase of emissions offsets, and performance of a Health Risk Assessment ("HRA") for diesel particulate matter ("DPM"). Branoff Declaration ¶ 17.

<sup>73</sup> Votaw Declaration ¶ 35.

<sup>74</sup> SPCC plans are designed to limit the impact of a potential spill of liquid petroleum products (including diesel fuel). These plans are required to include an inventory of storage containers, a description of the facility and its drainage features, spill prevention and response equipment and procedures, container inspection protocols and schedules, and employee training. Branoff Declaration ¶ 18.

<sup>75</sup> HMBP plans are required to be submitted to the local Certified Unified Program Agency ("CUPA") within 30 days of on-site storage of new materials or materials in higher quantities than previously envisioned. HMBP submittals must include a hazardous materials inventory, a chemical storage map, an employee training plan, and a consolidated emergency response and contingency plan. *Id.* ¶ 19.

<sup>76</sup> Votaw Declaration ¶ 36.

<sup>77</sup> *Id.* ¶ 37.



possible to obtain permits at all.<sup>78</sup> As noted above, easement restrictions will further limit deployment of all types of generators.

*PSPS Events May Not Qualify as Emergencies.* Emergency diesel generators are restricted by local permits, as well as state and federal regulations, to a limited number of hours of non-emergency operation under all permits and regulations restricting emergency generator usage.<sup>79</sup> Emergency operation is limited to very specific circumstances.<sup>80</sup> But there are serious unresolved questions about whether operating a generator in response to a PSPS event would qualify as an “emergency.”<sup>81</sup> To date, only one PSPS event has been declared an emergency, which only covered compliance with state, but not federal, requirements.<sup>82</sup> Communications service providers could face consequences for operating generators permitted for emergencies during PSPS events that are not declared emergencies by one or more air quality agencies.

#### Natural Gas and Propane Generators

Backup generators also can be powered by natural gas or propane. These products are commercially available, but to date Comcast has made only very limited use of them in California.<sup>83</sup> A picture of a power supply equipped with a backup propane generator is below. This device is 44 inches high by 78 inches (or 6½ feet) wide by 24 inches deep.

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<sup>78</sup> *Id.* ¶ 38.

<sup>79</sup> Branoff Declaration ¶ 20.

<sup>80</sup> The NSPS/NESHAP has strict limits on what is considered an “emergency,” and even those limits were further tightened under the recent court case that overturned exemptions for pending power failures. *See Delaware Dep’t of Nat. Res. & Envtl. Control v. EPA*, 785 F.3d 1 (D.C. Cir. 2015).

<sup>81</sup> Branoff Declaration ¶ 20.

<sup>82</sup> On October 27, 2019, Gov. Newsom issued a statewide Emergency Proclamation “due to ... extreme fire weather conditions” that resulted in PSPS events in portions of Comcast’s service territory. *See* <https://www.gov.ca.gov/wp-content/uploads/2019/10/2019-17-Fire-weather-conditions-State-of-Emergency-Signed-10.27.19.pdf>.

<sup>83</sup> Votaw Declaration ¶ 39.



Although these generators have lower air emissions as compared to their diesel-fueled counterparts, they present some of the same problems and concerns as diesel generators and also other significant challenges.<sup>84</sup>

First, as a public safety concern, *propane tanks and natural gas lines are highly dangerous when wildfire engulfs the area in which they are located.*<sup>85</sup> In addition, natural gas generators can only be deployed in places with access to gas utilities' distribution lines, and natural gas may not be available during emergencies (*e.g.*, earthquakes, mudslides, or wildfires) or PSPS events.<sup>86</sup> For safety reasons, the major pole owners in Comcast's service area will not allow propane or natural gas powered generators to be attached to poles, so they must be mounted on

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<sup>84</sup> *Id.* ¶ 40.

<sup>85</sup> *Id.* ¶ 41.

<sup>86</sup> Votaw Declaration ¶ 42.

concrete pads. As a result, these generators present siting and permitting challenges and delays similar to those described above for diesel generators.<sup>87</sup>

Natural gas and propane generators also face significant community opposition due to their size, aesthetics, noise, and safety concerns.<sup>88</sup> These concerns are not surprising given that the device shown in the picture above is 6½ feet long and nearly four feet tall. Cox Communications described the challenges it faced when it previously attempted to deploy natural gas and propane generators in California:

Cox had planned to deploy far more of these fixed natural gas generators. However, because of permitting challenges and complaints from local government officials and residents regarding, the size, and sometimes noise, of the units, Cox ceased installing any new fixed natural gas generators in the early 2000s. Around the same time, Cox deployed 83 fixed propane generators in areas where natural gas was not available. Similar to the fixed natural gas generators, permitting became a challenge, along with complaints about their size, noise and other aspects of the generators. We removed the propane generators from our network as a result of the challenges discussed above.<sup>89</sup>

*Portable Generators Are Not a Safe or Feasible Solution for Compliance with the Mandate*

The Proposal requires 72 hours of “*on-site*” emergency backup power,<sup>90</sup> so it is unclear whether Comcast could deploy portable, gasoline-powered generators temporarily in locations that have lost or are expected to lose commercial power in order to comply with the proposed mandate. In any event, deploying portable generators at hundreds or thousands of power supplies in the field when a PSPS event occurs raises so many significant safety, environmental, and other concerns and challenges as to make this option a non-starter.

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<sup>87</sup> *Id.* ¶ 43.

<sup>88</sup> *Id.* ¶ 44.

<sup>89</sup> R.18-03-011, Letter to Pres. Batjer from Cox Communications’ Sam Attisha, Attachment 1 at 2 (Nov. 18, 2019).

<sup>90</sup> Proposal, Appendix A at 3 (emphasis added).

Risk of Wildfire Ignition. As with fixed diesel generators, portable generators create a risk of wildfire ignition if deployed near ignitable debris or vegetation.<sup>91</sup> Bringing these generators into areas where wildfire risk is already extreme would only further increase the risk of a wildfire.<sup>92</sup> This risk is not theoretical. *The U.S. Consumer Product Safety Commission cited 172 incidents of fire starts from portable generators between 2004 and 2014.*<sup>93</sup> The San Francisco Chronicle has also reported several fires from homeowner use of generators as alternate power sources during PSPS events, including a 2017 generator-ignited wildfire in Santa Cruz County that burned 28 structures and nearly 7,700 acres.<sup>94</sup> Portable generators also pose a unique risk in that an unattended generator placed in a safe location by the operator can be moved by a homeowner, children, or someone else to an unsafe location relatively easily, increasing the risk of wildfire ignition and presenting personal safety hazards. Moreover, there is no way to ensure during windy conditions that debris will not blow into or near the generator, so it is problematic to leave them unstaffed.<sup>95</sup> In this regard, Cox noted in its Nov. 18, 2019 letter to Pres. Batjer that:

in Tier 2 Elevated areas during Red Flag events, Cox has made the determination that it must assign trained personnel to remain with deployed generators to help ensure that a fire may not start from such generators given the risk these areas present. However, if conditions are unsafe for our employees to remain with the generator, Cox will not deploy generators or will cease operation of them in Tier 2 areas.

Refueling Risks. In order to provide 72 hours of power, a typical portable generator needs to be refueled 10 to 12 times, which creates a worker safety risk.<sup>96</sup> The last thing the Commission should want to encourage during a PSPS event or other high fire-threat condition is many fuel trucks traveling into the impacted areas. Vehicles operating during high fire-threat conditions pose a risk of igniting a wildfire.<sup>97</sup> Moreover, the refueling

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<sup>91</sup> Rohde Declaration ¶ 10.

<sup>92</sup> *Id.*

<sup>93</sup> See U.S. Consumer Product Safety Commission, Supplemental Memos Regarding Some of the Hazards Associated with Engine-Driven Generators, 2004-2014 (2015), at 38, <https://www.cpsc.gov/s3fs-public/EpiMemosSupportGeneratorNPRpackage.pdf?QZA6fniZ84gEnmK6VArQVniG9WfyWqqY>.

<sup>94</sup> See <https://www.sfchronicle.com/california-wildfires/article/During-PG-E-outages-generators-caused-fires-14833601.php>. The National Fire Protection Association (“NFPA”) details a number of the risks of safety hazards arising from portable generators in its Standard 110, titled “Emergency and Standby Power.” The U.S. Department of Agriculture Forest Service also requires fire safety ratings and fire prevention practices for generator use in National Forests. See U.S. Forest Service Standard 5100-1, 36 C.F.R. § 261.52.

<sup>95</sup> Rohde Declaration ¶ 11.

<sup>96</sup> *Id.* ¶ 12.

<sup>97</sup> All internal combustion engines produce exhaust particles that are predominantly carbon with contaminants. These particles originate from deposits formed on the internal surfaces of an engine or exhaust system. Exhaust gases and carbon particles may be expelled from the engine block at temperatures exceeding 3,000° F. Exhaust system surfaces can reach temperatures of 1,000° F. Wildland

process also presents a safety hazard in terms of fire ignition risk.<sup>98</sup> National Fire Protection Association (“NFPA”) statistics indicate that a leading factor in generator fires is spilled fuel during refilling.<sup>99</sup> In addition, due to the flammable nature of fuels, static electricity discharge must be carefully managed as an ignition source, including implementation of grounding operations that may not be possible in all locations needed.<sup>100</sup>

Fuel Storage Risks. There also are safety issues associated with stockpiling large amounts of fuel at multiple locations throughout northern and central California. Fuel storage facilities also require special permitting and may pose a risk of adverse environmental impacts including a risk of leaks and releases into groundwater.

Security Risks. There are security issues pertaining to theft of portable equipment. In Comcast’s experience, portable generators have been frequent targets of theft during extended power outages.<sup>101</sup>

For the reasons described above, even if the Proposal would allow the use of portable generators, the logistical challenges and safety risks associated with deploying and refueling portable backup generators to provide 72 hours of ubiquitous backup power make this solution infeasible.

*Fixed, Fossil Fuel Generators Have Enormous Financial Costs that the Commission Must Weigh Against the Limited Benefits of its Proposal*

Setting aside purely for argument’s sake the overwhelming safety, environmental, and permitting concerns associated with deploying generators on a massive scale, ***Comcast anticipates that, in order to comply with the Proposal’s 72-hour backup power mandate, it would have to***

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fuels, however, can ignite at temperatures of only 400 to 500° F. Therefore, fires can be started by wildland fuels encountering hot exhaust gases or from contact with the hot surfaces of the exhaust system. Rohde Declaration ¶ 13.

<sup>98</sup> When a generator operates, the surfaces of the engine and exhaust system can have temperatures that exceed the auto-ignition temperature of the fluids used in the generator. When those fluids (e.g., fuel or engine oil) leak or spray onto hot surfaces, they can cause a fire that can be very difficult to extinguish. Rohde Declaration ¶ 14. In this regard, 34 of the 186 fire starts cited in the U.S. Consumer Product Safety Commission report referenced above were related to refueling.

<sup>99</sup> Rohde Declaration ¶ 15, citing NFPA, Hall, John, *Non-Home Structure Fires by Equipment Involved in Ignition* (2013).

<sup>100</sup> *Id.* ¶ 16.

<sup>101</sup> Votaw Declaration ¶ 45.

*install a fossil fuel-powered generator at each of its nearly 19,000 power supplies in California.*<sup>102</sup> The installed cost of each generator will vary, but Comcast estimates that the total cost would approximately [BEGIN CONFIDENTIAL] REDACTED<sup>103</sup> [END CONFIDENTIAL] This total cost represents the installed cost of the generators at Comcast’s nearly 19,000 power supplies. These generators would need to be powered by one of three fossil fuels—natural gas, propane, or diesel—because “clean energy backup power” options are not viable at the scale required to power Comcast’s network. Assuming, purely for argument’s sake that “clean energy” power alternatives were viable (which, as Comcast has established, they are not), the cost for such technologies would be significantly larger. Even for a large, well-capitalized company such as Comcast, this is an astronomical sum for one region, *especially when it would produce little or no benefit for Californians, who instead would bear its cost, safety risks, and disruption to their communities.*

Public Util. Code § 321.1 requires that the Commission must “assess the consequences of its decisions, *including economic effects*”<sup>104</sup> and “shall take all necessary and appropriate actions to assess the economic effects of its decisions and to assess and mitigate the impacts of its decisions on customer, public, and employee safety.”<sup>105</sup> The California Legislature specifically commanded that, in developing performance reliability standards for communications service providers, the CPUC “shall not implement standards ... unless it determines that the benefits of the standards

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<sup>102</sup> Votaw Declaration ¶ 46.

<sup>103</sup> This estimate is based on the installation of a natural gas, propane, or diesel generator at each of Comcast’s nearly 19,000 power supplies at a cost of approximately [BEGIN CONFIDENTIAL] REDACTED [END CONFIDENTIAL] per location. *Id.* ¶ 47.

<sup>104</sup> Pub. Util. Code § 321.1(a) (emphasis added).

<sup>105</sup> *Id.* § 321.1(b).

exceed the costs.”<sup>106</sup> The Proposal wholly fails to consider the enormous costs associated with its proposed mandate, notwithstanding these express statutory requirements.

In that regard, the Proposal suffers from many of the same flaws as an FCC attempt more than a decade ago to adopt backup power requirements for communications providers that the agency ultimately abandoned after disapproval from the Office of Management and Budget (“OMB”).<sup>107</sup> There, OMB found that the FCC failed to “demonstrat[e] the practical utility” of the associated information collection in light of “the expected volume of submitted reports, the size of the staff assigned to analyze the information, and the non-standardized format the information will be submitted.”<sup>108</sup> The Proposal’s various compliance and reporting mandates would raise similar concerns, particularly the extent that a flood of waiver requests may be necessary where compliance is simply impossible, as discussed below. Notably, the Proposal’s 72-hour backup power mandate for an even broader range of communications service provider facilities goes *well beyond anything required under the FCC rules that OMB disapproved as excessively burdensome*.

#### The Proposal Will Hinder Broadband Deployment in California

The backup power mandate, if adopted, will force Comcast and other broadband providers to divert scarce resources away from broadband deployment and ongoing network resiliency efforts that would truly benefit consumers for the construction of a new backup power network

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<sup>106</sup> *Id.* § 2892.1(d).

<sup>107</sup> In 2007, the FCC attempted to adopt requirements for 24 hours of backup power in telephone central offices and 8 hours at cell sites, but these rules never became effective following legal challenges and disapproval by OMB. *See Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, Order, 22 FCC Rcd. 10541 ¶ 77 (2007); *Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, Order on Reconsideration, 22 FCC Rcd. 18013 ¶¶ 23-26 (2007).

<sup>108</sup> Executive Office of the President, Notice of Office of Mgmt. & Budget Action (2008), [http://www.reginfo.gov/public/do/PRAViewICR?ref\\_nbr=200802-3060-019](http://www.reginfo.gov/public/do/PRAViewICR?ref_nbr=200802-3060-019).

that rarely will be used, will be ineffective even when used, and will *not* benefit consumers—instead, actually harming them and their communities. As such, the proposed mandate contravenes the Legislative policy found in Pub. Util. Code § 709 to promote broadband deployment.<sup>109</sup>

Finally, Comcast is making extraordinary efforts to meet the challenges posed by the COVID-19 pandemic. The entire company, including its front line-crews, is employed in this effort.<sup>110</sup> Now is not the time to divert precious resources away from this emergency response and toward engineering, siting, permitting, and dealing with the public fallout and consumer uproar that would be associated with placing so many unsafe, unsightly, and unhelpful backup power facilities throughout their neighborhoods.

#### **4(b) How should “outage” be defined?**

##### **COMCAST’S RESPONSE:**

It is unclear whether a definition of “outage” serves any purpose in this proceeding. The Proposal does not rely on the term in any substantive way and seems to contemplate activation of backup power immediately upon the loss of commercial power. It should be noted, however, that the Proposal, fails to recognize the enormous differences between traditional power “outages” and PSPS events. Comcast designed and engineered its network for resilient operation during

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<sup>109</sup> Although Pub. Util. Code § 709 does not provide the Commission with any regulatory authority, it does provide policy guidance:

The Legislature hereby finds and declares that the policies for telecommunications in California are as follows: (a) To continue our universal service commitment by assuring the continued affordability and *widespread availability of high-quality telecommunications services to all Californians*; ... (c) To encourage the development and deployment of new technologies ... in a way that efficiently meets consumer need and encourages the *ubiquitous availability* of a wide choice of state-of-the-art services; ... (e) To promote economic growth, job creation, and the substantial social benefits that will result from the rapid implementation of advanced information and communications technologies by *adequate long-term investment in the necessary infrastructure*. (Emphasis added).

<sup>110</sup> Votaw Declaration ¶ 48.



traditional power outages, which generally are limited in scope and are associated with storms or isolated damage to the power grid from construction, vehicle accidents, etc., and typically last for hours, not days.<sup>111</sup> Because of their limited scope, these outages may not result in widespread loss of power to customer homes, and Comcast strives to keep its service operating wherever possible. PSPS events are altogether different. They are affirmative acts performed by investor-owned utilities that can be extremely broad in scope and extended in duration.<sup>112</sup> PSPS events also are a new phenomenon—they have been sanctioned by the Commission in Comcast’s service area for less than two years.<sup>113</sup> The Proposal’s failure to acknowledge these differences results in unsound policy—a requirement for communications service providers to maintain backup power to fully replace the commercial power supply during high fire threat conditions.

**4(c) Should the length of the 72-hour backup power requirement be shorter, longer or indefinite? Please provide an analysis to support your recommendation**

**COMCAST’S RESPONSE:**

There is no rational basis or record evidence for a statewide mandate of 72 hours of backup power covering essentially all communications service providers’ networks in California. The proposed mandate is arbitrary, overbroad in scope, unsafe and unhealthy for consumers and communities, and ultimately ineffective. So this requirement definitely should not be longer.

*The 72-hour backup power mandate is arbitrary and inconsistent with the Commission’s prior findings.* The Proposal does not explain why 72 hours is an appropriate resiliency standard.

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<sup>111</sup> Votaw Declaration ¶ 49.

<sup>112</sup> For example, PG&E’s PSPS event of October 9 - 12, 2019 spanned 35 counties and nearly four days, while its larger PSPS event of October 23 – November 1, 2019 covered 38 counties and lasted more than a week. See [https://www.pge.com/pge\\_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/PSPS-Report-Letter-10.09.19-amend-2.pdf](https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/PSPS-Report-Letter-10.09.19-amend-2.pdf) and [https://www.pge.com/pge\\_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/PSPS-Report-Letter-10.26.19-amend.pdf](https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/PSPS-Report-Letter-10.26.19-amend.pdf).

<sup>113</sup> See Resolution ESRB-8 (issued July 16, 2018).

Instead, the Proposal cites a statement made at the November 20, 2019 prehearing conference by Paul Troxel, a Cal OES official.<sup>114</sup> Mr. Troxel, however, simply opined that 72 hours is an appropriate resiliency standard but did not provide any evidence or explanation for this contention.<sup>115</sup> Thus, at this point in the proceeding, *there is no evidentiary basis in the record for a 72-hour backup power mandate*. Instead, such a broad and extended backup power requirement would contradict multiple prior Commission findings and statements. In 2008, the Commission gave detailed consideration to communications backup power issues as directed by the Legislature under Assembly Bill 2393.<sup>116</sup> The Commission found that “California should not separately establish backup power requirements for central offices, cell sites, remote switches and digital loop carrier system remote terminals” and instead should monitor and participate in the development of federal standards.<sup>117</sup> With respect to network backup power, the Commission found that “industry design standards” typically recommend “24 hours of fuel storage at the central office facilities with contingency plans for rapid resupply of fuel as needed” and “[f]our hours (minimum) of backup power at remote terminals with an objective of eight hours at critical sites.”<sup>118</sup> At the same time, the Commission acknowledged that “[t]here may be mitigating circumstances that prevent achieving these design objectives,” and that “[r]egulatory compliance conflicts can easily arise with Federal Environmental Protection Agency rules, local fire codes, hazardous materials

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<sup>114</sup> See Proposal, Appendix A at 3, n. 3 (citing Order Instituting Rulemaking Regarding Emergency Disaster Relief Program to Support California Residents (R.18-03-011) November 20, 2019 Workshop Transcript at 29, lines 1-6.). The Proposal erroneously characterizes the November 20, 2019 prehearing conference as a “workshop.”

<sup>115</sup> Mr. Troxel stated: “Cal OES recommends that the service providers look at long-term solutions that is necessary to ensure communications facilities have a minimum of 8 hours battery backup and permanent generator backup with a minimum of 72 hours of onsite fuel storage.”

<sup>116</sup> See D.08-09-014.

<sup>117</sup> *Id.* at 4.

<sup>118</sup> *Id.* at 37.

loadings and building safety rules.”<sup>119</sup> With respect to customer premises equipment, the Commission determined that “eight hours of backup is more than sufficient for the vast majority of ... power outages” and that “since most consumers have multiple telecommunications means available to them (e.g., both wireline service and cell phone service) it is less likely that all of their telecommunications services will be lost simultaneously.”<sup>120</sup> ***The Proposal does not even attempt to reconcile these past Commission findings with its call for a 72-hour backup power mandate covering essentially all communications service provider facilities while ignoring the impact of power outages at customers’ homes.***

*The 72-hour backup power mandate is overbroad in scope.* The proposed 72-hour backup power mandate would apply throughout all of California—including areas where the likelihood of a wildfire or a PSPS event is small. In R.15-05-006, *Rulemaking to Develop and Adopt Fire-Threat Maps and Fire-Safety Regulations*, the Commission carefully developed new fire-threat maps and identified High Fire-Threat Districts in which wildfire risk is “elevated” (Tier 2) or “extreme” (Tier 3).<sup>121</sup> The Proposal inexplicably ignores this body of highly relevant information and treats the entire land mass of California uniformly, despite the fact that enormous portions of California fall outside of the identified High Fire-Threat Districts, and in which the need for 72 hours of backup power is significantly attenuated. As such, the 72-hour backup power mandate is grossly overbroad.

*A 72-hour backup power mandate ultimately would be ineffective.* Many consumer devices (e.g., modems, Wi-Fi routers, gateways, VoIP equipment, cordless phones, and desktop

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<sup>119</sup> *Id.*

<sup>120</sup> *Id.* at 16.

<sup>121</sup> *See* D.17-12-024.

computers) do not have backup batteries and are unlikely to have a reliable source of backup power regardless of any mandate for service provider networks. Widespread disasters or PSPS events that disrupt utility power to Comcast facilities are also likely to cut off power to many—or potentially all—customers’ homes in the same area. Even where a wildfire or PSPS event affects only part of the geographic area served by a larger Comcast facility (e.g., a headend or hub), affected customers will not have access to 911, web browsing, or other services contemplated by the Proposal regardless of Comcast’s efforts to maintain power at its own facilities. It also bears noting that any customers in the same geographic area who do *not* lose power would also see little benefit from the Proposal because the same utility power available at their homes would likely continue powering Comcast’s network without use of backup power. Consequently, the massive deployment of generators required to provide 72 hours of network backup power at all points throughout Comcast’s network would more often than not be wasted effort because customers still would not have access to these services during large-scale power outages.

*Reducing the amount of backup time cannot save the Proposal. Even if the 72-hour period were shortened, the Proposal would still be unhelpful for consumers and unjustifiable for many of the reasons described above. The vast majority of consumers lack power in their homes and therefore would not benefit from such a revised mandate, and many of the same safety, environmental, permitting, and other concerns would still apply.*

**4(d) What other backup power requirements or components should the Commission consider? Please provide an analysis to support your discussion of any additional requirements or components.**

**COMCAST’S RESPONSE:**

For the reasons discussed above, the Commission should not adopt one-size-fits-all network resiliency rules. Moreover, the proposed 72-hour backup power mandate is unsafe, environmentally unsound, arbitrary, overbroad in scope, unhealthy for consumers, and ultimately

ineffective. A better approach would be to allow communications service providers to adopt individualized approaches for their networks that optimize outcomes for their customers, communities, and employees. However, putting aside for the moment jurisdictional questions, if the Commission ultimately decides to adopt network resiliency rules, it should adopt a set of rules that is appropriate for each class of provider. Additionally, those rules should be narrowly tailored to “aid first responders” and “allow the public to communicate in a reliable manner during disasters and PSPS events.”<sup>122</sup> As explained below, the following two-part alternate network resiliency proposal meets these objectives *for wireline providers*.<sup>123</sup>

(1) *Wireline Communications Providers Would Deliver Uninterrupted Service to Fire Stations, Police Stations, Hospitals and Emergency Command and Dispatch Centers During an Outage.*

It is important to ensure that first responders and other critical facilities have access to reliable service during an emergency. Therefore, notwithstanding limits on the Commission’s regulatory jurisdiction, Comcast supports a framework that would ensure that wireline communications service providers are able to deliver uninterrupted service to fire stations, police stations, hospitals,<sup>124</sup> and emergency command and dispatch centers. This framework would apply under the following conditions:

- (1) the customer’s facility (*e.g.*, a hospital) is powered (either via its own backup power or via commercial power) and is located in the wireline communications service provider’s territory;
- (2) the wireline communications service provider owns the network components that serve the customer (leased facilities are not included);

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<sup>122</sup> Proposal, Appendix A at 1.

<sup>123</sup> Comcast anticipates that the Commission will adopt a different set of network resiliency rules for wireless given the different architecture and use of wireless networks.

<sup>124</sup> “Hospital” is defined as an institution providing in-patient medical and surgical treatment and nursing care for sick or injured people. It does not include doctor’s offices or clinics.

- (3) the wireline communications service provider can either (a) permit and install fiber to the customer premises, or (b) permit and safely install and maintain backup power equipment to power the network components that serve the customer facility; and
- (4) the wireline communications service provider's facilities have not been damaged and any backup power equipment can be safely accessed by workers for refueling and other maintenance proposes.

Implementation Period: The Commission should consider and adopt a reasonable timeframe to allow wireline communications service providers to adopt this framework.<sup>125</sup>

(2) *Wireline Communications Providers Would Maintain Connectivity for Their Wireless Carrier Customers During a Power Outage.*

Wireless services are critical during PSPS and wildfire events as well as other emergencies because customers may be displaced from their homes during such events or, even if they can remain in their homes, often lack an independent power source to keep their devices running. The importance of wireless services during emergencies is borne out by the fact that, as noted above, more than 80 percent of 911 calls originate from mobile phones.<sup>126</sup> As the Commission is well aware, wireless networks rely on wireline networks to provide backhaul and to connect their switches to the PSTN. Comcast, for example, uses its wireline network to provide backhaul service to hundreds of cell towers in California.

Accordingly, notwithstanding limits on the Commission's regulatory jurisdiction, Comcast supports a framework that would ensure that wireline providers that provide backhaul to wireless networks are able to provide connectivity to their wireless carrier customers during power outages. This framework would apply under the following conditions:

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<sup>125</sup> Comcast suggests that this implementation period be not less than 18 months. Even if wireline service providers take immediate steps to implement this commitment, it will require the construction of new fiber-optic cable facilities and the permitting and placement of additional generators.

<sup>126</sup> See <https://www.nena.org/page/911Statistics>.

- (1) the facilities (cell tower or mobile switching center) of the wireless carrier customer are powered (either via backup power supplied by the wireless carrier or via commercial power);
- (2) the wireline communications service provider owns the facilities that provide backhaul and other wired connectivity for wireless networks (leased facilities are not included) and those facilities are located in its service territory;
- (3) the wireline communications service provider can site backup power equipment needed to power the facilities that provide backhaul and other wired connectivity for wireless networks and can obtain the requisite permits and associated environmental review to do so; and
- (4) the wireline facilities that provide backhaul and other wired connectivity for wireless networks have not been damaged and can be safely accessed by the communications service provider workers for refueling and other maintenance proposes.

Implementation Period: The Commission should consider and adopt a reasonable timeframe to allow wireline providers to ensure they are able to provide connectivity to their wireless carrier customers during power outages.<sup>127</sup>

## **5. Backup Power Plans**

**The Proposal recommends that Providers file a Backup Power Plan with the Commission six months from the effective date of an adopted Commission decision with an array of requirements that illustrate the Provider's preparedness to ensure 9-1-1 access, ability to receive emergency notifications, and access web browsing for 100 percent of customers in the event of a commercial power outage. Please provide comments and analysis on this compliance requirement.**

## **COMCAST'S RESPONSE:**

Comcast does not object in principle to filing backup power plans with the Commission. However, the proposed Backup Power Plan's requirements are problematic. The Proposal requires the plan to "describe the Provider's ability to maintain access to 9-1-1 and maintain the ability to receive emergency notifications and access web browsing for emergency notices for 100 percent

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<sup>127</sup> Comcast suggests that this period should not be less than 18 months for full implementation.

of customers in the event of a power failure.”<sup>128</sup> This statement could be read to suggest that communications providers have an obligation to provide 100% connectivity at all times in all cases (which even the Proposal would not require). Alternatively, it could be read that communications service providers must be prepared to fully implement the 72-hour backup power mandate within six months of a Commission decision. This is problematic for two reasons. First, as explained above, the proposed 72-hour backup power rule is misguided, impractical, and should be much more targeted and limited. Second, there is no conceivable way for Comcast—and presumably other communications service providers—to comply with the proposed mandate in such a very short timeframe. If adopted, the 72-hour backup power requirement would effectively require Comcast to re-engineer its entire California network and install fixed, fossil fuel generators at each of its nearly 19,000 power supplies.<sup>129</sup> Even if Comcast had unlimited resources to devote to this endeavor—which it does not—the process would take years because of permitting and other external requirements.<sup>130</sup>

The Backup Power Plan proposal also is problematic because it sweeps in numerous competitively sensitive details and requires communications service providers to share this information. For example, there is no reason why communications service providers should be required to disclose the identity of their refueling vendors or the contractual terms under which they do business. At a minimum, the Commission should ensure confidential treatment of any such details or contractual agreements submitted with backup power plans.

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<sup>128</sup> Proposal, Appendix A at 3-4.

<sup>129</sup> Votaw Declaration ¶ 50.

<sup>130</sup> *Id.* ¶¶ 50-51.



- 5(a) Clean Energy Generation: The Proposal directs Providers to utilize clean energy backup power options (*e.g.*, solar, etc.) as reasonable before using diesel generators to meet the backup power requirement, among other provisions.**

**Please provide comments and analysis on this issue, and specifically address the following:**

- i. How should “clean energy backup” be defined?**
- ii. Provide specific information on barriers to procuring specific types of clean energy backup power (*e.g.*, cost, permitting, etc.).**

**COMCAST’S RESPONSE:**

As explained above, Comcast agrees that widespread use of diesel generators in response to disasters and PSPS events would present significant environmental issues. Any deployment of fossil-fuel based backup power sources at the massive scale contemplated by the Proposal would necessarily entail additional exhaust emissions and wildfire ignition risks. With that said, diesel is not the only fuel source that we currently use to provide backup power. Depending on the circumstances, and when it is safe and appropriate for each location, we also use generators fueled by natural gas, propane, and gasoline. As discussed above, natural gas and propane-fueled generators are cleaner-burning than diesel or gasoline generators, although they still consume fossil fuels and would generate substantial carbon emissions if deployed at many thousands of locations throughout Comcast’s California network. In addition, while Comcast does make extensive use of cleaner battery backup power throughout its cable plant today, relying on batteries alone for 72 hours of backup power would not be possible due to power supply and battery capacity

limitations.<sup>131</sup> Thus, for purposes of this section, Comcast assumes that “clean energy backup” refers to the renewable energy sources discussed in the Proposal, such as solar and wind power.<sup>132</sup>

*Solar and Wind Power.* Comcast and NBCUniversal are committed to renewable energy and have installed eight on-site solar projects in California since 2007.<sup>133</sup> These include solar installations at cable system and broadcast facilities in Oakland, Sonoma, Stockton, and San Diego, as well as a 549 kW rooftop system at our Universal Studios Hollywood theme park.<sup>134</sup> The latest project, a 105 kW ground-mounted solar array at Comcast’s Chico headend, will produce approximately 180 MWh/year of renewable electricity, avoiding 127 metric tons of carbon dioxide equivalent per year.<sup>135</sup> In all, Comcast and NBCUniversal’s on-site solar projects in California produce approximately 1.9 million renewable kWh annually—the equivalent of 155 homes’ electricity use for one year.<sup>136</sup>

Despite Comcast’s success in using solar to offset its reliance on utility power, it is important that the Commission understand that even such major investments in renewable energy are only capable of producing a fraction of the power required for the normal operation of Comcast’s network. Any requirement for “on-site” renewable energy at the levels required to power many Comcast facilities would face insurmountable physical space and siting challenges, as discussed further below. The 105 kW produced by the Chico project, for example, will address

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<sup>131</sup> As discussed below, however, the intermittent power output of renewable energy generation would also require large battery banks at many facilities to ensure 72 hours of available power at all times. Thus, the installation, maintenance, and replacement of batteries would be a consideration for any alternative to fossil fuel-powered generators.

<sup>132</sup> Proposal, Appendix A at 4.

<sup>133</sup> Corbusier Declaration ¶ 5.

<sup>134</sup> *Id.*

<sup>135</sup> *Id.*

<sup>136</sup> *Id.*

only 21 percent of the energy needs of that headend.<sup>137</sup> Cable system facilities are energy-dense and operate with virtually constant electric loads. That is to say, network equipment is either “on” or “off” and consumes about the same amount of power at all times regardless of which services or how much traffic the network is carrying.<sup>138</sup> Renewable energy generation, however, is intermittent and varies based on factors such as cloud cover, wind speed, and time of day. For a constant 72 hours of “clean energy backup power” to be available at all times (*e.g.*, day and night, and regardless of weather conditions) solar or wind<sup>139</sup> power sources would have to be accompanied by large battery banks to store the generated energy.<sup>140</sup> Given the need for large battery banks to store the generated energy, renewable energy sources would largely be redundant given the ability to charge the battery banks with power from the grid during normal operating conditions. Moreover, with more and more renewable energy on the grid today, project-specific facilities like the ones that Comcast would need to implement have nominal environmental benefits. The sheer size and scope of the facilities that would be required to meet a 72-hour backup power requirement across Comcast’s network would be so great as to make use of renewable energy effectively impossible. Consider the following examples:<sup>141</sup>

- Based on its average energy consumption, Comcast’s Santa Clara headend would require approximately 36,800 kWh of electricity for continuous operation over a 72-hour period. Accounting for factors such as DC to AC power conversion loss, and assuming that all solar panels would be free of shade and smoke, this headend would require a 3.5 MW solar array to produce adequate power at any given time of the year. ***Such an array would consist of more than 10,000 solar panels (five feet by three feet, producing 350 watts***

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<sup>137</sup> *Id.* ¶ 6.

<sup>138</sup> *Id.* ¶ 7.

<sup>139</sup> Wind turbines have not been a practical option for Comcast in California to date because of their large size, high upfront cost, and difficulty finding suitable sites for permits and installation. We provide the examples below for comparison to solar in the event that siting challenges could be overcome in certain locations.

<sup>140</sup> *Id.* ¶ 8.

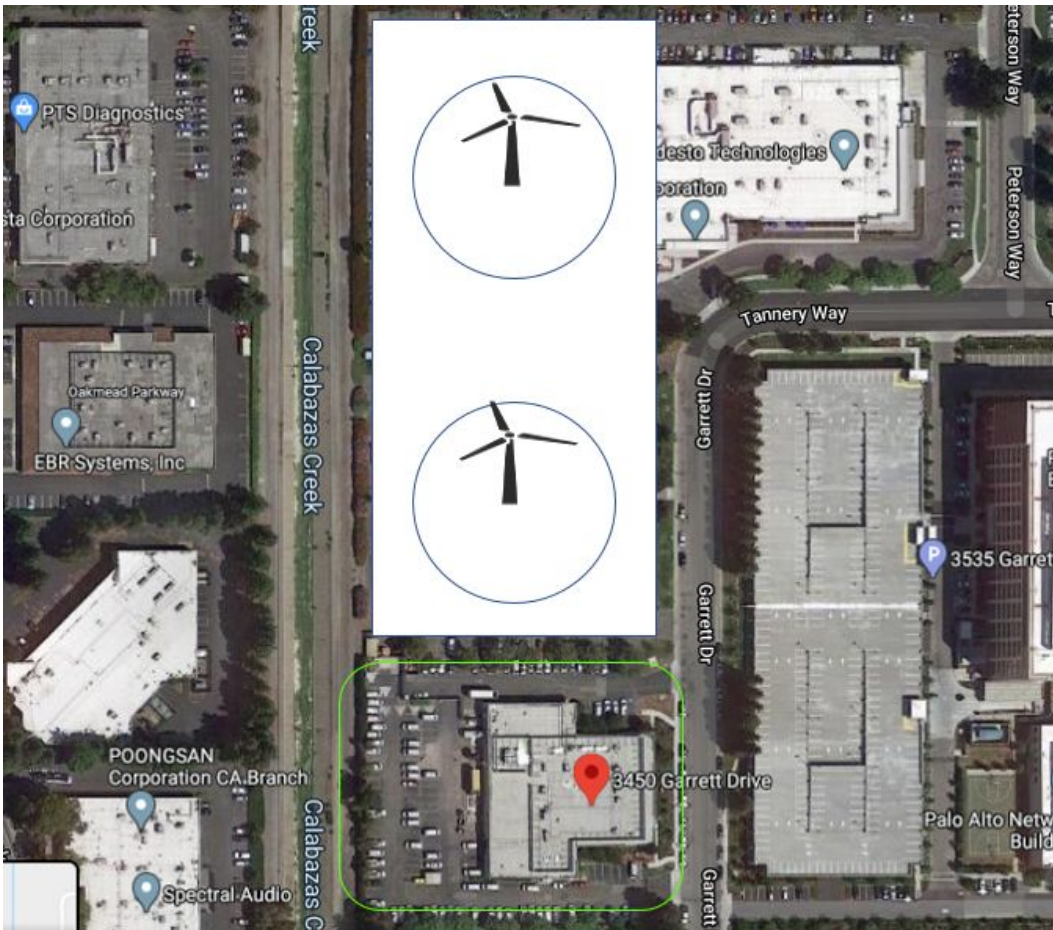
<sup>141</sup> *See id.* ¶¶ 9-13.

*each) and require approximately 92,000 square feet of land area—the equivalent of more than 500 parking spaces or 8 ½ football fields.* As shown below, Comcast does not own even close to enough property surrounding this headend to accommodate such a solar project and would have to purchase and clear several adjacent lots (assuming the required properties, permits, and zoning approvals could be obtained at all). Comcast has more than 100 headend and hub locations in California with similar power needs, so this would be only one of many locations presenting such siting challenges.



- Alternatively, Comcast could power the Santa Clara headend with two large wind turbines with capacity of 3.8 MW.<sup>142</sup> Each of these turbines would be approximately 380 feet tall and require about 1.5 acres of ground space. Again, Comcast would have to attempt to purchase adjacent properties and seek permits and zoning approvals that would almost certainly be opposed by surrounding residents and businesses.

<sup>142</sup> A typical solar efficiency factor for this region of California is 21-22 percent, while the wind power efficiency factor for this area is approximately 20 percent. The 3.8 MW capacity required for wind turbines would be slightly larger than that required for solar because wind turbines would be slightly less efficient to generate the required amount of electricity.



- An average power supply for Comcast field equipment needs approximately 56 kWh of electricity for 72 hours of continuous operation. Most power supplies do not run at full capacity at all times, but to plan for generation that would meet the rated capacity of each power supply would require 130 kWh over 72 hours. Factoring in battery efficiency losses and solar irradiance figures,<sup>143</sup> this would require a 19 kW solar array of 55 panels measuring five feet by three feet each at every power supply location. Each array would cover almost 500 square feet of land area—nearly the size of three parking spaces—and several might be required in each residential neighborhood depending on how many field cabinets are located there. In the event of nearby fires, smoke can significantly reduce available sunlight, decreasing solar power output. As seen in recent wildfires in Australia, solar output can be reduced up to 45 percent during these events, which would require a 35 kW array with 100 panels—almost **double** the size shown in the following picture.<sup>144</sup>

<sup>143</sup> Solar generation varies throughout the year due to sun angle changes. Irradiance is a measurement of power a unit of area from the sun.

<sup>144</sup> See Alison Potter, *How Much Does Smoke Haze Affect Rooftop Solar Production?*, SOLAR ANALYTICS BLOG (Jan. 13, 2020), <https://www.solaranalytics.com/us/blog/how-much-does-smoke-haze-affect-rooftop-solar-production> (noting that “rooftop PV [photovoltaic] systems in Sydney and Canberra saw PV output plummet by 15-45% on heavy smoke haze days”).





As noted above, Comcast has nearly 19,000 power supplies for field equipment across its California network, each of which would require a similar solar array. Even if permits could be obtained to locate all of these projects in the public right-of-way, neighbors and homeowners' associations would almost certainly oppose installations near their properties.

*Fuel Cells.* The Proposal also mentions fuel cells as options for “clean energy generation.”<sup>145</sup> Comcast has not had as much success with limited trials of fuel cells as it has with solar projects. In Comcast’s experience, this technology has not developed to the point that it would be practical or reliable to depend on fuel cells for backup power throughout its network.<sup>146</sup> Fuel cells may be promising for larger facilities such as cell towers and cable system headends, depending on their location and access to natural gas or propane fuel (the most common sources of hydrogen for use in fuel cells).<sup>147</sup> In locations with existing gas meters and connections to the natural gas distribution network, or where large tanks of propane can be stored safely, fuel cells

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<sup>145</sup> Proposal, Appendix A at 4.

<sup>146</sup> Corbusier Declaration ¶ 14.

<sup>147</sup> *Id.*

may be a practical option. But Comcast’s many thousands of power supplies for field equipment are not located near the natural gas distribution network, and none of Comcast’s power supplies has a gas meter installed.<sup>148</sup> The only options would be for natural gas utilities to extend their distribution networks to each of these Comcast facilities (an extended, costly, and disruptive process<sup>149</sup>), or for Comcast to install propane tanks at each location (posing the safety and other risks described above, requiring additional permits and likely triggering strong opposition in residential areas).<sup>150</sup> In light of these challenges, fuel cells are not a practical solution for cable networks with backup power requirements spread out over many different network components.

As discussed above with respect to generators, the Commission should also consider the fire risk associated with fuel cells themselves. That risk is particularly serious to the extent that fuel cells operate on compressed hydrogen. When used as an alternative for commercial power, hydrogen fuel cells involve high pressure (5,000-10,000 psi) storage, and any leak of hydrogen may generate significant gas release and rapidly develop fire ignition potential.<sup>151</sup> Hydrogen has a very wide flammable range in air and may explode with violent force during leaks or fires. Typically, fixed hydrogen fuel cell installations are limited by fire and building codes to industrial or commercial sites where special fire protection requirements may be implemented.<sup>152</sup> Installation of hydrogen fuel cells at power supplies for field equipment in residential

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<sup>148</sup> *Id.*

<sup>149</sup> Such an expansion of the utility gas network would be particularly challenging and unlikely as some California cities pass ordinances restricting natural gas appliances in new construction to promote use of renewable energy. See Mallory Moench, *California Regulators Clear Way for Natural Gas Bans to Take Effect*, SAN FRANCISCO CHRONICLE (Dec. 11, 2019), <https://www.sfchronicle.com/business/article/California-regulators-clear-way-for-natural-gas-14900008.php>.

<sup>150</sup> Corbusier Declaration ¶ 14.

<sup>151</sup> Rohde Declaration ¶ 17.

<sup>152</sup> *Id.*

neighborhoods would introduce inherent public safety risks and likely generate serious concern from nearby homeowners.<sup>153</sup> In addition, because fuel cells consume fossil fuels, a massive deployment of fuel cells on the scale contemplated by the Proposal would do little to advance the Commission’s renewable energy goals.

*Cooperative Agreements.* Finally, the Proposal asks whether “cooperative agreements with other utilities and providers” could make clean power generation more feasible.<sup>154</sup> Such arrangements may be possible in theory but are not feasible during extreme fire danger and PSPS events, where electric utilities have determined that the transmission grid must be shut down.<sup>155</sup> Even if they could pool resources to establish their own solar or wind farms, or other centrally located sources of renewable energy, communications providers cannot redistribute power over a de-energized electric grid.<sup>156</sup> The only other option would be to overbuild the current electric grid with new transmission lines specifically for communications backup power, which is not practical or financially feasible—and in any event could create many of the same wildfire ignition risks during PSPS events.<sup>157</sup> Realistically, backup power for each provider’s facilities would have to be located on-site in secure locations (and the Proposal would effectively mandate this by requiring 72 hours of “on-site emergency backup power”). Unfortunately, that logistical limitation leads back to the same size and siting barriers discussed above.

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<sup>153</sup> *Id.*

<sup>154</sup> Proposal, Appendix A at 4.

<sup>155</sup> Corbusier Declaration ¶ 15.

<sup>156</sup> *Id.*

<sup>157</sup> *Id.*



## 5(b) Waivers

**The Proposal directs Providers to submit waivers if they qualify for any of the exemptions enumerated in the Proposal. Please provide comments and analysis on this issue.**

### **COMCAST’S RESPONSE:**

For the various reasons explained above, the Proposal should be rejected, and any backup power requirements the Commission may choose to adopt should have a reasonable waiver process that includes the following components.

*First*, Comcast appreciates that the Proposal implicitly recognizes that it may simply be impossible to obtain permits and safely deploy generators at every power supply in California. But, in addition to the waivers for facilities that present a “significant risk to safety or life or health” and where compliance is prohibited by a “specific existing federal, state, tribal or local law,”<sup>158</sup> waivers also should be available at sites where installing backup power is infeasible without significant disruption to surrounding property owners or network components—for example, where there is insufficient space to install a generator or solar array.

*Second*, the waiver application process should be streamlined. The Proposal requires communications service providers seeking a waiver to identify the “specific location of the facility(s) and a detailed description of facts supporting the basis of the Provider’s claim of preclusion from compliance, including legal citations.”<sup>159</sup> A large provider such as Comcast—with nearly 19,000 power supplies across its California network—likely will encounter *thousands* of power supplies for which a fixed generator either cannot be safely sited or for which the local government will not issue a permit.<sup>160</sup> This would impose an enormous paperwork burden on

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<sup>158</sup> Proposal, Appendix A at 5.

<sup>159</sup> *Id.*

<sup>160</sup> Votaw Declaration ¶ 51.

Comcast and Commission staff, which would need to review and act upon each waiver request. The Commission should allow communications service providers to request waivers for multiple power supplies with one waiver application where there are common circumstances or for a specific geographic area. Moreover, any rules the Commission adopt should include specific, identified exceptions so that a waiver application is not required. Such a process would be more efficient for communications service providers and Commission staff alike.<sup>161</sup>

**5(c) Critical Facility Location Information Sharing**

**The Proposal directs Providers to share critical facility location information to emergency responders to enhance the ability to defend vital facilities against wildfire damage and ensure facility redundancy. Please provide comments and analysis on this issue.**

**COMCAST’S RESPONSE:**

As Comcast has stated previously, the specific locations of many network facilities are highly sensitive critical infrastructure data that could cause public safety and national security issues if made publicly available.<sup>162</sup> If acquired by a bad actor, this information could be used to

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<sup>161</sup> The Proposal’s waiver category for “redundant facilities” is likely to be specific to certain communications service providers, such as wireless carriers with overlapping cell site coverage. Comcast is unaware of any “facility or class of facilities” in a cable network that “does not need 72-hours of backup power to maintain overall consumer access to 9-1-1, as well as the ability to receive emergency notifications and access web browsing for emergency notices for 100 percent of customers.” As a result, from Comcast’s perspective, the Proposal’s “waiver for redundant facilities” is illusory.

<sup>162</sup> See *November 2019 Response* at A-5. The FCC and U.S. Department of Homeland Security (“DHS”) have similarly emphasized that communications networks are critical infrastructure, and that broad disclosure of the locations or vulnerabilities of specific network assets would present a public safety and national security risk. See *New Part 4 of the Commission’s Rules Concerning Disruptions to Communications*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd. 16830 ¶ 3 (2004) (adopting a presumption of confidentiality for network outage data in response to DHS concerns that such data “could be used by hostile parties to attack [communications] networks,” and that “disclosure of outage reporting information to the public could present an unacceptable risk of more effective terrorist activity”). And in its recent Business Data Services proceedings, the FCC accorded the highest level of confidentiality under its protective orders to “[i]nformation that provides detailed or granular information about specific network facilities, including types, equivalents, and capacities, whether TDM- or IP-based services,” as well as “[t]he location of companies’ collocations” and “[t]he location of companies’ fiber network routes.” *Confidential Information Usage in Business Data Services Proceedings*, Order and Protective Orders, 30 FCC Rcd. 13680, App. B, Attachment 1, at 26 (2015).

readily disable large portions of Comcast’s network, as well as other services that rely on our network (*e.g.*, for wireless backhaul).<sup>163</sup> However, Comcast agrees that it is important to coordinate with emergency responders to address their critical communications needs and help defend vital facilities against wildfire damage. Therefore, Comcast is prepared to assemble a list of specific locations of its infrastructure that may have regional or local impacts (*e.g.*, headends, nodes, backbone transport facilities, and wireless backhaul facilities) that can be provided confidentially to first responders on a county-by-county basis, so long as such authorities have procedural and substantive protections on par with federal confidentiality statutes and rules.

**5(d) Critical Infrastructure Resiliency, Hardening and Location Information Sharing**

**The Proposal directs Providers to annually submit geographic information system (GIS) information with the specific location of network facilities and backhaul routes to the Commission. The Proposal directs Commission staff to analyze and process this information, so it is accessible to state and local emergency responders, subject to confidentiality requirements. Please provide comments and analysis on these proposed directives.**

**COMCAST’S RESPONSE:**

As stated above, Comcast is prepared to assemble a list of specific locations of its network infrastructure that may have regional or local impacts that can be provided confidentially to first responders on a county-by-county basis. Comcast also is open to working with Commission staff to provide any information, including GIS data, that they may need to coordinate emergency response with state and local authorities, subject to similar confidentiality protections. But if the Commission is proposing that communications providers share critical facility location information directly with first responders, as discussed above, it should take care not to duplicate that function by designating Commission staff as an intermediary to “analyze and process” the same information before distributing it to public safety entities. While Commission staff may play

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<sup>163</sup> Votaw Declaration ¶ 52.

a useful role in convening stakeholders and sharing information during emergencies, communications providers will generally be in the best position to provide accurate, up-to-date facility information directly to first responders in their service areas.

While Comcast supports appropriate information sharing with first responders, the Proposal would appear to go much further by directing Commission staff to “analyze [critical facility location] information, in coordination with emergency responders, to identify locations in the state where actions must be taken to harden communications infrastructure for risk, including areas and communities where fiber backhaul routes do not have adequate hardening or physical redundancy.”<sup>164</sup> To the extent this analysis would be a collaborative process focused on maintaining connectivity to first responders, Comcast is always open to conversations about how it can effectively support emergency response. But to the extent the Commission proposes a regulatory mandate by which its staff would review network routes and order changes where it deems a provider’s network to be inadequately hardened or redundant, the Proposal would vastly exceed the Commission’s expertise and authority and be tantamount to impermissible public utility regulation. Comcast designs its network to the highest engineering standards and regularly reviews its network routing for diversity and redundancy. However, there are many locations in California where it is simply not possible to run multiple fiber connections or to completely eliminate the risk of failure due to fiber cuts.<sup>165</sup> And while Comcast prioritizes backup power and continuity of service for network components providing wireless backhaul, redundancy of backhaul routes to cell towers (or lack thereof) is typically the result of contractual agreements

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<sup>164</sup> Proposal, Appendix A at 6.

<sup>165</sup> Votaw Declaration ¶ 53.

with wireless carriers that specify the level of service provided to each location.<sup>166</sup> It is not the Commission's role to second-guess these reasonable business and sound engineering judgments.

**6. Emergency Operations Plans**

**The Proposal directs Providers to file emergency operations plans with the Commission, discussing how their operations are prepared to respond to emergencies. Please provide comments and analysis on this issue.**

**COMCAST'S RESPONSE:**

Comcast supports this aspect of the Proposal, subject to the Commission's recognition that deviations from a formal plan may be appropriate under the circumstances of each emergency. Comcast has standard operating procedures and response plans for a variety of circumstances, but every emergency is different, and strategies that may be effective in response to one event (*e.g.*, a wildfire or PSPS event) may not be effective in response to another (*e.g.*, an earthquake or a public health emergency).<sup>167</sup> Comcast agrees that annual submission of a general-purpose emergency operations plan and contact information to the Commission could be useful to review and update relevant information, as long as it is clear that communications service providers continue to have flexibility to adapt their procedures to changing facts on the ground.

**6(a) Additionally, the Proposal itemizes required content that the Providers must submit to the Commission. Please provide comments and analysis on this issue.**

**COMCAST'S RESPONSE:**

Comcast does not object to providing the Commission with emergency contact information, conducting annual emergency preparedness exercises, and sharing relevant outage information with emergency responders and the public. During prior emergencies, such as the 2018 Camp Fire and the October 2019 PSPS events, Comcast made several employees available

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<sup>166</sup> *Id.* ¶ 54.

<sup>167</sup> *Id.* ¶ 55.

as emergency operations center (“EOC”) liaisons.<sup>168</sup> These and other qualified employees are well versed in Comcast’s network operations, have received Standardized Emergency Management System (“SEMS”) training, and will be available to the State Operations Center (“SOC”) on a 24/7 basis during emergencies.

*Public Communications Plans.* Comcast has some of the industry’s most advanced network monitoring capabilities and provides customers with an online Status Center (both on the Xfinity.com website and the Xfinity My Account app), where they can find information on how to resolve common connectivity issues and check for service outages in their area. The Status Center includes an Xfinity outage map where customers can view local outages and an estimate of when they will be back online (to the extent that Comcast has that information). At present, this feature is only available to Xfinity customers who have logged in to their accounts. While the Proposal contemplates each service provider’s website providing outage maps to the “general public,” it is not clear how consumers that do not subscribe to Xfinity services would benefit from access to outage maps at the address level. In addition, Comcast has no control over the duration of PSPS events or other extended power outages and must rely on information provided by electric utilities for any estimate of expected restoration time, so the most efficient source for this information would be those utilities themselves. In any event, Comcast regularly shares updates on service impacts and restoration status through its website, social media, and outreach to affected communities.<sup>169</sup>

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<sup>168</sup> During the 2019 PSPS events, Comcast had personnel in both city and county EOCs and the Cal OES State Operations Center. Votaw Declaration ¶ 56.

<sup>169</sup> Votaw Declaration ¶ 57.

*Communication with Emergency Responders.* With respect to communication with emergency responders,<sup>170</sup> Comcast supports providing EOCs and appropriate state and local authorities with regular updates on network status, service impacts, and facilities that are offline during emergencies, and Comcast has made that information available to California authorities in response to recent wildfires and PSPS events.<sup>171</sup> However, the Commission should be aware that the more specific detail it requires to be communicated (*e.g.*, “precise ZIP code updates” regarding facility status) and the more frequently it requires such communications (*e.g.*, three times each day at specified times), the more communications provider resources will be diverted away from continuity and restoration of service toward information-gathering and recordkeeping to comply with the Commission’s mandates. Disasters develop and evolve quickly, and communications providers can only provide the best information available to them at the time. It also is unclear what the Proposal means by providing state agencies with “[t]emporary access to real-time network monitoring tools.”<sup>172</sup> While network monitoring is one source of information that may contribute to useful status updates for emergency responders, any requirement to provide state agencies with direct monitoring access to Comcast’s network would raise a host of security and operational concerns and would further complicate efforts to restore service.

**6(b) Should the proposed rule for Emergency Operations Plans include any other information that the Proposal does not address? Please explain why any additional information is legitimate and necessary for adoption.**

**COMCAST’S RESPONSE:**

For reasons explained above, broad public disclosure of emergency operations plans, detailed outage information, and personnel contact information would help bad actors identify

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<sup>170</sup> See Proposal, Appendix A at 7.

<sup>171</sup> Votaw Declaration ¶ 58.

<sup>172</sup> Proposal, Appendix A at 7.

vulnerabilities in critical infrastructure and undermine public safety. If the Commission requires submission of emergency operations plans and information specified in the Proposal, it should extend the same confidential treatment to such filings as it has proposed to provide for critical facility information sharing. At a minimum, communications providers should be permitted to request confidential treatment of sensitive details in their submissions under General Order 66-D and applicable Commission rules.

**7. Current Mitigation Efforts**

**In response to this ruling, all respondent communications service providers shall provide a discussion of what current mitigation efforts they are undertaking to ensure continuity of service in preparation and in advance of the upcoming 2020 wildfire and grid outage season. This should include, but is not limited to, the following topics:**

**7(a) Number of additional generators acquired (both fixed and mobile);**

**COMCAST'S RESPONSE:**

As noted above, Comcast has backup power systems at its 129 headends and hubs in California. In addition, Comcast has more than 400 portable generators strategically positioned throughout its California service area that can be deployed to support first responders and vital community assets where it is safe to do so. As discussed above, however, deployment of *thousands* of additional portable generators throughout Comcast's network to comply with a 72-hour backup power mandate would be a non-starter in light of the unacceptable fire risk to employees and surrounding communities.

**7(b) Number of additional temporary facilities acquired (e.g., COWs, COLTs, etc.);**

**COMCAST'S RESPONSE:**

Not applicable. Comcast does not own or operate a commercial mobile wireless network and, as such, is not a facilities-based provider of wireless services in California. Instead, Comcast's wireless affiliate, Xfinity Mobile, is an MVNO, with service provided over the Verizon



Wireless network. Therefore, Comcast owns no COWs or COLTs and could not use temporary wireless facilities to independently provide service to Xfinity Mobile customers even if such equipment were available.

Comcast, however, operates an extensive Wi-Fi network in northern and central California. During emergencies, Comcast routinely opens Xfinity public Wi-Fi hotspots to help residents and emergency personnel stay connected during times of crisis. Comcast makes the hotspots available to everyone for free, including non-Xfinity customers, and thus supports the public's ability to use mobile devices during emergencies—even when other networks are unavailable. Comcast again took this action in March 2020 in response to the COVID-19 pandemic.<sup>173</sup>

**7(c) Additional network redundancy built into network (e.g., logical and physical);**

**7(d) Provide details on plans in the near, intermediate and long term to further harden facilities;**

**COMCAST'S RESPONSE:**

In recent years, Comcast has accelerated its construction of redundant and diverse routing for its backbone network facilities to enhance the reliability and resiliency of its network. For example, Comcast completed multiple projects involving the construction of new fiber-optic facilities in California to create diverse routing within its network and built new fiber-optic facilities to deliver upgraded, more reliable service to rural communities. In addition, in 2018 and 2019, Comcast made significant investments to upgrade the power network and backup power capabilities at headends and hub sites and implemented a program that permits remote monitoring of fuel levels at fixed generators. Projects such as these are ongoing.<sup>174</sup>

**7(e) Identify barriers to building resiliency into your networks;**

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<sup>173</sup> Votaw Declaration ¶ 59.

<sup>174</sup> *Id.* ¶ 60.

### **COMCAST’S RESPONSE:**

Comcast’s network is highly resilient, as that term traditionally has been defined. The various challenges associated with making Comcast’s network “resilient” to comply with the proposed 72-hour backup power mandate are addressed above in response to Question 4(a). In brief, *these challenges include permitting issues, environmental issues, generator siting issues, community resistance to pad-mounted generators, risk of wildfire ignition, risks to employee safety, risks to public safety, security risks, refueling risks, fuel storage risks, air pollution issues, the technological limitations of clean energy backup power options, inordinate costs, and the diversion of scarce resources from broadband deployment and emergency response efforts.*

- 7(f) Identify any other investments or cooperative agreements that will be made to build in more backup generation or minimize the need for backup generation; and**

### **COMCAST’S RESPONSE:**

The alternative approach that Comcast has proposed in response to Question 4(d) will: (1) deliver uninterrupted service to critical facilities during PSPS events and emergencies, and (2) keep wireless networks operating during PSPS events and emergencies to help consumers access essential services. These are realistic, meaningful, laudable commitments that will make future PSPS events far more manageable for the public.

- 7(g) Identify if communications service outages as a result of future public safety power shutoff events are expected. Identify specific locations and reasons where network outages are expected.**

### **COMCAST’S RESPONSE:**

PG&E’s PSPS event of October 26 – November 1, 2019 covered 38 counties and lasted more than a week. Outages would have occurred even if Comcast had 72 hours of backup power throughout its network at that time. It is impossible for Comcast to predict the location and duration of future PSPS events. *The most important step the Commission can take to avoid*

*problems such as those experienced in October 2019 is to limit the scope and duration of future PSPS events or at least to ensure that communications service providers receive as much advance notice as possible from electric utilities to begin preparing for a loss of commercial power.*

## **8. Other Topics for Commission Consideration**

**Parties may identify issues in addition to the proposed rules and discussion in the Proposal.**

### **COMCAST’S RESPONSE:**

*Issue 1: CEQA Requires the Commission to Review the Environmental Impacts of the Proposal.*

As discussed above, the Proposal, which would effectively impose an obligation to install backup diesel generators at tens of thousands of communications infrastructure locations across California, would clearly have significant impacts on the environment and run afoul of California’s implementation of the federal Clean Air Act, which calls for the *elimination* of the use of diesel backup generators.<sup>175</sup> At a minimum, before adopting any such mandate, the Commission must perform an appropriate review of those impacts as required under CEQA.

#### *CEQA Applies to the Proposal*

CEQA requires public agencies, like the Commission,<sup>176</sup> to conduct an environmental review prior to approving any discretionary “project” that may have a significant impact on the

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<sup>175</sup> See Comcast’s Response to Question 4.a, *supra*. Comcast alone would have to install nearly 19,000 backup generators. But Comcast is just one of many communications service providers in California.

<sup>176</sup> Pub. Res. Code § 21063; CEQA Guidelines, California Code of Regulations, Title 14, § 15379 (defining a “public agency” under CEQA as “any state agency, board, or commission, [among others]”). The Commission is, as it has acknowledged in numerous decisions, a “public agency.” See, e.g., D.10-12-016, Appendix B at 3 (“the CPUC is the public agency with the greatest responsibility for supervising or approving the project”).

environment.<sup>177</sup> A “project,” in turn, means “the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.”<sup>178</sup> Each of these triggers for CEQA review is met here.

Adoption of the Proposal would be an “approval,” because it would commit the Commission to a “definite course of action”—*i.e.*, requiring entities subject to its authority to install infrastructure-intensive backup power systems that are highly reliant on fossil fuels. Rulemakings of this type are quasi-legislative acts routinely held to be subject to CEQA.<sup>179</sup>

Generally, the only question to be answered when determining if CEQA applies to such rulemakings is whether the rule is of a type that “is capable of causing a direct or reasonably foreseeable indirect physical change in the environment.”<sup>180</sup> Here, the preceding discussion amply demonstrates that requiring 72 hours of backup power for communications infrastructure across California is certainly “capable” of causing a “reasonably foreseeable indirect physical change in the environment.” As discussed above, there are currently—and for the foreseeable future—only a handful of viable options for providing the unprecedented amount of backup power that the Commission proposes to require: portable gasoline-powered generators or fixed generators powered by either diesel fuel, natural gas, or propane. Renewable energy sources may be feasible in some locations but would be so large and disruptive in many areas as to make their use

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<sup>177</sup> 14 CCR § 15352 (defining “approval” of a project as “the decision by a public agency which commits the agency to a definite course of action in regard to a project intended to be carried out by any person”).

<sup>178</sup> 14 CCR § 15378(a).

<sup>179</sup> See *Union of Med. Marijuana Patients v. City of San Diego*, 7 Cal. 5th 1171, 1199 (2019) (city’s adoption of an ordinance allowing the erection of medical marijuana establishments may have a significant impact on the environment and is thus subject to CEQA); *California Unions for Reliable Energy v. Mojave Desert Air Quality Mgmt. Dist.*, 178 Cal.App.4th 1225, 1240 (2009) (“The adoption of a rule or regulation can be a project subject to CEQA.”); *John R. Lawson Rock & Oil, Inc. v. State Air Res. Bd.*, 20 Cal. App. 5th 77, 98 (2018) (“The modification of current regulations may constitute a project.”).

<sup>180</sup> *Union of Med. Marijuana Patients*, 7 Cal. 5th at 1197.

impractical. Each of these options comes with potentially significant environmental impacts that merit review under CEQA. These include but are not limited to:

- land disturbance and potential runoff from the installation of a concrete pad and ;
- significant air emissions from diesel generators, which emissions are strictly regulated under California law;<sup>181</sup>
- environmental risks from the continuous transport and storage of diesel fuel, which can require special management as a hazardous material/hazardous waste in California;<sup>182</sup>
- air emissions and traffic impacts from the increase in truck traffic required for generator refueling;
- air emissions from use of natural gas and propane generators, as well as safety issues associated with propane storage; and
- hazardous metals and other toxic or corrosive materials in batteries, which are highly regulated as hazardous in California.<sup>183</sup> The addition of these materials in areas where they be released into the environment as the result of a wildfire poses significant environmental concerns.

These types of concerns are not only reasonably foreseeable, they are precisely the kind of environmental impacts CEQA is intended to address.

Critically, these impacts are not limited to just Comcast's potential installation of additional backup power, but would be multiplied many times over since the Proposal would impose a backup power mandate on "***all*** companies owning, operating, or otherwise responsible for infrastructure that provide or otherwise carry 9-1-1, voice, text messages, or data" in California.<sup>184</sup>

*The Full Environmental Impacts Can be Addressed Only by Reviewing the Proposal*

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<sup>181</sup> See, e.g., <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>.

<sup>182</sup> See, e.g., <https://www.co.mendocino.ca.us/aqmd/diesel-engine-information.html>.

<sup>183</sup> See <https://www.calrecycle.ca.gov/reducewaste/batteries>.

<sup>184</sup> Proposal, Appendix A at 2 (emphasis added).

CEQA requires “governmental agencies ‘at all levels’ to consider environmental factors[.]” and that the “environmental consequences which an EIR [Environmental Impact Report] affords be furnished and considered at the earliest possible stage.”<sup>185</sup> The Proposal is the most appropriate time for such an analysis, so that the environmental consequences identified in any analysis can be considered and mitigated to the extent possible in any final rule.

The Proposal’s environmental impacts can be estimated with facts determined at an evidentiary hearing.<sup>186</sup>

Moreover, the fundamental obligation imposed under CEQA is to review the “whole of an action[.]”<sup>187</sup> Failing to perform such a complete review now, and leaving the CEQA analysis to whichever other state or local agencies must approve some portion of a single company’s proposed compliance option, would result in the very kind of piecemeal review CEQA prohibits. As the California Court of Appeal has held:

[t]he requirements of CEQA cannot be avoided by piecemeal review which results from “chopping a large project into many little ones—each with a minimal potential impact on the environment—which cumulatively may have disastrous consequences.” For example, “[w]here an individual project is a necessary precedent for action on a larger project, or commits the lead agency to a larger project, with significant environmental effect, an EIR must address itself to the scope of the larger project.” The prohibition against piecemeal review is the flip side of the requirement that the whole of a project be reviewed under CEQA.<sup>188</sup>

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<sup>185</sup> *Bozung v. Local Agency Formation Comm’n*, 13 Cal. 3d 263, 282 (1975); see 14 CCR § 15004(b) (“EIRs and negative declarations should be prepared as early as feasible in the planning process to enable environmental considerations to influence project program and design”).

<sup>186</sup> 14 CCR § 15004(b).

<sup>187</sup> 14 CCR § 15378(a).

<sup>188</sup> *Lighthouse Field Beach Rescue v. City of Santa Cruz*, 131 Cal. App. 4th 1170, 1208 (2005) (internal citations omitted); cf. *County of Amador v. El Dorado Cty.y Water Agency*, 76 Cal. App. 4th 931, 948 (1999) (because “the purpose of an EIR is to ensure an informed public and informed decisionmaking another entity’s subsequent determinations are irrelevant when considering whether the lead agency complied with CEQA mandates.”) (internal citations omitted).

Similarly, in this case, although compliance with the Proposal would trigger a myriad of discretionary permit obligations for regulated entities with associated CEQA review, each of those CEQA reviews would be limited to the issues associated with a particular site for which a permit is sought.<sup>189</sup> The Commission is the only agency with the regulatory scope to conduct an analysis of the likely environmental impacts of *all* entities that it is asserting are subject to its rules.<sup>190</sup> Accordingly, if the Commission fails to act now, the full magnitude of the environmental impact of its action will never be assessed.

Of course, CEQA review does not preclude the Commission from considering the Proposal. It simply ensures that any final decision—whatever that may be—represents an informed decision based on a full and fair analysis of the associated environmental impacts. Postponing appropriate environmental review of the sweeping backup power obligation under consideration would frustrate the CEQA’s purpose of ensuring informed and timely government decision-making about potentially substantial environmental impacts.

*Issue 2: The Commission Lacks Regulatory Jurisdiction Over Many of the Services Subject to the Proposal*

Under California law, the Commission has limited jurisdiction over specifically defined “public utilities.”<sup>191</sup> The Commission lacks authority to enforce “regulatory compliance over all

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<sup>189</sup> Indeed, even if any local agency had authority to compel a statewide assessment of environmental consequences as part of its permit review, that agency would not have the knowledge, experience, or resources to develop and meaningfully assess such widespread consequences.

<sup>190</sup> As discussed below, the Commission lacks regulatory jurisdiction over many of the services subject to the Proposal.

<sup>191</sup> See Cal. Const. art. XII, § 6 (providing that the Commission “may fix rates, establish rules, examine records, issue subpoenas, administer oaths, take testimony, punish for contempt, and prescribe a uniform system of accounts for *all public utilities subject to its jurisdiction*”) (emphasis added); Pub. Util. Code § 216(a)(1) (listing entities subject to public utility regulation); *id.* § 1757(a)(1) (providing for judicial review of decisions in which “[t]he commission acted without, or in excess of, its powers or jurisdiction”).

communications service providers,” as stated in the Proposal, and offers no legal support whatsoever for its sweeping imposition of backup power and other regulatory mandates on entities, such as broadband providers, that are not public utilities.<sup>192</sup> Moreover, such state-level requirements would conflict with controlling rulings of the FCC and undermine a deregulatory federal policy toward IP-enabled services. Any Commission rules resulting from the Proposal would therefore be vulnerable to federal preemption and other legal challenges.

Prescriptive backup power mandates for interconnected VoIP providers would also conflict with the longstanding federal policy that VoIP should not be subject to common carrier obligations or other forms of public utility regulation.<sup>193</sup> To the extent the Proposal is premised on classification of VoIP providers as public utility “telephone corporations,” that conflict is even more clear and irreconcilable.<sup>194</sup>

Although the FCC has adopted certain public safety obligations for interconnected VoIP providers, such as provision of E911 service, the FCC has expressly rejected mandatory, extended

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<sup>192</sup> Nor could the Proposal cite such authority, because an assertion of jurisdiction over broadband providers would plainly contradict the Commission’s own prior rulings. *See, e.g.*, D.13-12-005 at 2 (“It is well-established that Internet service is classified for state and federal regulatory purposes as an ‘information service’ and that state commissions such as the [Commission] do not have jurisdiction over information services even if the providers also provide ‘communications services’ that are subject to state regulation.”); D.06-03-013 at Appendix A, A-4 (“In adopting [a Consumer Bill of Rights Governing Telecommunications Services] the [Commission] does not assert regulatory jurisdiction over broadband service providers; Internet Service Providers; Internet content or advanced services; or any other entity or service not currently subject to regulation by the [Commission].”).

<sup>193</sup> *See, e.g., Vonage Holdings Corporation Petition for Declaratory Ruling Concerning and Order of the Minnesota Public Utilities Commission*, 19 FCC Rcd. 22404 ¶ 1 & ¶ 21 n.78 (2004) (“*Vonage Preemption Order*”), *aff’d*, *Minnesota PUC v. FCC*, 483 F.3d 570 (8th Cir. 2007). By definition, “telephone corporations” are “public utilities” under California law. Pub. Util. Code § 216(a)(1).

<sup>194</sup> *See VoIP Coalition Application for Rehearing of Decision 19-08-025, Decision Adopting an Emergency Disaster Relief Program for Communications Service Provider Customers*, R.18-03-011 (Sept. 23, 2019) (requesting that the Commission reconsider its erroneous determination earlier in this proceeding that VoIP providers fit the statutory definition of “telephone corporations”).



backup power requirements for customers’ in-home VoIP equipment.<sup>195</sup> Instead, the FCC requires interconnected VoIP service providers to offer new subscribers the option to purchase either eight or 24 hours of backup power when initiating service and make annual and point-of-sale disclosures regarding the capabilities and limitations of their backup power solutions.<sup>196</sup> In that proceeding, the FCC specifically *declined* to require interconnected VoIP providers to assume responsibility for “powering network equipment at the subscriber premises during the first 8 hours of an outage” in light of record evidence that consumers typically decline backup batteries, increasingly rely on mobile devices during power outages, and do not want to subsidize the cost of a mandatory backup power requirement for all VoIP equipment.<sup>197</sup> In reaching that conclusion, the FCC expressly agreed that “a mandate to offer backup power for multiday outages could impose unnecessary burdens on service providers and excessive costs on consumers for comparatively little public safety benefit.”<sup>198</sup> The FCC further emphasized that “nothing in our rules forces consumers to purchase backup power they do not want.”<sup>199</sup>

Moreover, a federal appeals court has ruled that interconnected VoIP service—including fixed cable VoIP service provided to subscribers’ homes—meets the federal statutory definition of an “information service,” and the U.S. Supreme Court has declined to review that determination.<sup>200</sup> As the Eighth Circuit held in that case, “any state regulation of an information service conflicts

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<sup>195</sup> See *Ensuring Continuity of 911 Communications*, Report and Order, 30 FCC Rcd. 8677 ¶¶ 3, 9 (2015) (“*VoIP Backup Power Order*”).

<sup>196</sup> See 47 C.F.R. § 9.20(b), (d).

<sup>197</sup> See *VoIP Backup Power Order* ¶¶ 7, 37.

<sup>198</sup> *Id.* ¶ 36.

<sup>199</sup> *Id.* ¶ 37.

<sup>200</sup> *Charter Advanced Servs. (MN), LLC v. Lange*, 903 F.3d 715, 719 (8th Cir. 2018), *cert. denied sub nom. Lipschultz v. Charter Advanced Servs. (MN), LLC*, 140 S. Ct. 6 (2019); see also 47 U.S.C. § 153(24) (defining “information service”).

with the federal policy of nonregulation,” and “preemption of state regulation ... is therefore warranted.”<sup>201</sup> The FCC strongly supported these conclusions, stating in a brief to the court that a state commission’s “sweeping assertion of regulatory authority over VoIP service threatens to disrupt the national voice services market.”<sup>202</sup> Adoption of the Proposal would conflict with all of these controlling laws and policies.

With respect to BIAS as well, the Proposal would conflict with federal law and policy. In 2018, the FCC reinstated its longstanding classification of BIAS as an interstate information service, rejecting “heavy-handed utility-style regulation of [BIAS] and return[ing] to the light-touch framework under which a free and open Internet underwent rapid and unprecedented growth for almost two decades.”<sup>203</sup> In so doing, the FCC expressly repealed common carrier classification and prescriptive conduct rules for Internet service providers (“ISPs”), finding that “a return to [an information service] classification will facilitate critical broadband investment and innovation by removing regulatory uncertainty and lowering compliance costs.”<sup>204</sup> These FCC rulings have been affirmed on direct appeal and may not be collaterally attacked in this proceeding.<sup>205</sup> By purporting to mandate unprecedented amounts of backup power throughout service provider networks in California, the Proposal would subject ISPs and their facilities to impermissible common carrier

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<sup>201</sup> *Id.*, 903 F.3d at 719, 720.

<sup>202</sup> Brief for FCC as Amicus Curiae in *Charter v. Lange* at 18 (Oct. 27, 2017), <https://docs.fcc.gov/public/attachments/DOC-347483A1.pdf>.

<sup>203</sup> *Restoring Internet Freedom*, Declaratory Ruling, Report and Order, and Order, 33 FCC Rcd. 311 ¶ 1 (2018) (“*Restoring Internet Freedom Order*”).

<sup>204</sup> *Id.* ¶ 20.

<sup>205</sup> *Mozilla Corp. v. FCC*, 940 F.3d 1, 35 (D.C. Cir. 2019), *rehearing en banc denied*, No. 18-1051 (D.C. Cir. Feb. 6, 2020); *see also United States v. Dunifer*, 219 F.3d 1004, 1007 (9th Cir. 2000) (holding under the federal Hobbs Act that “[a] defensive attack on ... FCC regulations is as much an evasion of the exclusive jurisdiction of the Court of Appeals as is a preemptive strike by seeking an injunction”).

regulation and utility-style service quality requirements, undermining the deregulatory rulings announced by the FCC.<sup>206</sup>

Well-established case law makes clear that the Commission cannot impose regulatory mandates that the FCC has deemed contrary to federal policy.<sup>207</sup> The Court of Appeals for the D.C. Circuit’s recent *Mozilla* decision is not to the contrary. Although *Mozilla* vacated the FCC’s express “preemption directive,” which would have categorically prohibited all state regulation of BIAS on a *prospective* basis,<sup>208</sup> it validated the continuing application of conflict preemption on a case-by-case and fact-specific basis where, as here, state-level regulation actually conflicts with or undermines federal law and policy.<sup>209</sup> And it remains well-settled under FCC and judicial precedent that BIAS is a jurisdictionally interstate service that “provides the capability to transmit data to and receive data from *all or substantially all internet endpoints*,” notwithstanding the

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<sup>206</sup> Cf. 47 U.S.C. § 214(d) (requiring a common carrier “to provide itself with adequate facilities for the expeditious and efficient performance of its service as a common carrier”); *id.* § 262(c)(1)(B) (directing the FCC to “promulgate rules to establish service quality standards for the transmission of covered voice communications” by certain common carriers involved in rural call completion). As noted above, the Proposal cites no legal authority for its imposition of backup power requirements on providers of “data” services. But to the extent such obligations were premised on analogous provisions of California law, a conflict with federal law and policy would be inevitable. See Pub. Util. Code § 451 (requiring “[e]very public utility” to “furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities ... as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public”) (emphasis added) (footnote omitted); *id.* § 2896 (authorizing the CPUC to adopt “[r]easonable statewide service quality standards, including, but not limited to, standards regarding network technical quality” for “telephone corporations” providing service to “telecommunication customers”) (emphasis added).

<sup>207</sup> See, e.g., *Capital Cities Cable, Inc. v. Crisp*, 467 U.S. 691, 708 (1984) (“[W]hen federal officials determine ... that restrictive regulation of a particular area is not in the public interest, States are not permitted to use their police power to enact such a regulation.”) (citation and internal quotation marks omitted).

<sup>208</sup> *Mozilla*, 940 F.3d at 74.

<sup>209</sup> See *id.* at 85 (“In vacating the Preemption Directive, we do not consider whether the remaining portions of the [Restoring Internet Freedom] Order have preemptive effect under principles of conflict preemption or any other implied-preemption doctrine.”); *id.* (“If the [FCC] can explain how a state practice actually undermines the [Restoring Internet Freedom] Order, then it can invoke conflict preemption.”).

location of certain network equipment and facilities within state boundaries.<sup>210</sup> The Proposal would impermissibly burden interstate BIAS offerings by imposing costly and technologically infeasible backup power mandates for facilities in California that transmit BIAS traffic throughout the nation and the world.

The Commission does not have independent federal authority under Section 706 of the Telecommunications Act of 1996 to adopt backup power mandates under the guise of promoting deployment of “advanced telecommunications capability.” As the FCC has determined and the Court of Appeals for the D.C. Circuit has affirmed, Section 706 is merely a policy statement “exhorting the [FCC] to exercise market-based or deregulatory authority granted under other statutory provisions,” not “an independent grant of regulatory authority.”<sup>211</sup> Whatever role the Commission may have in promoting broadband deployment and protecting consumers during wildfires and PSPS events, it clearly lacks legal authority to promulgate far-reaching backup power mandates like those contained in the Proposal.

#### IV. CONCLUSION

For the reasons discussed above, the Commission should not adopt one-size-fits-all network resiliency rules. The proposed 72-hour backup power mandate is unsafe, environmentally unsound, arbitrary, overbroad in scope, unhelpful to consumers, and ultimately ineffective. A better approach would be to allow communications service providers to adopt individualized approaches for their networks that optimize outcomes for their customers, communities, and employees. However, if the Commission ultimately decides to adopt network resiliency rules, it

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<sup>210</sup> 47 C.F.R. § 8.1(b) (emphasis added); *see also Protecting and Promoting the Open Internet*, Report on Remand, Declaratory Ruling, and Order, 30 FCC Rcd. 5601 ¶ 431 (2015) (reaffirming the FCC’s “longstanding conclusion that broadband Internet access service is jurisdictionally interstate for regulatory purposes”), *aff’d*, *U.S. Telecom Ass’n v. FCC*, 825 F.3d 674 (D.C. Cir. 2016).

<sup>211</sup> *Mozilla Corp.*, 940 F.3d at 46.

should adopt the alternate network resiliency proposal for wireline providers set out in response to Question 4(d).

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*For Comcast Phone of California, LLC*

Dated: April 3, 2020

## **Appendix: Ten Reasons Why A 72-Hour Backup Power Mandate Should Not Be Adopted**

1. Even if Comcast could maintain power throughout its network for 72 hours following a disaster or public safety power shutoff (“PSPS”) event, the vast majority of customers do not have *any amount* of backup power in their homes for equipment required to use VoIP and broadband services. Requiring Comcast to maintain power throughout its network when customers have no power at home would be a massive waste of resources with little benefit to consumers in affected areas.
2. Batteries alone cannot provide anything close to 72 hours of backup power throughout Comcast’s network. As a result, Comcast alone would need to deploy a generator at each of its *nearly 19,000* power supplies for field equipment. The number would be further compounded by each of the other wireline providers subject to the new rules.
3. The Proposal would effectively require Comcast (and other wireline providers) to deploy *tens of thousands* of additional generators throughout its California network in high fire-threat areas. This would pose an unacceptable safety risk to California residents, Comcast employees and surrounding communities.
4. These generators would need to be powered by one of three fossil fuels—natural gas, propane, or diesel. (Gasoline-powered portable generators are not a safe or feasible solution in areas with extreme fire danger.) Each of these generator technologies presents a host of environmental, health, and safety issues.
5. The Proposal’s prescription that solar, wind, and other alternative energy sources be used instead of generators is simply not practical in most areas. Comcast supports renewable energy and has installed multiple solar power projects in California, but currently available clean energy technologies would require immense physical scale to generate on-site power at anywhere near the levels required to power our facilities for 72 hours.
6. The placement of so many new generators (or, in limited cases, solar panels) throughout California would entail ripping up areas surrounding many thousands of homeowners’ properties to install large, unsightly, and frequently noisy backup power sources, creating overwhelming practical, siting, and permitting challenges, as well as substantial consumer backlash.
7. The Proposal would have adverse environmental impacts, including exhaust emissions, fuel transportation and storage risks, disposal of hazardous materials, and noise. With respect to the toxic emissions from diesel backup generators in particular, adoption of the Proposal would place the Commission in direct conflict with California’s implementation of the federal Clean Air Act (“CAA”), which has called for eliminating reliance on diesel generators. Because of all these environmental impacts, the Proposal, at a minimum, requires further review under the California Environmental Quality Act (“CEQA”).
8. Adoption of the Proposal would conflict with federal communications law and policy and unlawfully burden services over which the Commission has very limited regulatory authority.

9. Any method of provisioning 72 hours of backup power would come at an astronomical cost, which the Public Utilities Code requires the Commission to weigh against the Proposal's limited benefits to consumers, and which will hinder broadband deployment in California.
10. Despite understandable concerns about the 2020 wildfire season, this is simply not the time to divert resources—people and financial—away from the communications service providers who are working day and night to meet the challenges posed by the COVID-19 emergency. Imposing unprecedented new backup power obligations will only create unreasonable and unacceptable strains on businesses like Comcast that are working hard to ensure all Californians have continued access to broadband, voice, and other services that are even more important to them during these unprecedented times.

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Instead, the Commission should allow communications service providers to adopt individualized approaches for their networks that optimize outcomes for their customers, communities, and employees. However, if the Commission ultimately decides to adopt network resiliency rules, it should implement a framework that: (1) ensures that wireline communications service providers are able to deliver uninterrupted service to fire stations, police stations, hospitals, and emergency command and dispatch centers; and (2) ensures that wireline providers that provide backhaul to wireless networks are able to maintain service to their wireless carrier customers during power outages.

**Declarations of  
Jeffrey Votaw,  
Michael Rohde, Steven Branoff, and Kevin Corbusier**



**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking  
Regarding Emergency Disaster  
Relief Program.

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Rulemaking 18-03-011

**DECLARATION OF JEFFREY VOTAW IN SUPPORT OF  
COMMENTS OF COMCAST PHONE OF CALIFORNIA, LLC (U-5698-C) ON  
ASSIGNED COMMISSIONER’S RULING AND PROPOSAL**

I, Jeffrey Votaw, hereby declare as follows:

1. I am Comcast California’s Regional Vice President for Engineering and Construction. My office is in Livermore, California. I have been in this position since October 2018.
2. I have been in the industry for 36 years, with the last 21 years working for Comcast in Washington and California. Previously, I served as Comcast’s Regional Vice President of Technical Operations – California, Vice President of Field Operations – Sacramento Area, Vice President of Field Operations – South Valley Area, Director of Field Operations – Seattle, and Director of Field Operations – Tacoma, and Regional Director of Construction – Kent, Washington. I also served for two years as the Manager of Network Operations for Tacoma Power. The majority of my career has been focused on the construction and maintenance of broadband networks
3. I am responsible for overseeing the maintenance and construction of Comcast’s advanced broadband network in California.
4. I am providing this Declaration in support of Comcast’s comments in the above-captioned proceeding to impart information about Comcast’s network and operations, and the anticipated impact on Comcast’s operations of a CPUC proposal (“Proposal”) that includes a regulatory mandate of 72 hours of backup power applicable to communication service providers in California.
5. In recent years, Comcast has made a major effort to enhance the resiliency of its network during power outages, including significant investments to upgrade the backup power capabilities at its key facilities in California. Comcast has deployed multiple backup power sources—including fixed and portable generators, battery backup systems, and solar arrays—to ensure that the portions of its network that support vital infrastructure remain operational during power outages.
6. In large-scale disasters that can be predicted in advance, such as hurricanes and related flooding, Comcast engages in proactive planning for maintenance and restoration of service. Comcast’s emergency preparation plans include pre-positioning materials and equipment; testing and refueling backup generators; setting up local command centers; and ensuring that

employees and contractors have current credentials and access letters so they are not delayed in reaching critical locations and equipment once an event has passed.

7. During extended power outages following such disasters, Comcast also institutes an emergency fuel plan, including mobilizing fuel trucks to secure staging areas within range of affected communities. As in all disasters, Comcast collaborates with emergency management officials to share information, ensure that crews have access to critical facilities, help secure plant and equipment, and avoid fiber cuts that hinder recovery efforts.
8. The major components of Comcast's hybrid fiber-coaxial ("HFC") network are headends, hubs, and power supplies, which in turn feed a multitude of nodes, amplifiers, and line extenders. A headend is a centralized facility for receiving and processing television signals for distribution over a cable TV system; it also includes equipment needed to enable broadband and VoIP services. A headend typically serves a broad geographic area (*e.g.*, a medium-sized city or a section of a large city). Hubs distribute optical signals from headends throughout the service area. Nodes convert the optical signals to electric (radio frequency) signals for distribution over coaxial cable, while line extenders and amplifiers boost the signal as needed to reach each subscriber's home. All of these devices require commercial power for normal operation.
9. Comcast has backup power systems at its 129 headends and hubs in California. In 2018 and 2019, Comcast made significant investments to upgrade the power network and backup power capabilities at these facilities. All Comcast headends and hub sites have either a direct current ("DC") battery backup system or a fixed alternating current ("AC") generator (typically diesel fueled) and, in most cases, have both systems. Comcast also has trailer-based portable AC generators that can be rapidly deployed to headends and hub sites that have no fixed generator. The DC battery backup systems at headends and hubs typically have the capacity to operate for approximately four to 12 hours. The AC generators can continue to provide power as long as they can be safely refueled. Comcast monitors the fuel consumption of these generators and schedules refueling once the fuel level reaches 50 percent, which typically occurs after approximately 24 hours of operation, depending upon operating load.
10. Between Comcast's headends and subscribers' homes, there are nearly 19,000 power supplies that rely on commercial power in California. These power supplies, in turn, feed power to approximately 250,000 nodes, amplifiers, and line extenders. A typical power supply is equipped with three backup batteries for an average of six hours of operation total without commercial power, depending on the electrical load.
11. Equipment needed to deliver Voice over Internet Protocol ("VoIP"), broadband, and cable video service requires commercial power at each customer's home. Even if Comcast's cable network could run indefinitely on backup power—an unrealistic assumption—Comcast's services would only be available to customers affected by commercial power shutoffs who have an independent power source at home.
12. Comcast offers its voice customers the option to purchase backup batteries for VoIP equipment (offering either eight or 24 hours of backup power), but the vast majority of customers decline even those options. Many other consumer devices (*e.g.*, cable modems, Wi-Fi routers, cordless

phones, and desktop computers) do not have backup batteries at all and are unlikely to have a reliable source of backup power regardless of any mandate for service provider networks.

13. If adopted, the Proposal would effectively require Comcast to re-engineer its California cable systems to provide an unprecedented amount of backup power throughout its network during wildfire-prone conditions deemed too dangerous for the electric companies to provide power. The only way to meet the proposed requirement would be to deploy thousands of fossil-fuel powered generators to thousands of locations across California. Not only would such massive deployment be infeasible, but it also would pose significant risks to public safety and to the environment.
14. Unlike cell towers—which are spread out geographically but relatively self-contained—Comcast’s cable system is widely distributed over many physical connections and network components between Comcast’s headends and customers’ homes and businesses. Comcast’s cable systems also are located largely in the public rights-of-way, unlike cell towers that usually are on private property.
15. Although Comcast has deployed battery backup at thousands of points throughout its California footprint, these batteries were not designed to replace commercial power on a long-term basis. For longer electrical outages, Comcast relies on generators where it is safe to do so, and the fixed generators at Comcast’s headends and other protected locations can generally remain operational for as long as they can safely be refueled.
16. PG&E’s public safety power shutoff (“PSPS”) events of October 2019 were unprecedented in scope and duration and created unique challenges for continuity of communications services. Because these power outages are initiated on short notice during extreme fire weather conditions, safety considerations have significantly limited Comcast’s ability to widely deploy portable generators and other backup power sources. Portable generators can themselves pose a fire ignition hazard, and keeping those generators running for extended periods in wildfire evacuation areas can present an unacceptable risk to the community and our employees. Therefore, Comcast has sought to prioritize backup power at critical points in its network, including headends and hubs serving large geographic areas; backhaul facilities that serve cell towers; vital network infrastructure serving hospitals and evacuation centers; and other locations supporting first responders.
17. Comcast uses the following strategies at various times to help support its network and operations: backup power, redundancy, hardening, temporary facilities, communication and coordination, and preparedness planning.
18. Power supplies vary in size and backup power capability, but a “typical” power supply is configured with three backup batteries that provide power for an average of six hours combined (approximately two hours per battery) depending on the electrical load and other factors, including weather conditions. This assumes the electronic devices receiving power from the power supply draw a current of six Amperes.

19. To achieve 72 hours of backup power for a “typical” power supply, Comcast would need to install an additional 33 backup batteries on average, for a total of 36 batteries at each power supply.
20. But this cannot be done because of technical constraints. Power supplies include a component called an “inverter,” which, when commercial power is lost, converts DC power (supplied by backup batteries) to AC power (to power the network components). An inverter, however, can be connected to, at most, 12 batteries—each providing about two hours of backup power for a typical power supply. Because of this limitation, for a typical power supply, the maximum backup power duration that can be obtained from batteries is only 24 hours.
21. Direct current (“DC”) batteries with longer life than conventional lead-acid batteries are not readily available on the massive scale contemplated by the Proposal and may pose other risks.
22. Power supplies can either be attached to a utility pole or mounted on a concrete pad. Slightly more than half of Comcast’s power supplies are pad-mounted and the remainder are pole-mounted. The major pole owners in Comcast’s service area will not allow generators to be attached to poles, so they must be mounted on concrete pads. For Comcast’s existing (roughly 9,000) pole-mounted power supplies, Comcast would need to either (1) deploy a new generator on a concrete pad near the pole-mounted power supply to support the device or (2) replace the pole-mounted power supply with a new pad-mounted power supply equipped with a generator. For Comcast’s existing (roughly 10,000) pad-mounted power supplies, Comcast would need to expand the footprint of the existing power supply to accommodate a new generator. Comcast would need to undertake this work at each of its nearly 19,000 power supplies in California.
23. Seventy-two hours of backup power cannot be achieved using batteries. Consequently, Comcast would need to deploy fossil-fueled generators to meet the 72-hour backup power requirement.
24. Comcast has installed fixed diesel generators at its 129 headends and hubs in California, generally in commercial buildings where there are parking lots or other protected places where a fixed generator can be safely located. However, installing fixed diesel generators at the thousands of power supplies in the field would raise numerous safety, environmental, and other concerns and challenges.
25. For generators of all types, permits are needed from the local government to install generators on concrete pads. These permits can be difficult to obtain in a timely manner and, in some locations, are effectively impossible to obtain.
26. In most cases, generators would be located in the public rights-of-way—near or adjacent to California homes or businesses. Others would have to be located in easements on private property, which sometimes restrict the range of permitted uses. For example, an existing easement right permitting installation of a power supply on a utility pole may not entitle Comcast to install a concrete pad on the ground below to accommodate a generator. Moreover, property owners routinely oppose permits for pad-mounted equipment for aesthetic reasons,

and Comcast anticipates significant public outcry from the placement of tens of thousands of new generators that would be effectively mandated by the Proposal.

27. Of the three types of fossil fuel generators, diesel fuel generators are Comcast's least preferred option because of their exhaust emissions, siting challenges, wildfire ignition risk, and refueling requirements.
28. Fixed generators must be installed on a concrete pad, usually in the public right-of-way. Given the size of the generator available space can be a limiting factor. Rugged, hilly terrain also can make siting a challenge.
29. Vegetation maintenance around emergency generators is an ongoing challenge, especially at remote, unstaffed sites.
30. There are safety issues associated with stockpiling and transporting large amounts of fuel to hundreds or thousands of locations throughout northern and central California. The tank associated with a typical 75 HP diesel generator would allow operation for up to 24 hours at 100 percent load. Thus, Comcast would need to refuel its diesel fuel generators at least two times to achieve 72 hours of backup power.
31. The scale of this type of undertaking would be enormous, requiring a fleet of diesel fuel trucks to travel to each generator location on a near-continuous basis to serve the fuel demand.
32. Diesel can be stored only six to 12 months under ideal conditions. Thus, Comcast will need to service these generators and remove and replace stored, unused fuel and then dispose of the unused fuel.
33. The installation of new generator pads involves ground disturbance, raising the possibility of erosion and runoff issues to protected waterways on federal lands, as well as possible wetlands or habitat issues, and archaeological, historic, and tribal cultural resource impacts.
34. Fuel storage also poses the risk of leaks, introducing a possible pathway for releases into soil and nearby waterways.
35. Comcast's service area covers 16 of California's 35 Air Districts, each with its own air quality regulations and permitting standards.
36. Local fire departments typically have their own permit requirements, which vary greatly by city and county throughout California.
37. Backup generators often require the approval of the local zoning board, and could (depending on the scope of the Commission's environmental review of these regulations and type of local permit required) trigger the need for a site-specific California Environmental Quality Act review. Noise permits also may be required.
38. Given the noise and emissions, diesel generators likely will be extremely difficult to permit (especially in residential neighborhoods) and will generate significant neighborhood opposition. Even in the best-case scenario, obtaining multiple permits for hundreds or

thousands of generators could take years. In some cases, it simply will not be possible to obtain permits at all.

39. Backup generators can be powered by natural gas or propane. These products are commercially available, but to date Comcast has made only very limited use of them in California.
40. Although natural gas and propane generators have lower air emissions as compared to their diesel-fueled counterparts, they present some of the same problems and concerns as diesel generators and other significant challenges.
41. Propane tanks and natural gas lines are highly dangerous when wildfire engulfs the area in which they are located.
42. In addition, natural gas generators can only be deployed in places with access to gas utilities' distribution lines, and natural gas may not be available during emergencies (e.g., earthquakes, mudslides, or wildfires) or PSPS events.
43. For safety reasons, the major pole owners in Comcast's service area will not allow propane or natural gas powered generators to be attached to poles, so they must be mounted on concrete pads. As a result, these generators present siting and permitting challenges and delays similar to those for diesel generators.
44. Natural gas and propane generators face significant community opposition due to their size, aesthetics, noise, and safety concerns.
45. There are security issues pertaining to theft of portable equipment. In my experience, portable generators have been frequent targets of theft during extended power outages.
46. I anticipate that, in order to comply with the Proposal's 72-hour backup power mandate, Comcast would have to install a fossil fuel-powered generator at each of the company's nearly 19,000 power supplies in California.
47. The installed cost of each generator will vary, but I estimate that the total cost would be approximately [BEGIN CONFIDENTIAL]REDACTED[END CONFIDENTIAL]. This estimate is based on the installation of a natural gas, propane, or diesel generator at each of Comcast's nearly 19,000 power supplies at a cost of approximately [BEGIN CONFIDENTIAL]REDACTED[END CONFIDENTIAL] per location.
48. Comcast is making extraordinary efforts to meet the challenges posed by the COVID-19 pandemic. The entire company, including its front line-crews, is employed in this effort.
49. Comcast designed and engineered its network for resilient operation during traditional power outages, which generally are limited in scope and are associated with storms or isolated damage to the power grid from construction, vehicle accidents, etc., and typically last for hours, not days.

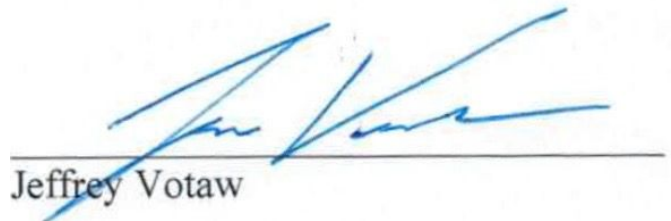
50. There would be no conceivable way for Comcast to comply with the proposed 72-hour backup power mandate within a matter of months. If adopted, the 72-hour backup power requirement would effectively require Comcast to re-engineer its entire California network and install fixed, fossil fuel generators at each of its nearly 19,000 power supplies. Even if Comcast had unlimited resources to devote to this endeavor—which it does not—the process would take years because of permitting and other external requirements.
51. A large provider such as Comcast—with nearly 19,000 power supplies across its California network—likely will encounter thousands of power supplies for which a fixed generator either cannot be safely sited or for which the local government will not issue a permit.
52. The specific locations of many of Comcast’s network facilities are highly sensitive critical infrastructure data that could cause public safety and national security issues if made publicly available. If acquired by a bad actor, this information could be used to readily disable large portions of Comcast’s network, as well as other services that rely on our network (*e.g.*, for wireless backhaul).
53. Comcast designs its network to the highest engineering standards and regularly reviews its network routing for diversity and redundancy. However, there are many locations in California where it is simply not possible to run multiple fiber connections or to completely eliminate the risk of failure due to fiber cuts.
54. While Comcast prioritizes backup power and continuity of service for network components providing wireless backhaul, redundancy of backhaul routes to cell towers (or lack thereof) is typically the result of contractual agreements with wireless carriers that specify the level of service provided to each location.
55. Comcast has standard operating procedures and response plans for a variety of circumstances, but every emergency is different, and strategies that may be effective in response to one event (*e.g.*, a wildfire or PSPS event) may not be effective in response to another (*e.g.*, an earthquake or a public health emergency).
56. During prior emergencies, such as the 2018 Camp Fire and the October 2019 PSPS events, Comcast made several employees available as emergency operations center (“EOC”) liaisons. During the 2019 PSPS events, Comcast had personnel in both city and county EOCs and the Cal OES State Operations Center.
57. Comcast regularly shares updates on service impacts and restoration status through its website, social media, and outreach to affected communities.
58. Comcast has provided regular updates on network status, service impacts, and facilities that are offline during emergencies to California authorities in response to recent wildfires and PSPS events.
59. Comcast operates an extensive Wi-Fi network in northern and central California. During emergencies, Comcast routinely opens Xfinity public Wi-Fi hotspots to help residents and emergency personnel stay connected during times of crisis. Comcast makes the hotspots available to everyone for free, including non-Xfinity customers, and thus supports the public’s

ability to use mobile devices during emergencies – even when other networks are unavailable. Comcast again took this action in March 2020 in response to the COVID-19 pandemic.

60. In recent years, Comcast has accelerated its construction of redundant and diverse routing for its backbone network facilities to enhance the reliability and resiliency of its network. For example, Comcast completed multiple projects involving the construction of new fiber-optic facilities in California to create diverse routing within its network and built new fiber-optic facilities to deliver upgraded, more reliable service to rural communities. In addition, in 2018 and 2019 Comcast made significant investments to upgrade the power network and backup power capabilities at headends and hub sites and implemented a program that permits remote monitoring of fuel levels at fixed generators. Projects such as these are ongoing.

I declare under penalty of perjury under the laws of the state of California that, to the best of my knowledge, the foregoing is true and correct.

Executed on April 3, 2020 at Livermore, California.



Jeffrey Votaw



**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking  
Regarding Emergency Disaster  
Relief Program.

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Rulemaking 18-03-011

**DECLARATION OF MICHAEL ROHDE IN SUPPORT OF  
COMMENTS OF COMCAST PHONE OF CALIFORNIA, LLC ON  
ASSIGNED COMMISSIONER’S RULING AND PROPOSAL**

I, Michael Rohde, hereby declare as follows:

1. I am the CEO and Principal Consultant of Rohde & Associates, LLC, a consulting firm with expertise in wildfire mitigation and emergency management and response. Our office is located in Rancho Santa Margarita, California.
2. I am engaged in wildland-urban interface fire planning, vegetation/hazardous fuels management, emergency and oil spill planning, training and exercise, and public utilities emergency management. I pioneered advanced work in this field both domestically and internationally.
3. I have over 45 years of fire service experience, having retired as a Battalion Chief with the Orange County Fire Authority. Previously, I served with the California Dept. of Forestry and Fire Protection, the U.S. Forest Service, and the Los Angeles County Fire Department. I maintain national Incident Command System qualifications as an Incident Commander, Operations and Planning Section Chief, Structural Protection Specialist, and Hazardous Materials Specialist. I served with state and federal Type 1 Incident Management Teams in the command of wildfires and incidents of national significance complexity. I am certified as a California Chief Fire Officer and am an expert in Wildland-Urban Interface and utility related wildfire prevention issues.
4. I have been honored as a life member of the Southern California Association of Foresters and Fire Wardens, and awarded a Lifetime Achievement Award by the California “Continuing Challenge” Hazardous Materials Response Conference.
5. I hold a graduate degree in Emergency Services Administration.
6. Comcast asked me to provide information and analysis about fire safety issues associated with a CPUC proposal for a regulatory mandate of 72 hours of backup power applicable to communication service providers in California.
7. Lithium batteries can overheat and ignite under certain conditions and, once ignited, can be difficult to extinguish.
8. Diesel-powered generators create a risk of wildfire ignition unless deployed with the necessary safety precautions – precautions that are not always feasible in all locations. For example,

these generators must be (i) operated in a location where they will not contact ignitable windblown debris or vegetation; (ii) be placed level on surfaces such as bare ground that contains no combustible vegetation, irrigated/green lawn grass, or hard pavement; and (iii) located in an area in which they can be safely refueled and also grounded for fuel transfer.

9. Diesel fuel generators cannot be operated in confined spaces or below grade areas where hazardous vapors may accumulate and should not be operated within 15 feet of habitable structures, tents, or breathing air induction ports.
10. As with fixed diesel generators, portable generators create a risk of wildfire ignition if deployed near ignitable debris or vegetation. Bringing these generators into an area right when wildfire risk is already extreme would further increase the risk of wildfire.
11. Portable generators pose a unique risk in that an unattended generator placed in a safe location by the operator can be moved by a homeowner, children, or someone else to an unsafe location relatively easily, increasing the risk of wildfire ignition and presenting personal safety hazards. Moreover, there is no way to ensure during windy conditions that debris will not blow into or near the generator, so it is problematic to leave them unstaffed.
12. In order to provide 72 hours of power, a typical portable generator needs to be refilled 10 to 12 times, which creates a worker safety risk.
13. Vehicles operating during high fire threat conditions pose a threat of igniting a wildfire. All internal combustion engines produce exhaust particles that are predominantly carbon with contaminants. These particles originate from deposits formed on the internal surfaces of an engine or exhaust system. Exhaust gases and carbon particles may be expelled from the engine block at temperatures exceeding 3,000° F. Exhaust system surfaces can reach temperatures of 1,000° F. Wildland fuels, however, can ignite at temperatures of only 400 to 500° F. Therefore, fires can be started by wildland fuels encountering hot exhaust gases or from contact with the hot surfaces of the exhaust system.
14. The refueling process also presents a safety hazard in terms of fire ignition risk. When a generator operates, the surfaces of the engine and exhaust system can have temperatures that exceed the auto-ignition temperature of the fluids used in the generator. When those fluids (e.g., fuel or engine oil) leak or spray onto hot surfaces, they can cause a fire that can be very difficult to extinguish.
15. National Fire Protection Association (“NFPA”) statistics indicate that a leading factor in generator fires is spilled fuel during refilling. See NFPA, Hall, John, *Non-Home Structure Fires by Equipment Involved in Ignition* (2013).
16. Due to the flammable nature of fuels, static electricity discharge must be carefully managed as an ignition source, including implementation of grounding operations that may not be possible in all locations needed.

17. When used as an alternative for commercial power, hydrogen fuel cells involve high pressure (5,000-10,000 psi) storage, and any leak of hydrogen may generate significant gas release and rapidly develop fire ignition potential. Hydrogen has a very wide flammable range in air and may explode with violent force during leaks or fires. Typically, fixed hydrogen fuel cell installations are limited by fire and building codes to industrial or commercial sites where special fire protection requirements may be implemented. Installation of hydrogen fuel cells at power supplies for field equipment in residential neighborhoods would introduce inherent public safety risks and likely generate serious concern from nearby homeowners.

I declare under penalty of perjury under the laws of the state of California that, to the best of my knowledge, the foregoing is true and correct.

Executed on April 3, 2020 at Rancho Santa Margarita, California.

A handwritten signature in black ink, appearing to read 'Michael Rohde', written over a horizontal line.

Michael Rohde,  
CEO/Principal Consultant  
Rohde & Associates LLC

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking  
Regarding Emergency Disaster  
Relief Program.

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Rulemaking 18-03-011

**DECLARATION OF STEVEN BRANOFF IN SUPPORT OF  
COMMENTS OF COMCAST PHONE OF CALIFORNIA, LLC ON  
ASSIGNED COMMISSIONER’S RULING AND PROPOSAL**

I, Steven Branoff, hereby declare as follows:

1. I am a Principal with Ramboll Group A/S (“Ramboll”). Ramboll is a leading environmental, engineering, architecture and consultancy company with headquarters in Copenhagen, Denmark. My office is in San Francisco, California.
2. I have over 20 years of experience in the field of air quality, with special emphasis on air permitting, air compliance and human health risk assessments. I specialize in work related to air quality permitting and compliance at the local, state and federal levels. I frequently manage projects involving emissions estimation, dispersion modeling analysis, control technology feasibility and cost, as well as Geographic Information System-based methods of displaying and interpreting data. This includes work with criteria pollutants, air toxics and greenhouse gases (“GHGs”) for a variety of source categories, including Fortune 500 companies with facilities located throughout the United States. I have extensive experience in regulatory interpretation and negotiations, including litigation. I am certified by the San Joaquin Valley Air Pollution Control District as a Certified Air Permit Professional and by the California Air Resources Board as a GHG Emissions Inventory Lead Verifier.
3. Prior to joining Ramboll, I worked for five years in the Air Permits Office at the United States Environmental Protection Agency (“EPA”), Region 9. This work included oversight of State and Local air permit agencies, acting as EPA reviewer of proposed air permits and air permit regulations. I also participated in national workgroups within EPA to develop new Federal air permit regulations.
4. I have an MS in Environmental Engineering from the University of California, Berkeley, and a BA in English from Williams College.
5. Comcast asked me to provide information and analysis about the environmental impact of a CPUC proposal for a regulatory mandate of 72 hours of backup power applicable to communication service providers in California.
6. The use of thousands of emergency backup diesel generators during a Public Safety Power Shutoff (“PSPS”) event poses potentially significant air quality concerns. Diesel generators emit exhaust that includes nitrogen oxides (“NOx”), particulate matter (“PM”), and greenhouse

gases (“GHG”). NO<sub>x</sub> impacts pose a particular concern, given the short-term (one-hour) average of the National Ambient Air Quality Standard (“NAAQS”) for this pollutant.

7. The health risks posed by air emissions from statewide continuous operation of diesel-fired generators during an emergency PSPS event could exceed allowable thresholds for acceptable health risks defined by the California Air Resources Board (“CARB”) and the Office of Environmental Health Hazard Assessment (“OEHHA”). The thresholds for public notification and risk reduction are outlined in the 1987 Air Toxics “Hot Spots” Information and Assessment Act (AB 2588) and associated implementation guidance.
8. CARB adopted a Diesel Risk Reduction Plan that identifies PM from diesel-fueled engines as a toxic air contaminant (“TAC”) and sets as a goal an 85 percent reduction in diesel PM emissions. *See*: <https://ww3.arb.ca.gov/diesel/documents/rrpapp.htm>.
9. Diesel PM emissions are estimated to be responsible for about 70 percent of the total risk posed by air toxics in ambient air. *See*: CARB, Mobile Source Strategy (May 2016) at 27, available at: <https://ww3.arb.ca.gov/planning/sip/2016sip/2016mobsrsrc.pdf>.
10. California’s State Implementation Plan (“SIP”), pursuant to the federal Clean Air Act (“CAA”), calls for the elimination of diesel generators in many areas. The United States EPA has established National Ambient Air Quality Standards (“NAAQS”) setting the maximum permissible concentrations of criteria pollutants in ambient air. (42 U.S.C. § 7409.) EPA has set NAAQS for pollutants including particulate matter (“PM”) and nitrogen dioxide (“NO<sub>2</sub>”). EPA designates areas that fail to attain the NAAQS as “nonattainment areas.” (42 U.S.C. § 7407(d)(1).) To ensure compliance with the NAAQS, each state must submit to EPA a SIP that meets certain substantive requirements. (*See* 42 U.S.C. § 7410.) Specifically, each state is mandated under § 110(a) of the Act, 42 U.S.C. § 7410(a), to adopt a “plan which provides for implementation, maintenance, and enforcement” of the NAAQS and to submit its SIP to EPA for approval. Each SIP must include enforceable emission limitations and other control measures necessary to attain the NAAQS, as well as timetables for compliance. *See* 42 U.S.C. § 7410(a)(2)(A).
11. The South Coast Air Quality Management District’s (“SCAQMD”) 2016 air quality management plan (“AQMP”), which forms part of California’s federally-approved SIP (*see* SCAQMD letter to CARB dated Mar. 10, 2017 re 2016 AQMP, available at: <https://ww3.arb.ca.gov/planning/sip/planarea/scabsip/2016scletter.pdf>) sets forth measures to eliminate the use of diesel generators, including a measure to “reduce NO<sub>x</sub> emissions from traditional combustion sources, such as diesel back-up generators, by replacing older, high-emitting equipment with new, lower or zero-emitting equipment.” SCAQMD 2016 AQMP at 4-13.
12. The AQMP calls for diesel generators and other traditional combustion sources to be replaced by “electrification, battery storage, alternative process changes, efficiency measures, or fuel cells for CHP. *See* SCAQMD 2016 AQMP at 4-14. The AQMP describes SCAQMD’s plans to undertake rulemakings to require zero emission equipment where cost-effective and feasible and near-zero emission equipment in all other applications.

13. The Bay Area Air Quality Management District's ("BAAQMD") 2017 Clean Air Plan ("CAP") (the BAAQMD's overarching blueprint for regulating air emissions) sets as one of its "four key priorities" decreasing demand for diesel and other fossil fuels. *See* BAAQMD 2017 CAP at E2-5, available at: [https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a\\_-proposed-final-cap-vol-1-pdf.pdf?la=en](https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en).
14. Consistent with CARB's findings, the BAAQMD's CAP identifies diesel PM as the most significant source of carcinogenic risk, as compared to all other air pollutants: "[A] small subset of TACs account for approximately 95 percent of the total cancer risk from air pollutants in the Bay Area, [and] diesel PM in itself greatly dominates the cancer risk from TACs. ..." *See* BAAQMD 2017 CAP at 2/21. The CAP contains measures that specifically seek to reduce emissions from diesel backup generators. *See* BAAQMD 2017 CAP measure SS-32.
15. The Proposal could cause or contribute to an exceedance of the NAAQS under the CAA. The Proposal might require the installation of thousands of new diesel generators, which would result in highly material air quality impacts.
16. Diesel generators are often loud, introducing potential compliance issues with local noise ordinances.
17. Installation of new stationary diesel generators rated 50 HP and above requires an air permit from one of California's Air Districts (*i.e.*, Air Pollution Control District or Air Quality Management District, depending on the jurisdiction). Obtaining an air permit for new power generation can be a time-consuming process, involving demonstration of compliance with a number of requirements, including Best Available Control Technology ("BACT"), the purchase of emissions offsets, and performance of a Health Risk Assessment ("HRA") for diesel particulate matter ("DPM").
18. Depending on the amount of fuel stored at the site, new generators may require development of site-specific Spill Prevention, Control, and Countermeasure ("SPCC") plans prior to startup. SPCC plans are designed to limit the impact of a potential spill of liquid petroleum products (including diesel fuel). These plans are required to include an inventory of storage containers, a description of the facility and its drainage features, spill prevention and response equipment and procedures, container inspection protocols and schedules, and employee training.
19. New generators would trigger reporting requirements under the Emergency Planning and Community Right-to-Know Act ("EPCRA") Tier II program. In California, facilities comply with this program by creating (or revising) a Hazardous Materials Business Plan ("HMBP") for each site. HMBP plans are required to be submitted to the local Certified Unified Program Agency ("CUPA") within 30 days of on-site storage of new materials or materials in higher quantities than previously envisioned. HMBP submittals must include a hazardous materials inventory, a chemical storage map, an employee training plan, and a consolidated emergency response and contingency plan.

20. Emergency diesel generators are restricted by local permits, as well as state and federal regulations, to a limited number of hours of non-emergency operation. There are serious unresolved questions about whether operating a generator in response to a PSPS event would qualify as an “emergency” under all permits and regulations restricting emergency generator usage.

I declare under penalty of perjury under the laws of the state of California that, to the best of my knowledge, the foregoing is true and correct.

Executed on April 2, 2020 at Albany, California.



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Steven Branoff

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking  
Regarding Emergency Disaster  
Relief Program.

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Rulemaking 18-03-011

**DECLARATION OF KEVIN CORBUSIER IN SUPPORT OF  
COMMENTS OF COMCAST PHONE OF CALIFORNIA, LLC ON  
ASSIGNED COMMISSIONER'S RULING AND PROPOSAL**

I, Kevin Corbusier, hereby declare as follows:

1. I am a Project Specialist for the Office of Sustainability at Comcast Corporation. In that position, I analyze and implement renewable energy projects and contracts for all business units within the corporation.
2. I have 3 years of experience in corporate sustainability and renewable energy. I have a degree in Environmental Sciences from Villanova University, as well as a master's degree in Sustainable Engineering from Villanova University.
3. Based on my education and work experience, I am knowledgeable about solar, wind, fuel cells, and other sources of clean energy, as well as Comcast's experience with the use of those technologies. I also am familiar with the energy needs of various Comcast facilities required to keep Comcast's network operational during commercial power outages.
4. Comcast has a longstanding commitment to adopting clean energy both nationally and in California and has been a leader in this effort. Beginning in 2021, through California's Direct Access program, Comcast Cable will receive 100 percent renewable electricity supply for 54 of its larger facilities, equating to approximately 27 million kilowatt-hours ("kWh") annually in electricity use, further reducing Comcast's carbon footprint in California. This electricity will come from local renewable electricity sources.
5. In California, Comcast and NBCUniversal have installed eight on-site solar projects since 2007. These include solar installations at cable system and broadcast facilities in Oakland, Sonora, Stockton, and San Diego, as well as a 549 kW rooftop system at our Universal Studios Hollywood theme park. The latest project, a 105 kW ground-mounted solar array at Comcast's Chico headend, will produce approximately 180 megawatt-hours ("MWh") per year of renewable electricity, avoiding 127 metric tons of carbon dioxide equivalent each year. In all, Comcast and NBCUniversal's on-site solar projects in California produce approximately 1.9 million renewable kWh annually – the equivalent of 155 homes' electricity use for one year.
6. These solar projects are designed to offset, not to replace, Comcast's reliance on utility power. Even such major investments in renewable energy are only capable of producing a fraction of the power required for the normal operation of Comcast's network. For example, the 105 kW produced by the Chico project will address only 21 percent of the energy needs of that headend.



7. Cable system facilities are energy-dense and operate with virtually constant electric loads. Most network equipment is either “on” or “off” and consumes about the same amount of power at all times regardless of which services or how much traffic the network is carrying.
8. Renewable energy generation is intermittent and varies based on factors such as cloud cover, wind speed, and time of day. Therefore, for a specified duration of cable system backup power to be available at all times, solar or wind power sources would have to be designed to account for variabilities in power output and accompanied by large battery banks to store the generated energy.
9. To estimate the size and scope of the clean energy generation and storage projects that would be required to comply with a 72-hour on-site backup power mandate at typical Comcast facilities, my team analyzed historical electrical load data for Comcast headends and power supplies for field equipment in California. We then calculated the amount of energy required to power those facilities for 72 hours under normal conditions. (As stated above, most cable network equipment is “on” at all times and maintains a relatively constant electrical load regardless of network traffic.) We then determined how many solar panels or wind turbines would be required to ensure a constant 72 hours of backup power at all times (e.g., in all weather conditions at any time of year), accounting for variables such as DC to AC power conversion loss, battery efficiency loss, and the typical efficiency factors for solar and wind power in California. Finally, we applied reasonable assumptions about the size and ground coverage ratio of the solar arrays or wind turbines that would be required to estimate the physical dimensions of each installation.
10. Comcast’s Santa Clara headend would require approximately 36,800 kWh of electricity for continuous operation over a 72-hour period. Accounting for the efficiency factors noted above, and assuming that all solar panels would be free of shade and smoke, this headend would require a 3.5 MW solar array to produce adequate power at any given time of the year. Such an array would consist of more than 10,000 solar panels (which we reasonably estimate at five feet by three feet each, producing 350 watts each) and require approximately 92,000 square feet of land area – the equivalent of more than 500 parking spaces or 8 ½ football fields. (This calculation is based on the reasonable assumption that a ground coverage ratio of 60 percent would match the typical solar tilt angle in California and that, for comparison purposes, a typical parking space is approximately 180 square feet.) Comcast does not have anywhere near enough property surrounding this headend to accommodate such a large solar project and would have to attempt to purchase and clear several adjacent lots, assuming that the required properties, permits, and zoning approvals could be obtained at all. Comcast has more than 100 headend and hub locations in California with similar power needs, so this would be only one of many locations presenting such siting challenges.
11. Alternatively, Comcast could power the Santa Clara headend with two large wind turbines with capacity of 3.8 MW. The 3.8 MW capacity required for wind turbines would be slightly larger than that required for solar because the typical solar efficiency factor for this region of California is 21-22 percent, while the wind power efficiency factor for this area is slightly lower at approximately 20 percent. Each wind turbine would be approximately 380 feet tall and require about 1.5 acres of ground space. Again, Comcast would have to attempt to

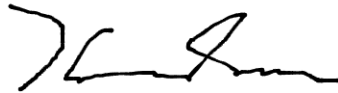
purchase adjacent properties and seek related permits and zoning approvals, which might not be granted in any event given the relatively populated location of this headend.

12. An average power supply for Comcast field equipment requires approximately 56 kWh of electricity for 72 hours of continuous operation. Most power supplies do not run at full capacity at all times, but to plan for generation that would meet the rated capacity of each power supply would require 130 kWh over 72 hours. Factoring in battery efficiency losses and solar irradiance figures, this would require a 19 kW solar array of 55 panels (measuring five feet by three feet each) at every power supply location. Each array would cover almost 500 square feet of land area – nearly the size of three parking spaces. Comcast has nearly 19,000 power supplies for field equipment across its California network, each of which would require a similar solar array. Such installations in the public right-of-way would require permits and would likely receive strong opposition from neighboring landowners, particularly in residential areas.
13. In the event of nearby fires, smoke can significantly reduce available sunlight, decreasing solar power output. During recent wildfires in Australia, it has been reported that solar output can be reduced up to 45 percent during these events. To ensure 72 hours of backup power despite similar efficiency losses during any future wildfires in California, the size of the solar arrays described above would have to be increased accordingly. For example, the solar array for each Comcast power supply would have to nearly double in size to a 35 kW installation with 100 panels.
14. Comcast has conducted limited trials of hydrogen fuel cells, but our experience to date has been that it would not be practical or reliable to depend on fuel cells for backup power throughout our network. Fuel cells may be promising for larger facilities such as cell towers and cable system headends, depending on their location and access to natural gas or propane, which are the most common sources of hydrogen for use in fuel cells. In locations with existing gas meters and connections to the natural gas distribution network, or where large tanks of propane can be stored safely, fuel cells may be a practical option. As noted, Comcast has nearly 19,000 power supplies for field equipment in California, which are not always located near existing gas lines, and none of Comcast's power supplies has a gas meter installed. To rely on fuel cells at the power supply level, Comcast would either have to request that natural gas utilities extend their distribution networks to each of Comcast's field cabinets or install tanks of propane at each field cabinet. Both options would require permits, be highly disruptive to surrounding neighborhoods, and pose additional fire and safety risks.
15. Under normal circumstances, it would be theoretically possible for Comcast to enter into cooperative agreements with other communications providers and/or electric utilities to share centrally located sources of clean energy backup power. But that is not a viable option during extreme fire danger and public safety power shutoff ("PSPS") events, where electric utilities have determined that the transmission grid must be shut down to prevent wildfire ignition. Even if they could pool resources to establish their own solar or wind farms in appropriate locations, communications providers cannot redistribute power to their facilities over a de-energized electric grid. The only other option would be for communications providers to overbuild the current electric grid with new transmission lines specifically for communications

backup power. That is not practical or financially feasible and, in any event, could create many of the same wildfire ignition risks as a live electric grid during PSPS events.

I declare under penalty of perjury under the laws of the state of California that, to the best of my knowledge, the foregoing is true and correct.

Executed on April 3, 2020 at Philadelphia, PA.

A handwritten signature in black ink, appearing to read 'K. Corbusier', written over a horizontal line.

Kevin Corbusier, Project Specialist, Sustainability