



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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January 25, 2013

HAND DELIVERED

Kimberley J. Santopietro
Public Utilities Support Services Manager
Public Utility Regulatory Authority
Ten Franklin Square
New Britain, Connecticut 06051

Re: **Public Act No. 12-148 "An Act Enhancing Emergency Preparedness and Response"**

Dear Ms. Santopietro:

Pursuant to Section 8 of Public Act No. 12-148 the Connecticut Siting Council, in consultation and in coordination with the Department of Energy and Environmental Protection, the Department of Emergency Services and Public Protection and the Public Utilities Regulatory Authority, has completed its study (see attachment) of the feasibility of requiring backup power for telecommunications towers and antennas.

For further information you may contact Linda Roberts, Executive Director at (860) 827-2935.

Thank you for your time in this matter.

Very truly yours,

A handwritten signature in black ink that reads "Robert Stein". To the right of the signature are the initials "LR" written in a similar ink.

Robert Stein
Chairman

RS/FC

Attachment: Connecticut Siting Council DOCKET NO. 432 – Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148, dated January 24, 2013.

S:dockets/432/transmittaltoPURA012513



<p>DOCKET NO. 432 – Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148.</p>	<p>} } }</p>	<p>Connecticut Siting Council January 24, 2013</p>
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Feasibility Study

INTRODUCTION

In 2011, Connecticut experienced the wrath of two significant storm events, Tropical Storm Irene and Storm Alfred. In response to those storms, Governor Malloy formed a Two Storm Panel that was charged with “a broad, objective evaluation reviewing how Irene was handled in the state both in preparation and recovery, identify areas that can be improved upon and, most importantly, made recommendations for future disaster preparedness and response.”¹ One of the recommendations of the Two Storm Panel was for state regulatory bodies to review telecommunications services currently in place to verify that the vendors have sufficient generator and backhaul capacity to meet the emergency needs of consumers and businesses.² Public Act No. 12-148 (codified at C.G.S. §16-50*l*), “An Act Enhancing Emergency Preparedness and Response” (“the Public Act”) is one of many legislative initiatives that resulted from this recommendation of the Two Storm Panel. Subsequent to the passage of the Public Act, another significant storm event occurred on October 27, 2012, Super-storm Sandy. These storms tested Connecticut’s infrastructure and prompted the State to carefully examine planning, preparedness, response and recovery capabilities in accordance with the State of Connecticut State Response Framework.³

Section 8(a) of the Public Act establishes a requirement for each provider of mobile radio service (“CMRS provider”) to submit an annual report to the Connecticut Siting Council (“Council”) and the Department of Emergency Services and Public Protection (“DESPP”) concerning each provider’s ability to provide backup power and each provider’s plans concerning backup power. Section 8(a) states:

“On or before October 1, 2012, and annually thereafter, each provider of mobile radio service, as defined in 47 CFR 20.3, shall submit a report to the Connecticut Siting Council and the Department of Emergency Services and Public Protection concerning each such provider’s ability to provide backup power during an electric service outage for any telecommunications tower or antenna owned, leased or operated by such

¹ Final Report of the Two Storm Panel, January 9, 2012, *available at* http://www.ct.gov/dep/lib/dep/forestry/vmtf/two_storm_panel_final_report.pdf

² *Id.*; Connecticut Siting Council, Docket No. 432, Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148, Pre-Filed Testimony of Deputy Commissioner William P. Shea, Division of Emergency Management and Homeland Security, Department of Emergency Services and Public Protection, dated October 25, 2012, available at <http://www.ct.gov/csc/cwp/view.asp?a=962&Q=511254&PM=1>

³ DEPARTMENT OF EMERGENCY SERVICES AND PUBLIC PROTECTION, DIVISION OF EMERGENCY MANAGEMENT AND HOMELAND SECURITY, STATE OF CONNECTICUT STATE RESPONSE FRAMEWORK, VERSION 2.0, August 2011, *available at* http://www.ct.gov/demhs/lib/demhs/ct_srf_aug_2011.pdf; DEPARTMENT OF EMERGENCY SERVICES AND PUBLIC PROTECTION, DIVISION OF EMERGENCY MANAGEMENT AND HOMELAND SECURITY, STATE OF CONNECTICUT STATE RESPONSE FRAMEWORK, Draft Connecticut Emergency Support Function 12, All Hazards Energy and Utilities Annex, July 2012, *available at* http://www.ct.gov/demhs/lib/demhs/eppi/esf_12_all-hazards_energy_and_utilities_annex_final_draft_july_2012.pdf

provider and each such provider's plans concerning such backup power. Any information provided in the report submitted pursuant to this section shall be considered confidential, not subject to disclosure under the Freedom of Information Act, as defined in section 1-200 of the general statutes, and such information shall not be transmitted to any person except as needed to comply with this section.”

This Feasibility Study was developed to comply with Section 8(b) of the Public Act which states, in part:

“As the reliability of such mobile radio service is considered to be in the public interest and necessary for public health and safety,... the Connecticut Siting Council, in consultation and in coordination with the Department of Energy and Environmental Protection, the Department of Emergency Services and Public Protection and the Public Utilities Regulatory Authority, shall study the feasibility of requiring backup power for telecommunications towers and antennas.”

Pursuant to Section 8(c) of the Public Act, the feasibility study of backup power requirements for telecommunications towers and antennas shall consider:

1. Federal, state and local jurisdictional issues of such backup power requirements, including, but not limited to, siting issues;
2. Similar laws or initiatives in other states;
3. The technical and legal feasibility of such backup power requirements;
4. The environmental issues concerning such backup power; and
5. Any other issue concerning backup power that the Public Utilities Regulatory Authority (PURA) deems relevant to such study.

PROCEDURE

During a public meeting of the Council held on October 4, 2012, the Council, in consultation and coordination with the Department of Energy and Environmental Protection (DEEP), DESPP and PURA, opened this docket and established a schedule to study the feasibility of requiring backup power for telecommunications towers and antennas in the state.⁴ The schedule included a public hearing to be held on November 1, 2012; however, due to Super-storm Sandy, the public hearing was postponed and rescheduled to December 4, 2012.⁵ Pursuant to the Public Act, the state agency participants in the proceeding were the Council; DESPP; DEEP, through Commissioner Daniel Esty’s designee on the Council, Mr. Brian Golembiewski; and PURA, through Chairman Arthur House’s designee on the Council, Mr. Larry Levesque. The CMRS provider participants in the proceeding were as follows: Sprint Spectrum L.P. and Nextel Communications of Mid-Atlantic, Inc. (Sprint); Celco Partnership, d/b/a Verizon Wireless (Verizon); New Cingular Wireless PCS, LLC (AT&T); MetroPCS New York, LLC and MetroPCS Massachusetts, LLC (MetroPCS); and T-Mobile Northeast, LLC, d/b/a T-Mobile USA, Inc. (T-Mobile). Other participants in the proceeding included the Office of Consumer Counsel (OCC) and CTIA- The Wireless Association (CTIA). The scope of the public hearing was limited to the five considerations contained in Section 8(c) of the Public Act.

The Council issued interrogatories to the CMRS provider participants on October 12, 2012 and on November 8, 2012 to which Sprint, T-Mobile and MetroPCS filed general objections on the basis that the

⁴ Connecticut Siting Council, Council Meeting Minutes, October 4, 2012, available at <http://www.ct.gov/csc/cwp/view.asp?a=953&Q=512672&PM=1>

⁵ Connecticut Siting Council, Docket No. 432, Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148, Council Memo to Participants dated October 31, 2012, available at http://www.ct.gov/csc/lib/csc/pendingproceeds/docket_432/432cancelmemo.pdf

Council, DEEP, DESPP and PURA do not have jurisdiction over CMRS providers' network reliability and cannot require or mandate the deployment of backup power.⁶ During a meeting held on November 15, 2012 and during the public hearing held on December 4, 2012, the Council overruled all of the CMRS provider participants' general objections to the extent that the objections frustrate the purpose and intent of the Public Act to protect the public health and safety of the citizens of the state of Connecticut.⁷

FEASIBILITY STUDY

1. Federal, state and local jurisdictional issues of such backup power requirements, including, but not limited to, siting issues.

a. Federal Jurisdictional Issues

CMRS providers, defined under 47 C.F.R. §20.3, are licensed by and are under the jurisdiction and authority of the Federal Communications Commission ("FCC"). The FCC has exclusive authority to regulate communication stations, towers and other facilities with regard to: coordination and assignment of radio frequencies, interference between users of the radio frequency spectrum, the kinds of facilities to be used with respect to their "external effects" and the quality of the signals emitted from such facilities, the location of classes of stations or individual stations, the establishment of areas or zones to be served by stations, adoption of record keeping rules related to transmission of energy and communications, and painting/illumination requirements in the interest of air navigation safety.⁸ Pursuant to this authority, in January 2006, the FCC established the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks ("Katrina Panel").⁹ The Katrina Panel was charged with reviewing the impact of Hurricane Katrina on all sectors of the telecommunications and media industries, including public safety communications. The Katrina Panel Report identified a lack of power or fuel to maintain operation of portions of the telecommunications system as a significant concern.¹⁰ The report also cited flooding and backhaul failure as two other primary contributors to the majority of telecommunications network disruptions.¹¹

In 2007, acting on the findings of the *Katrina Panel*, the FCC issued an Order ("Katrina Panel Order") directing the FCC Public Safety and Homeland Security Bureau ("PSHSB") to implement several recommendations of the Panel.¹² The PSHSB issued an order adopting Section 12.2 of the FCC rules that required CMRS providers to have an emergency backup power source for all assets that are normally powered from local AC power; however, in response to six petitions for reconsideration and/or clarification of that order, the FCC modified Section 12.2 to address issues raised in the petitions.¹³ On reconsideration, the FCC amended Section 12.2 as follows, in pertinent part: "... CMRS providers...

⁶ Connecticut Siting Council, Docket No. 432, Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148, Record, available at <http://www.ct.gov/csc/cwp/view.asp?a=962&Q=511254&PM=1>

⁷ *Id.*

⁸ Telecommunications Act of 1996, 47 U.S.C. §§302 and 303 (1996).

⁹ *Notice of Establishment of the Commission's Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, 71 Fed. Reg. 933 (2006) ("Katrina Panel").

¹⁰ *Independent Panel Reviewing Impact Of Hurricane Katrina On Communications Networks, Report And Recommendations To The Federal Communications Commission* (2006) ("Katrina Panel Report"), available at <http://www.fcc.gov/pshs/docs/advisory/hkip/karrp.pdf>.

¹¹ *Id.*

¹² *In the Matter of Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, Order, 22 FCC Rcd. 10541, 10565 (2007) ("Katrina Panel Order"), on recon., 22 FCC Rcd 18013 (2007), vacated, *CTIA v. FCC*, Nos. 07-1475 *et al.* (Order dated July 31, 2009).

¹³ *Id.*

must have an emergency backup power source (e.g. batteries, generators, fuel cells) for all assets necessary to maintain communications that are normally powered from local commercial power, including those assets located inside central offices, cell sites, remote switches and digital loop carrier system terminals. ...CMRS providers must maintain emergency backup power for a minimum of twenty-four hours for assets that are normally powered from local commercial power and located inside central offices, and eight hours for assets that are normally powered from local commercial power at other locations, including cell sites, remote switches and digital loop carrier system remote terminals.”¹⁴

These rules, which were the subject of a judicial challenge by several CMRS providers, never took effect and were ultimately vacated by the U.S. Circuit Court of Appeals for the District of Columbia after the FCC communicated its intent to the court to revise the rules in further rulemaking proceedings.¹⁵ Thereafter, in 2011, the FCC issued a Notice of Inquiry that consolidated three dockets broadly derived from initiatives set forth in the National Broadband Plan (NBP) regarding the reliability and continuity of the nation’s communications infrastructure.¹⁶ The NBP identified the inadequacy of backup power and insufficient communications backhaul redundancy as key factors that contribute to the congestion or failure of commercial wireless data networks, particularly during emergencies such as large-scale natural and man-made disasters.¹⁷ In 2012, by public notice, the FCC further expanded the inquiry in response to a June 29, 2012 “derecho” that had a significant adverse effect on communications services generally and 9-1-1 facilities particularly in the states of Ohio, Kentucky, Indiana, Virginia, West Virginia and Pennsylvania.¹⁸ Most recently, on November 21, 2012, the FCC has announced plans to convene a series of field hearings to examine new challenges to the nation’s communications networks in the wake of Super-storm Sandy and will focus on the unique challenges faced by communications service providers, state and local officials, emergency personnel, and consumers, before, during and after Super-storm Sandy as well as other natural disasters.¹⁹

In a presentation to the PSHSB, certain CMRS providers, through CTIA, indicated that best practices permitting flexible deployment of backup power assets that enable carriers to account for individual

¹⁴ See 47 C.F.R. §§ 12.2, *et seq.* (2007) (“Redundancy of Communications Systems”).

¹⁵ The Commission had provided that the rules would not take effect until the agency had published notice of approval from the U.S. Office of Management and Budget (“OMB”) under the Paperwork Reduction Act (44 U.S.C. §3501, *et seq.*) of the rules’ information collections. After the wireless petitioners filed their petitions for review challenging the backup power requirements, the D.C. Circuit issued an Order stating that the consolidated cases were not ripe for review and held them in abeyance pending OMB’s action. *CTIA – The Wireless Association v. FCC*, 530 F.3d 984, 986, 989 (D.C. Cir. 2008). OMB disapproved the information collection, *see* Office of Mgmt. & Budget, Executive Office of the President, Notice of Office of Mgmt. & Budget Action (2008), *available at* http://www.reginfo.gov/public/do/PRAViewICR?ref_nbr=200802-3060-019, and the Commission decided not to exercise its authority under the Paperwork Reduction Act to override the disapproval, *see* 44 U.S.C. § 3507(f)(1). Instead, the Commission filed a letter with the court stating its intent to revise the subject rules and requesting that the court dismiss the consolidated cases as moot. Letter from Nandan M. Joshi, Counsel for FCC to Mark Langer, Clerk of the U.S. Circuit Court of Appeals for the District of Columbia (Dec. 3, 2008). In an unpublished opinion, the court ordered the petitions for review to be dismissed as moot and vacated the challenged rules. *CTIA – The Wireless Association v. FCC*, No. 07-1475 (D.C. Cir. filed July 31, 2009).

¹⁶ FEDERAL COMMUNICATIONS COMMISSION, 26 FCC Rcd 5614, Notice of Inquiry, Release Number FCC 11-55, April 7, 2011, *available at* <http://www.fcc.gov/document/reliability-and-continuity-communications-networks-including-broadband-technologies>

¹⁷ *Id.* (citing to Chapter 12, “Energy and Environment” and Chapter 12.1, “Broadband and the Smart Grid” in the National Broadband Plan); *See* FEDERAL COMMUNICATIONS COMMISSION, Connecting America: The National Broadband Plan, March 2010, *available at* <http://www.broadband.gov/plan/>

¹⁸ FEDERAL COMMUNICATIONS COMMISSION, PS Docket No. 11-60, Public Notice, Release Number DA 12-1153, July 18, 2012, *available at* <http://www.fcc.gov/document/pshsb-seeks-comment-effects-derecho-storm-communications>

¹⁹ FEDERAL COMMUNICATIONS COMMISSION, News Release, November 21, 2012.

markets, dynamic network management and particular site characteristics represents the best approach to backup power requirements.²⁰ During the proceeding, the CMRS providers indicated that they adhere to voluntary programs, such as the CTIA Business Continuity/Disaster Recovery Program (“CTIA Program”), which is a ten-step certification program designed to ensure network reliability during power outages, and the Network Reliability and Interoperability Council (NRIC) Best Practices (now known as the Communications Security, Reliability and Interoperability Council, “CSRIC”), which are recommended standards focused on network reliability.²¹ Sprint and T-Mobile have been certified under the CTIA program since its inception in 2006.²² MetroPCS is not a member of CTIA.²³ All of the CMRS provider participants acknowledged that the NRIC Best Practices provide helpful guidance, but insist that the CMRS providers themselves are the experts primarily responsible for the reliability and resiliency of their networks.²⁴ Pursuant to the FCC Chairman’s announcement on November 21, 2012 relative to field hearings to examine new challenges to the nation’s communications networks in the wake of Super-storm Sandy, the FCC may revisit the issue of backup power requirements in the near future. Therefore, a new federal rule for backup power may be on the horizon.

b. State Jurisdictional Issues

During this proceeding, several of the CMRS provider participants indicated that state imposition of backup power requirements would be inconsistent with federal law and cited to the provisions of Section 332 of the Telecommunications Act of 1996 (“Telcom Act”) regarding state preemption and limitation.²⁵ Relevant to the jurisdiction and authority of PURA, Section 332(c)(3) of the Telcom Act states, “no state or local government shall have any authority to regulate the entry of or the rates charged by any commercial mobile service..., *except that this paragraph shall not prohibit a state from regulating the other terms and conditions of commercial mobile services.*” (Emphasis added). Relevant to the jurisdiction and authority of the Council, Section 332(c)(7)(A) of the Telcom Act states, “Except as provided in this paragraph, nothing in this Act shall limit or affect the authority of a state or local government or instrumentality thereof over decisions regarding the placement, construction and modification of personal wireless service facilities.” Section 332(c)(7)(B) further states, “The regulation of the placement, construction, and modification of personal wireless service facilities by any state or local government or instrumentality thereof - (I) shall not unreasonably discriminate among providers of functionally equivalent services; and (II) shall not prohibit or have the effect of prohibiting the provision of personal wireless services.”

PURA has jurisdiction over and issues certificates of public convenience and necessity (CPCN) for intrastate telecommunications services pursuant to C.G.S. §16-247a, *et seq.* None of the CMRS provider participants hold a CPCN from PURA.²⁶ On September 14, 2011, PURA opened a docket (Storm Docket) on its own motion to investigate and examine preparedness, service response and communications concerns surrounding Tropical Storm Irene and Storm Alfred, including, but not limited to,

²⁰ FEDERAL COMMUNICATIONS COMMISSION, WC Docket No. 06-63, Notice of Ex Parte, CTIA – the Wireless Association, November 19, 2009, *available at* <http://apps.fcc.gov/ecfs//document/view.action?id=7020349599>

²¹ Connecticut Siting Council, Docket No. 432, Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148, CTIA letter to Christopher B. Fisher, Esq., dated October 25, 2012.

²² *Id.*, Sprint Responses to Siting Council Interrogatories, Set I, Question 13, dated October 24, 2012; T-Mobile Responses to Siting Council Interrogatories, Set I, Question 13, dated October 25, 2012.

²³ *Id.*, MetroPCS Responses to Siting Council Interrogatories, Set I, Question 13, dated November 27, 2012.

²⁴ *Id.*

²⁵ Connecticut Siting Council, Docket No. 432, Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148, CTIA letter to Chairman Robin Stein dated October 1, 2012 and citations thereto by CMRS provider participants in responses to interrogatories.

²⁶ *Id.*

telecommunications.²⁷ In the final decision dated August 1, 2012, PURA indicated throughout the proceedings held on the Storm Docket that the wireless carriers argued that PURA has no jurisdiction over wireless industry relative to storm outages and restoral.²⁸ PURA found that the delivery of the wireless carriers' services immediately following the two storms was affected by two key issues: (1) the predominant loss of commercial power to the cell sites; and (2) the loss of commercial power to the backhaul facilities between carrier cell sites and their respective switching stations.²⁹ The wireless carriers continually referred PURA to the FCC, citing their disaster reporting responsibilities pursuant to the FCC's Disaster Information Reporting System (DIRS), which treats information maintained by wireless carriers as confidential pursuant to 47 C.F.R. §4.2.³⁰ After a technical meeting was held on May 18, 2012 to discuss the best means for the state of Connecticut to access data submitted to the FCC DIRS, the wireless carriers submitted a proposal ("Wireless Proposal") relative to the sharing of information limited to efforts to stabilize, recover and restore operations to levels necessary to support the communications needs of the carriers' respective customers within Connecticut.³¹ PURA found the Wireless Proposal to be responsive and satisfactory to PURA's needs in conveying outage/restoral information to other state agencies and also found the information provided to PURA will eliminate duplicative requests for such information from various state and local agencies.³² Unfortunately, not all of the CMRS provider participants in this proceeding are participants to the Wireless Proposal.³³ The Council sees no reason why all CMRS providers could not support the Wireless Proposal, and encourages any non-signatory—MetroPCS, for example—to become participants.

The Council has jurisdiction over and issues certificates of environmental compatibility and public need (CECPN) for the construction, maintenance and operation of telecommunications towers and associated equipment pursuant to the Public Utility Environmental Standards Act, C.G.S. §16-50g, *et seq.* This jurisdiction does not extend over antenna installations that are not associated with a "tower." The term "tower" is defined in Section 16-50j-2a of the Regulations of Connecticut State Agencies, which states, in pertinent part, "a structure, whether free standing or attached to a building or other structure, that has a height greater than its diameter and that is high relative to its surroundings...which is or is to be *used principally* to support one or more antennas for receiving or sending radio signals..." (Emphasis added). Therefore, an antenna installation that is to be affixed to the circumference of a functioning water tank, for example, would not be under the Council's jurisdiction; the principal use of the structure is a water tank. The municipal authority would have jurisdiction over this type of antenna installation.

As part of an application for a CECPN for a new telecommunications tower, as a matter of practice, or in response to Council interrogatories, CMRS providers submit plans for backup power at a proposed site. The CMRS provider participants were requested through interrogatories to indicate whether they would be willing to comply with a Council CECPN condition for a permanent backup power source with the ability to provide backup power for a defined duration and to the extent the proposed site can technically, legally, economically and environmentally accommodate the permanent backup power source. Verizon

²⁷ PUBLIC UTILITIES REGULATORY AUTHORITY, Docket No. 11-09-09, PURA Investigation of Public Service Companies' Response to 2011 Storms, Final Decision, August 1, 2012, *available at* <http://www.dpuc.state.ct.us/FINALDEC.NSF/0d1e102026cb64d98525644800691cfe/94379d4dcd71849f85257a4d005dbe5c?OpenDocument&Highlight=0,11-09-09>

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ *Id.* ("Wireless carriers include: AT&T Mobility, Sprint Nextel, T-Mobile and Verizon Wireless."); Connecticut Siting Council, Docket No. 432, Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148, Metro PCS Responses to Council Interrogatories Set I, Question 20, dated November 27, 2012.

responded that it includes in each of its certificate applications a provision for battery backup power and a permanent backup generator, but did not indicate whether it would be willing to comply with a Council condition for backup power.³⁴ AT&T responded that it incorporates the capability for deployment of fixed generators into its tower applications before the Siting Council, but indicated the Council does not have specific legal authority to either compel an applicant or condition approval of an application on a specific form of backup power.³⁵ MetroPCS responded that it generally collocates on existing facilities rather than applies to the Council for construction of new facilities, but indicated the imposition of such a condition may have unintended consequences and may negatively impact the siting of facilities.³⁶ T-Mobile responded that it would be willing to comply with a Council condition for backup power at new cell sites assuming jurisdictional, regulatory and financial limitations could be overcome.³⁷ Sprint responded that a backup power mandate instituted in Connecticut would likely entail considerable expense to carriers and such a circumstance might have a chilling effect on network development, network expansion and the introduction of new technologies in Connecticut.³⁸ Therefore, generally considering federal limitations on state jurisdiction and specifically considering not all CMRS provider participants are signatories to the Wireless Proposal, there is no all-encompassing jurisdictional hook for a statewide mandate for backup power.

Note that the Council frequently has acted to “harden” primary commercial power at telecom facilities in order to alleviate the need for backup power. When applying for a CECPN, the CMRS provider identifies the location and type of connection proposed to the local utility (electric and telephone), and the Council carefully considers these connections. Many of these sites are located between a few hundred feet to over one thousand feet from the nearest utility pole. Also, many sites traverse wooded areas. Typically, the Council has ordered CMRS providers to install their telephony and electric wire connections underground, both to decrease the visual impact and to protect against ice, wind and falling trees. This approach is reasonable and feasible and the CMRS providers comply with this requirement.

c. Local Jurisdictional Issues

As indicated in Section 1(b) above, the Council does not have jurisdiction over antenna installations that are not associated with a tower. These types of antenna installations are reviewed and approved by municipal commissions. The antenna installations include, but are not limited to, building rooftops, billboards, water tanks used principally for water purposes, or smokestacks used principally for emissions purposes. The CMRS provider participants were requested through interrogatories to indicate whether the provision of backup power is typically addressed when the participant negotiates a lease for a cell site. Verizon responded in the affirmative.³⁹ AT&T responded “not specifically” and indicated its leases typically incorporate broad tenant rights for the installation of wireless facility components.⁴⁰ MetroPCS responded “sometimes” and indicated it will typically negotiate sufficient space to accommodate any business or regulatory requirements it may have for backup power.⁴¹ T-Mobile responded that its standard lease template includes a provision which enables it to deploy the necessary utilities to operate a cell site and indicated landlords frequently negotiate for the limited application or preclude the use of emergency power generators altogether.⁴² Sprint did not respond to the question, but rather placed the burden on the

³⁴ *Id.*, Verizon Wireless Response to Council Interrogatories Set II, Question 25, dated November 27, 2012.

³⁵ *Id.*, AT&T Response to Council Interrogatories Set II, Question 25, dated November 27, 2012.

³⁶ *Id.*, MetroPCS Response to Council Interrogatories Set II, Question 25, dated November 27, 2012.

³⁷ *Id.*, T-Mobile Response to Council Interrogatories Set II, Question 25, dated November 27, 2012.

³⁸ *Id.*, Sprint Response to Council Interrogatories Set II, Question 25, dated November 27, 2012.

³⁹ *Id.*, Verizon Wireless Response to Council Interrogatories Set II, Question 23, dated November 27, 2012.

⁴⁰ *Id.*, AT&T Response to Council Interrogatories Set II, Question 23, dated November 27, 2012.

⁴¹ *Id.*, MetroPCS Response to Council Interrogatories Set II, Question 23, dated November 27, 2012.

⁴² *Id.*, T-Mobile Response to Council Interrogatories Set II, Question 23, dated November 27, 2012.

Council to determine the extent of Sprint's backup power deployment and to draw a conclusion regarding whether backup power is typically addressed when Sprint negotiates a lease.⁴³

For antenna installations over which the Council does not have jurisdiction, CMRS provider participants apply to the host municipality for approval, including approval of the backup power source for the antenna installations. The CMRS provider participants were requested through interrogatories to list the types of permits required for installing backup power. Verizon indicated that it receives local building and zoning approvals for its backup power systems.⁴⁴ AT&T indicated that it receives zoning approvals for its backup power systems that are incorporated into permit and construction drawings submitted by AT&T.⁴⁵ MetroPCS indicated backup power is typically installed under an electrical building permit.⁴⁶ T-Mobile indicated it complies with all necessary permits required for installing backup power.⁴⁷ Sprint indicated the answer to the question varies from location to location and depends on factors including local zoning issues, local construction permitting processes, environmental issues, issues regarding historic preservation, noise ordinances, and issues related to site leases.⁴⁸ Therefore, with 169 municipalities within the state that have jurisdiction over antenna installations not associated with a tower, there would be no uniformity relative to backup power requirements for antenna installations over which the Council does not have jurisdiction.

2. Similar laws or initiatives in other states;

In 2006, Governor Schwarzenegger approved a bill with provisions that directed the California Public Utilities Commission ("CPUC") to open an investigative proceeding, in consultation with the Office of Emergency Services and the Department of General Services, to identify the need for telecommunications service systems to have installed backup power and to determine whether recommendations for backup systems have been implemented by telecommunications service providers operating in California.⁴⁹ The CPUC opened an Order Instituting Rulemaking, engaged in a thorough investigation of reliability standards for telecommunications emergency backup power systems and emergency notification systems, and issued a Final Analysis Report on May 9, 2008.⁵⁰ From the technical review and cost analysis performed in the investigation, the CPUC generated conclusions and possible options for several issues, including backup power at network sites.⁵¹ Recognizing currently implemented industry best practices for backup power provide 24 hours of fuel storage at central office facilities and 4-hour minimum of backup reserve capacity at remote terminals with an objective of 8 hours at critical sites, the CPUC came to the following conclusions:

1. Current reserve backup capacity and design criteria used for Remote Terminal and Central Office facilities have proven successful in providing emergency telecommunications in more than 95% of power outages;
2. The large majority of California customers are served by providers who comply with NRIC Best Practices;

⁴³ *Id.*, Sprint Response to Council Interrogatories Set II, Question 23, dated November 27, 2012.

⁴⁴ *Id.*, Verizon Wireless Response to Council Interrogatories Set I, Question 17, dated October 25, 2012.

⁴⁵ *Id.*, AT&T Response to Council Interrogatories Set I, Question 17, dated October 25, 2012.

⁴⁶ *Id.*, MetroPCS Response to Council Interrogatories Set I, Question 17, dated November 27, 2012.

⁴⁷ *Id.*, T-Mobile Response to Council Interrogatories Set I, Question 17, dated October 25, 2012.

⁴⁸ *Id.*, Sprint Response to Council Interrogatories Set I, Question 17, dated October 24, 2012.

⁴⁹ CALIFORNIA PUBLIC UTILITIES COMMISSION, Reliability Standards for Telecommunications Emergency Backup Power Systems and Emergency Notification Systems Pursuant to California Public Utilities Code §776, §2872.5 and §2892, Final Analysis May 2008, available at <http://www.cpuc.ca.gov/NR/rdonlyres/3196E853-F0F8-4CCC-ADB5-1C1870CFCCA6/0/FinalAnalysisReportMay92008.pdf>

⁵⁰ *Id.*

⁵¹ *Id.*

3. The costs to harden network facilities, ensure environmental safeguards and implement hazard reduction protocols with increased fuel capacity at central office facilities are far greater than having an efficient fuel delivery schedule and contingency plans in case of an emergency;
4. The costs of permanently adding battery capacity at remote terminals is far higher than having a contingency plan for delivery of new batteries or portable generators to critical sites in the case of a long term power outage or emergency;
5. The probability of the additional battery capacity being needed over the lifetime of the cabinet or the lifetime of the battery is small.⁵²

The recommended approach to backup power at network sites was to require minimum backup times with flexibility to service providers to allow for software engineering and network reconfiguration as a response to emergencies.⁵³ This would therefore allow for mitigating circumstances that may prevent service providers from achieving the desired objectives that could be documented and allow service providers to show that an emergency plan is in place to augment the backup power capacity at network sites.⁵⁴ Unfortunately, the CPUC did not promulgate a statewide backup power rule.

A similar rulemaking proceeding was initiated by the Texas Public Utility Commission (“TPUC”) in 2008 due to recommendations made in a hurricane report.⁵⁵ TPUC proposed new rules that would require certificated telecommunications utilities to install emergency power in coastal areas capable of full and complete normal operation for 72 hours after loss of commercial power.⁵⁶ Unfortunately, the TPUC did not promulgate a backup power rule. However, a different approach was taken in a particular case where Mid-Tex Cellular, Ltd. applied to the TPUC for designation as an ETC and the TPUC stated in its approval, “each cell site will also be equipped with a permanent backup generator capable of at least six hours of backup power.”⁵⁷

Other state public utility commissions, including Colorado, Alaska and Iowa have also used a case by case approach that requires tower sites to be equipped with backup power for a specified duration by regulation or as a condition of a decision to grant applicants designation as an eligible telecommunications carrier (“ETC”).⁵⁸ In Colorado, the Code of Regulations states, “In the event of a commercial power failure the provider shall furnish a minimum of four hours of backup power or battery reserve rated for peak traffic load requirements from the provider’s power source to the network interface in landline (coaxial, fiber or copper) applications in order to support existing basic service to lines that use a traditional ringer. A mobile power source shall be available that can be delivered and connected within four hours. Additional battery reserve capacity beyond the four-hour minimum shall be provided based on the consideration of local conditions.”⁵⁹ In Alaska, in regulations regarding designation of eligible telecommunications carriers, applicants are required to maintain “at least eight hours of backup power to ensure functionality without local alternating current (AC) commercial power.”⁶⁰ In Iowa, as part of

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ TEX. PUBLIC UTIL. COMM’N, Docket No. 30666 (August 9, 2005).

⁵⁸ ALASKA ADMIN. CODE, Title 3, §53.410 (a) (12) (2012); 4 COLO. CODE REGS. § 723.2 (2012); IOWA ADMIN. CODE R.199-39.2 (2012); IOWA ADMIN. CODE R.199-39.6 (2012); TEX. PUBLIC UTIL. COMM’N, Docket No. 30666 (August 9, 2005).

⁵⁹ 4 COLO. CODE REGS. § 723.2 (2012).

⁶⁰ ALASKA ADMIN. CODE, Title 3, §53.410 (a) (12) (2012).

universal service certification regulations, carriers “shall certify that the carrier is able to maintain backup power for a minimum of two hours to ensure functionality without an external power source.”⁶¹

The term, “ETC” is defined under 47 U.S.C. §214 as carriers eligible to receive universal service support distributed pursuant to 47 U.S.C. §254 who shall, throughout the service area for which the designation is received offer the services that are supported by Federal universal service support mechanisms under section 254(c), either using its own facilities or a combination of its own facilities and resale of another carrier's services (including the services offered by another eligible telecommunications carrier) and advertise the availability of such services and the charges therefor using media of general distribution.⁶² 47 U.S.C. §214 further describes designation as an ETC by a state public utility commission, as follows:

“A State commission shall upon its own motion or upon request designate a common carrier that meets the requirements of {an eligible telecommunications carrier} for a service area designated by the State commission. Upon request and consistent with the public interest, convenience, and necessity, the State commission may, in the case of an area served by a rural telephone company, and shall, in the case of all other areas, designate more than one common carrier as an eligible telecommunications carrier for a service area designated by the State commission, so long as each additional requesting carrier meets the requirements of {ETC designation}. Before designating an additional eligible telecommunications carrier for an area served by a rural telephone company, the State commission shall find that the designation is in the public interest.”⁶³

The CMRS provider participants were requested through interrogatories to indicate whether they are certified as an ETC in any state. Verizon indicated it is not certified as an ETC in Connecticut; however Verizon, or one of its legacy companies, retains ETC status in Iowa, New York, North Dakota and Wisconsin.⁶⁴ AT&T indicated it is not certified as an ETC in Connecticut, but that it is certified as an ETC in other states.⁶⁵ MetroPCS indicated it is not certified as an ETC in any state.⁶⁶ T-Mobile indicated that through its corporate affiliates, it is certified as an ETC in several states, including Connecticut for Lifeline Purposes Only pursuant to an order adopted by the FCC on August 16, 2012.⁶⁷ Sprint indicated it is not certified as an ETC in any state.⁶⁸ Therefore, given that not all of the CMRS provider participants are ETCs in the state of Connecticut, an approach based on Public Utility Commission certification for a backup power mandate would not be feasible.

⁶¹ IOWA ADMIN. CODE R.199-39.2 (2012).

⁶² 47 U.S.C. §214 (2012).

⁶³ *Id.*; (5) "Service area" defined. The term "service area" means a geographic area established by a State commission (or the Commission under paragraph (6)) for the purpose of determining universal service obligations and support mechanisms. In the case of an area served by a rural telephone company, "service area" means such company's "study area" unless and until the Commission and the States, after taking into account recommendations of a Federal-State Joint Board instituted under section 410(c) [47 USCS § 410(c)], establish a different definition of service area for such company.

⁶⁴ Connecticut Siting Council, Docket No. 432, Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148; Verizon Responses to Council Interrogatories Set II, Question 21, dated November 27, 2012.

⁶⁵ *Id.*; AT&T Responses to Council Interrogatories Set II, Question 21, dated November 27, 2012.

⁶⁶ *Id.*; MetroPCS Responses to Council Interrogatories Set II, Question 21, dated November 27, 2012.

⁶⁷ *Id.*; T-Mobile Responses to Council Interrogatories Set II, Question 21, dated November 27, 2012.

⁶⁸ *Id.*; Sprint Responses to Council Interrogatories Set II, Question 21, dated November 27, 2012.

3. The technical and legal feasibility of such backup power requirements;

a. Technical Feasibility

The Context of Network Operations Overall

Public Act 12-148 was promulgated to examine backup power by itself, as a discrete element of network operations. This approach overlooked the key technical point that other elements are equally important to network operations overall. Simply put, networks need more than power. They also need signal. Signals received wirelessly at towers and antenna locations must be delivered from there via wires to switching offices, where they are either routed to another tower or antenna location for wireless transmission to a wireless end-user or to the wireline network for delivery to a wired end-user. This switching and routing part of network operations is known as backhaul. Backhaul typically utilizes either existing copper telephone wires or fiber-optics to carry signal: these lines are no more under the CMRS providers' control than power lines are. Thus, even if backup power requirements were found to be technically and legally feasible, implementing such requirements would not be sufficient to assure networks could function.

Examining requirements for backup power by itself also begs the question of how to prevent the commercial power lines from failing in the first place. Sprint-Nextel contends the most important need is to assure commercial power through hardening, restoration planning, and other means.⁶⁹ Since CMRS providers do not own the power facilities, however, they cannot make such improvements.

In sum, from a technical point of view, it is unreasonable to create requirements meant to assure 100 percent reliable network operations 100 percent of the time, because networks are not currently designed in a way that allows CMRS providers to control all the necessary functional inputs.⁷⁰ CMRS providers favor, instead, voluntary, market-driven industry solutions to promote network resiliency and service reliability. They do not believe one-size-fits-all requirements are appropriate or flexible enough to deal with the diverse and unpredictable events that cause network outages; they argue that such mandates would deter innovation and competition as well as increase cost unnecessarily.⁷¹

Voluntary Solutions for Overall Network Resiliency

Various types of voluntary solutions to assure network resiliency during disasters have been developed by CMRS providers in the years since Hurricane Katrina. Some of these solutions are administrative only, and assume technical feasibility; others, more operational, have proven to be technically feasible. This section describes these various types.

(Administrative Solutions)

- The CSRIC is a Federal Advisory Committee that will provide recommendations to the FCC regarding best practices and actions the FCC can take to ensure the security, reliability, and interoperability of commercial and public safety communications systems. CMRS providers routinely consider and incorporate applicable best practices; however, the CSRIC best practices do not supplant CMRS providers' own practices to ensure operation of their individual networks in an emergency situation.

⁶⁹ *Id.*, Sprint Response to Council Interrogatories Set I, Question 5, dated October 24, 2012.

⁷⁰ *Id.*, T-Mobile Response to Council Interrogatories Set I, Question 37, dated November 26, 2012.

⁷¹ *Id.*, MetroPCS Response to Council Interrogatories Set I, Questions 5 and 14, dated November 27, 2012.

- CTIA has instituted and oversees a Business Continuity/Disaster Recovery Program. (Attached as Exhibit 1) Begun in 2006, this program requires “CMRS providers to (1) establish, fund, implement, maintain, and update Business Continuity and Crisis Management Plans; (2) complete and monitor results of exercises and drills of the Business Continuity/Disaster Recovery program; and (3) develop plans to communicate with employees, management, other stakeholders, and government representatives.”⁷² AT&T, Sprint-Nextel, T-Mobile, and Verizon have certified their compliance each and every year since 2006. ⁷³ MetroPCS is not a CTIA participant; however, MetroPCS does plan, prepare, respond and recover similarly to the other CMRS providers.
- A CMRS provider’s switching office is the first link to the wireline side of telephony and would be the first priority to have backup power.
- Beyond prioritizing their switching facilities, CMRS providers have established further priorities regarding the cell sites that should be preferentially hardened or restored in disasters. In each case, the prioritizing is done per a provider’s public sector account teams, local market knowledge, and public safety agencies. While labels may vary, and details may differ, all providers generally concur on their priorities. The following outline was provided by Sprint. A Tier 1 site covers critical locations such as hospitals, airports, stadiums, ports, major areas that may be designated as evacuation areas, or other critical accounts, such as the State EOC. Tier 2 sites are considered coverage sites in populated areas and primary transportation corridors. Tier 3 sites are capacity sites.

(Operational Solutions)

The CSRIC best practices and CTIA Recovery Program provide guidance regarding a more feasible approach to network recovery than just instituting ‘across the board’ backup power provisions. The Council recognizes this. Moreover, the Council understands that the CMRS providers must work within a federal, state and municipal hierarchical recovery effort responsible for numerous infrastructure resources. Hence upgrades to backup power, a single component of network operations, while logical on paper, may not be so easy to implement in reality. Nonetheless, upgrading network system components is a feasible approach to maintaining network operations. For background, the Council reports in this section on some large-scale operational solutions to network failures, including some system upgrades to system components other than backup power.

- In Connecticut, each CMRS provider operates its own emergency operating center to assess its network needs, communicate outages to the appropriate utility, and report to PURA and the FCC its disaster information. These separate centers have worked adequately to meet each company’s needs; it is unclear whether or not it would be technically feasible for these centers to be coordinated.
- AT&T is the only CMRS provider embedded at the State Emergency Operations Center (EOC) during a time of declared emergency. As the historical and predominant owner of wireline communications in the state, AT&T is mainly responsible for tracking wireline damage and recovery; nonetheless, the opportunity to track the status of its wireless facilities is also beneficial for both the company and the state.

⁷² *Id.*, Sprint Response to Council Interrogatories Set I, Question 14, dated October 24, 2012.

⁷³ *Id.*, AT&T Response to Council Interrogatories Set I, Question 13, dated October 25, 2012.

- Whether or not CMRS providers are embedded at the Connecticut EOC, they can benefit from prompt and comprehensive reports from the EOC along the lines of the New Jersey model.⁷⁴
- As reported in the media, widespread flooding and power outages took down 25 percent of cell sites across selected counties in ten states during Storm Sandy. AT&T and T-Mobile responded by making extraordinary efforts to share each other's respective networks, via a roaming arrangement, that enabled customers to place calls as they normally would at no extra cost.⁷⁵ The Council recognizes the admirable effort on behalf of T-Mobile and AT&T and encourages innovative collaboration amongst all CMRS providers. Moreover the Council believes that this quick and efficient feasible solution needs further exploration to open the whole CMRS network during times when the state declares a state of emergency.
- CMRS providers' networks in Connecticut have significant overlapping continuous coverage. This alone allows cell sites to fully or partially compensate an inoperative neighboring site.
- Presently, each CMRS provider is upgrading its network to 4G technology that will support a greater coverage footprint and a greater capacity to handle a mass calling event or an increase in demand during outages.
- CMRS providers revealed ongoing upgrades from existing copper telephone (F1) lines to new Ethernet optical fiber backhaul technology, which will increase resiliency. In addition, CMRS providers have employed microwave backhaul to sites that presently have fiber connection to switching offices. Fiber is more reliable than copper wire (99.99% vs. 99.9%) because the fiber equipment is new, and less susceptible to damage from lightning or flooding.⁷⁶
- A question often posed is as follows: "Can a carrier just turn up power to compensate for sites out of service?" That is not a feasible solution. Increasing power output from an antenna accomplishes little if the phone cannot "talk back" to the antenna located on a building or tower. Also, increasing power to increase coverage causes interference with adjacent sites, since frequency reuse is inherent in the network. Boosting power at the antenna will only decrease network reliability, not maintain it, and is thus infeasible.
- What about compensating by increasing the power at the cellphone—that is, adding to the capability of the cellphone's battery? Although this suggestion at least correctly targets the limiting factor within a wireless network, it would not work either. At the outset of the cellphone industry, a prototype mobile phone was as big as a briefcase and had large battery packs; it evolved to a brick-size phone with a slightly smaller battery, or a car-mounted phone utilizing the car battery, either of which provided the power to uplink to antennas on towers at great distances. Distances from antenna location to antenna location have shrunk and battery technology has evolved much further to create thin, smaller mobile devices. Attempting at this point to provide a battery strong enough to solve large-scale network problems would be a step backwards and is infeasible.
- Using a cellphone's battery more efficiently, however, will accomplish the same purpose as increasing its power, and if many people were to use text instead of voice messaging the reliability of the network as a whole would indeed increase. Voice uses greater bandwidth than text messaging, as sound is more complicated to convey than graphic characters. Voice

⁷⁴ T-Mobile Late File Exhibit 3 New Jersey Situational Status Report

⁷⁵ *Id.*, T-Mobile Response to Council Interrogatories Set II, Question 33, dated November 26, 2012.

⁷⁶ *Id.*, Sprint Response to Council Interrogatories Set II, Question 43, dated November 26, 2012.

communications also demand immediate and uninterrupted connectivity, whereas a text message, once initiated, can be held in a queue until an open channel becomes available to complete the transmission. Since texting is a much more efficient use of battery power, not to mention bandwidth, than communicating by voice, texting stresses a network as a whole much less. Greater public understanding of this fact, and consequent greater usage of text, can significantly assist the efficiency and reliability of network operations.⁷⁷

Voluntary or Ancillary Solutions during Storm Sandy Regarding Backup Power Recovery

Last year's storms in Connecticut resulted in widespread commercial power outages. Following the CSRIC and CTIA guidelines, Connecticut CMRS providers pre-staged crews, fuel supply, and portable generators in the market area. To the extent that they were able to get through to cell sites, this preparation allowed them to autonomously respond and recover from backup power interruptions without relying on the retail market for resources.

Data presented to the Two Storm Panel in 2011 indicated that Connecticut has one of the most dense tree canopies in the United States (# 1 in the U.S. for our Wildland/Urban Interface tree density). Connecticut's tree profile, also, revealed trees with larger circumferences than average. UIL Holdings estimated that over 300,000 trees are planted in the utility-pole rights of way (ROW) in its 17 town territory.⁷⁸ One recommendation from the Two-storm panel report included a State Vegetation Management Task Force (SVMTF) whose mission was "To develop standards for road side tree care in Connecticut, vegetation management practices and schedules for utility rights of way, right tree/right place standards, standards for tree wardens, municipal tree inventories and pruning schedules."⁷⁹ After the two storms in 2011 the utilities and State Department of Transportation initiated an intensive tree pruning/removal program of the roadside forest to minimize future losses and disruptions to both roadway obstructions and fallen utility lines. These actions are consistent with findings of the SVMTF report and did help the CMRS providers with recovery from Storm Sandy. Indeed, DESPP testified that the Make Safe Protocol contained within the Connecticut Emergency Support Function #12 All Hazards Energy and Utilities Annex⁸⁰ is based on the lessons learned from past storms, which places into each town, at a minimum, one dedicated tree crew and one line crew from the utilities to clear roadways of downed trees and power lines. During Storm Sandy, this effort facilitated the CMRS providers in gaining access to their sites and bringing in backup power.

Physical Backup Power Systems

Backup power can be supplied by batteries, internal combustion engines, and fuel cells. The type of backup power chosen for use at a facility is determined by facility constraints (space, weight restrictions, lease arrangements, zoning codes), environmental limitations and liabilities, capital and operating/maintenance costs, network functionality, and fuel availability.

⁷⁷ *Id.*, AT&T Response to Council Interrogatories Set II, Question 36, dated November 26, 2012.

⁷⁸ Final Report of the Two Storm Panel, January 9, 2012, *available at* http://www.ct.gov/dep/lib/dep/forestry/vmtf/two_storm_panel_final_report.pdf page 14

⁷⁹ http://www.ct.gov/dep/lib/dep/forestry/vmtf/final_report/part_one.pdf page 4.

⁸⁰ DEPARTMENT OF EMERGENCY SERVICES AND PUBLIC PROTECTION, DIVISION OF EMERGENCY MANAGEMENT AND HOMELAND SECURITY, STATE OF CONNECTICUT STATE RESPONSE FRAMEWORK, Draft Connecticut Emergency Support Function 12, All Hazards Energy and Utilities Annex, July 2012, *available at* http://www.ct.gov/demhs/lib/demhs/eppi/esf_12_all-hazards_energy_and_utilities_annex_final_draft_july_2012.pdf

Virtually all cell sites in Connecticut employ a bank of batteries for short-term backup. On average, these supply four to eight hours of power dependent upon usage of the facility. Installation of additional batteries to extend the duration of power is an option. This would necessitate adequate space and possibly structural modifications to support the added weight.

Backup power supplied by a fuel cell publicizes green energy yet is expensive; installed costs for fuel cell systems are \$4,000 and greater per kW. Like batteries, fuel cells can easily be scaled up to extend the amount and duration of power. While Sprint and T-Mobile have deployed fuel cells, other CMRS providers are only at the stage of reviewing this type of system.

Internal combustion generators may be installed permanently at cell sites or transported to locations as needed. Typical generators are fueled by diesel, with some portable units fueled by gasoline. Fuel storage is incorporated into the unit and includes secondary containment. In cases where natural gas is available, it is the fuel of choice for both firm delivery and low emission profiles. Hydrogen and propane require more elaborate regulatory requirements than other fuels regarding storage and refueling in or adjacent to occupied buildings.

At most cell sites, individual CMRS providers each supply their own backup power, which may differ in the type of system employed. For certain sites, a centralized or shared backup power system may offer environmental and economic benefits. A shared fixed generator must have an engine sized to a large demand and may not be possible to accommodate at various types of wireless facilities. Shared generators also are limiting factors with respect to each CMRS provider's current and future planning, given that wireless technology is constantly evolving. Moreover, these shared backup power systems are no more or less likely to fail than generators providing backup power to a single provider. If a shared power system were to fail, then each individual provider would deploy a temporary/portable generator.⁸¹ Potential shared installations include sites covering state and municipal emergency services, emergency operating centers, hospitals, airports, university campuses, corporate/private buildings requiring 24/7 power, and other sites where buildings and infrastructure can be integrated into a "microgrid" around distributed generation. In reality, such shared systems are few and far between, since they raise certain issues that will be mentioned further under "Legal Feasibility" below. Nonetheless, they are technically feasible, as illustrated by their use in the microgrid scenarios mentioned. The Council will explore shared backup power sources as applicable to new tower facility applications.

Costs

If backup power requirements were mandated, CMRS providers would need to allocate significant capital and operating costs for upgrading their backup systems. Costs for typical battery and generator systems are as follows:

Batteries – anywhere from installed cost of \$5,000 for a small site to \$30,000 for larger sites, with additional operational costs for a finite battery lifetime and disposal costs.

Generators – anywhere from \$5,000 to \$20,000 for typical sites, some of the larger sites possibly reaching \$50,000 for installed cost. Installed first cost per kW ranges from \$800 to \$1,400.⁸²

For example, one CMRS provider has 578 tower sites in Connecticut. Assuming a median installed first cost of \$17,500 times 578 locations equals an initial capital expense of \$10.1 million for batteries. Assuming a typical-size generator with a power output of 50,000 Watts (50kW) times a median installed

⁸¹ *Id.*; AT&T Responses to Council Interrogatories Set II, Question 40, dated November 27, 2012.

⁸² Reliability Standards for Telecommunications Emergency Backup Power Systems and Emergency Notification Systems, Final Analysis Report, May 9, 2008, California Public Utilities Commission, pp. 57 and 71

first cost of \$1,100 per kW times 578 locations equals an initial capital expense of \$31.8 million for generators. Maintenance and operating costs have not been included for either technology.

Incremental costs to backup battery power were not explored, but a plan to extend battery backup power from an eight-hour period to 16 or 24 hours may have merit. The Council understands that space and weight may limit the number of sites that are capable of such expansion, but determines this type of plan to be feasible, and directs the CMRS providers to consider it for their more remote sites that could become particularly difficult to access during disasters.

b. Legal Feasibility

In addition to the jurisdictional issues related to backup power requirements, there are also cost, compliance, and competitive legal issues.

First, CMRS providers would be required to re-negotiate leases for existing cell sites to make provision for any backup power requirements, as described in Section 1(c) above. Nearly every cell site is located on leased property.⁸³ This would include leases at cell sites over which the Council has jurisdiction, as well as antenna installations over which municipalities have jurisdiction. Backup power requirements would result in significant transaction costs being incurred by the CMRS providers to re-negotiate leases. The transaction costs would likely be passed on to consumers. In some instances, a landlord may provide a backup power generator, such as antenna installations on hospital rooftops, but in other instances, a landlord may not permit a lessee to install a backup generator on the landlord's property. Therefore, a statewide backup power mandate may result in cell sites being dismantled, relocated or abandoned.

Second, CMRS providers would be confronted with regulatory compliance issues. As has been mentioned above, generators are prohibited at certain locations, such as rooftops, smokestacks, water tanks, or church steeples. Furthermore, federal Environmental Protection Agency rules, such as the Clean Air Act, EEP rules, such as the Noise Control Regulations, and local fire codes, building safety rules and other regulations may conflict relative to the installation of backup power in certain locations.

Third, several CMRS providers have indicated that a backup power mandate in the state of Connecticut would force them to take cell sites offline because they could not legally comply. Alternatively, if all CMRS providers were forced to invest equally in backup power and somehow complied, consumers would have not have the power to choose a provider based on that variable.⁸⁴ Strictly on a cost basis, the expense of retrofitting existing cell sites with backup power under a state mandate would be prohibitive, inhibiting the construction of new cell sites.⁸⁵ For all these reasons, the providers argue that a mandate would both decrease the availability of service to consumers and compromise competition in the telecommunications industry.

Lastly, the CMRS providers addressed the suggestion that they increase the number of cell sites where they share a centralized backup power source. In their opinion, this suggestion raises transaction costs, maintenance and liability issues, especially in cases where a tower company, not a CMRS provider, owns

⁸³ AT&T Testimony on HB 5544, March 20, 2012, available at <http://www.cga.ct.gov/2012/ETdata/Tmy/2012HB-05544-R000320-AT&T%20-%20John%20Emra-TMY.PDF>

⁸⁴ *Id.*; Verizon Testimony on HB 5544, March 20, 2012, available at <http://www.cga.ct.gov/2012/ETdata/Tmy/2012HB-05544-R000320-Verizon-TMY.PDF>

⁸⁵ PCIA Testimony on HB 5544, March 20, 2012, available at <http://www.cga.ct.gov/2012/ETdata/Tmy/2012HB-05544-R000320-PCIA-TMY.PDF>

the cell site. This was their most widely-cited concern. This proceeding did not include tower owners and/or management companies.

4. The environmental issues concerning such backup power; and

Typical environmental issues concerning backup power at CMRS provider facilities are the potential for batteries or fuel to leak from storage; visibility to neighbors; noise from air-conditioning units or during weekly generator tests; and air emissions.

Certain of the backup power systems described above may contain hazardous materials or generate waste detrimental to human health and the environment. The two systems of most concern are batteries and generators fueled by diesel, propane or natural gas.⁸⁶ Batteries are self-contained units linked in linear strings and under constant charge by commercial power. They have a lifespan of five to ten years. Leakage and disposal present potential environmental problems. Diesel is a common fuel used to fuel generators and such setups have double-walled tanks and many are housed in shelters with impermeable floor systems. Propane/natural gas fuels are gases and do not spill, but gas leaks into the environment have a potential for risks of explosion or the depletion of atmospheric ozone. Like all other backup power systems, both battery and fossil fuel systems have their own storage and containment specifications consistent with a spill prevention and control plan. Such plans protect the health and safety of the public under typical operating scenarios. However, these systems can be vulnerable to natural and man-made catastrophic events.

Backup power systems do not generally raise visibility issues since they are typically housed within equipment buildings. Systems placed outside have a low profile.

The two most common environmental impacts from operating backup power generators are noise and air emissions. Noise suppression methods include baffled enclosures, mufflers, or increased distance to noise receptors. Typically, land-use ordinances address allowable noise emission levels and the CMRS providers review and comply as necessary with such regulations. However, State of Connecticut noise regulations exempt "noise created as a result of, or relating to, an emergency."⁸⁷

As to air emissions, DEEP requires a permit to operate a generator that has the potential to exceed the pollutant criteria threshold of 15 tons per year. CMRS providers may or may not hold such a permit under normal circumstances depending on the type of generator they plan to install. Generators that do not exceed the pollutant criteria threshold are regulated by DEEP through a general "permit by rule". At any rate, in anticipation of Storm Sandy, DEEP released an authorization on October 26, 2012 for the temporary operation of emergency engines without regard to permit through November 14, 2012. It required the operators to make and keep records of the fuel usage and resulting emissions during that period, and provide those figures to DEEP in an annual report.

Operation of backup generators has associated electrical safety and occupational hazards. The National Electric Code and Office of Safety and Health Administration rules govern personnel activity in proximity of these devices. In a disaster, water infiltration would be of particular concern. Either leaking enclosures or flooding could cause equipment to fail, and in some instances cause arcing or fire. To protect potential fire outbreaks, equipment could be turned off in advance of water penetration: this is what the Connecticut utilities did at some substations during Storm Sandy. If the CMRS providers were to

⁸⁶ CTIA Testimony on HB 5544, March 20, 2012, available at [http://www.cga.ct.gov/2012/ETdata/Tmy/2012HB-05544-R000320-CTIA%20-%20Gerard%20Keegan-TMY%20\(2\).PDF](http://www.cga.ct.gov/2012/ETdata/Tmy/2012HB-05544-R000320-CTIA%20-%20Gerard%20Keegan-TMY%20(2).PDF)

⁸⁷ Regulations of Connecticut State Agencies §22a-69-1.8

protect their backup generators in this way, the outage would be temporary, but nonetheless it would defeat the purpose of backup power. Just as the Council carefully examines applications for new substations in terms of a site's topography and potential for flooding, it will scrutinize new tower applications in the same terms.

5. Any other issue concerning backup power that PURA deems relevant to such study.

As indicated in Section 1(b) above, after the two storms of 2011, PURA opened a Storm Docket on its own motion to investigate and examine preparedness, service response and communications concerns. During the proceeding, the CMRS providers submitted the Wireless Proposal⁸⁸ and⁸⁸ in its final decision, PURA found the Wireless Proposal to be responsive and satisfactory to PURA's needs in conveying outage/restoration information to other state agencies. During Super-storm Sandy, the Wireless Proposal was implemented and the results were favorable, in that representatives from CMRS providers were available to interface with the State EOC.⁸⁸

CONCLUSIONS

Legal

- Federal jurisdiction generally leaves no opening for state agencies to mandate backup power requirements.
- Even if some opening were discovered, now is not the time for a Connecticut agency to mandate backup power requirements, since the FCC seems about to adopt a new backup power ruling of its own.
- An approach similar to that in other states whereby the provision of backup power is conditioned upon ETC certification will not work in Connecticut since not all CMRS providers are ETCs in this state.
- Antenna installations not associated with a tower are subject to local jurisdiction and restrictive lease provisions. A statewide backup power mandate may be incompatible or unenforceable relative to these types of installations.
- To the extent that a statewide backup power mandate necessitates leasing additional space at any existing facility, existing leases may make it infeasible.
- The most legally feasible approach to improving CMRS providers' performance in a disaster is a voluntary agreement such as the PURA Wireless Proposal. Not all CMRS providers in Connecticut are signatories to the Wireless Proposal. Nonetheless, it is feasible for any non-signatory to sign on.

⁸⁸ *Id.*, December 4, 2012 Transcript at page 18.

Technical

- Mandating specific backup power requirements for CMRS providers would be too limited an action to assure reliable network operations overall and would not improve service commensurately with its costs to providers.
- A greater priority should be put on hardening and/or planning the restoration of commercial electric power to telecommunications sites. In the case of new tower sites, the Council already typically requires that connections to commercial power and telephone lines be installed underground.
- CSRIC best practices, the CTIA Business Continuity/Disaster Recovery Program and the DESPP Make Safe Protocol have been successful and offer useful ways for state agency officials and CMRS providers to work together on iterative improvements in network reliability. Recent examples include the AT&T/T-Mobile cooperation, and the practice of pre-staging repair crews, generators, and supplies.
- Increasing power from the tower to the mobile device and reverting to larger, stronger batteries for mobile devices would be a step backward, besides being infeasible.
- Sharing a backup source is feasible for CMRS providers, within certain limits. Going forward the Council will explore this option in applications for new tower facilities. The Council acknowledges, however, that special problems may arise with shared backup power at facilities owned and managed by tower companies who are not CMRS providers themselves. It is unclear how such companies might regard shared backup power, since they were not present at this proceeding.
- Incremental battery expansion to prolong backup power is feasible for CMRS providers, within certain limits, and the Council will direct CMRS powers to consider its more remote sites for this type of backup power.
- The Council will continue to urge reassessment and implementation of new technologies to improve network operations overall, including improvements in backup power.

Environmental

- Integrating a variety of backup sources to prolong power at a given site is feasible without harm to the environment.

Exhibit 1

**CTIA-THE WIRELESS ASSOCIATION®
BUSINESS CONTINUITY/NETWORK RECOVERY PROGRAM**

Requirement 1: Project Initiation and Management

Companies must demonstrate that they have done the following:

- Defined objectives
- Developed project plan and budget
- Defined and recommended process structure and management
- Obtained senior management commitment

Requirement 2: Risk Evaluation and Control

Companies must demonstrate that they have done the following:

- Identified risks, events, and external surroundings that can adversely affect the company
- Evaluated the damage that such risks and events could cause and probability of occurrence
- Identified controls and safeguards to prevent or mitigate losses to company

Requirement 3: Business Impact Analysis

Companies must demonstrate that they have done the following:

- Identified the critical functions of the organization
- Identified the impacts resulting from disruptions and disaster scenarios
- Determined recovery priorities and timeline objectives

Requirement 4: Developing Business Continuity Strategies

Companies must demonstrate that they have done the following:

- Selected business recovery operating strategies
- Assessed risk associated with each optional continuity strategy

Requirement 5: Emergency Response and Operations

Companies must demonstrate that they have done the following:

- Developed and implemented procedures for responses to situations
- Established a process for activation of an Emergency Operations Center
- Integrated Disaster Recovery/Business Continuity procedures with Emergency Response procedures
- Established Command and Control procedures

Requirement 6: Developing and Implementing Business Continuity Phase

Companies must demonstrate that they have done the following:

- Established and implemented Business Continuity and Crisis Management plans
- Established procedures to transition from emergency response to crisis management/business continuity
- Established a procedure to maintain and update Business Continuity plans

Requirement 7: Awareness and Training Programs

Companies must demonstrate that they have done the following:

- Established a process to educate the company regarding business continuity issues and programs
- Developed and presented training programs

Requirement 8: Exercise Business Continuity Program

Companies must demonstrate that they have done the following:

Established a process to drill/exercise the Business Continuity/Disaster Recovery Program

Organized and completed exercises/drills

Developed and monitored after-action reports and results of exercises

Requirement 9: Public Relations and Crisis Communications

Companies must demonstrate that they have done the following:

Developed plans to communicate with employees and management

Developed process to communicate, if necessary, with other stakeholders

Requirement 10: Coordination with External Agencies

Companies must demonstrate that they have done the following:

Established applicable procedures and policies for coordinating response with government representatives.

