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VIA ELECTRONIC MAIL

January 10, 2013

TO: Parties and Intervenors

FROM: Linda Roberts, Executive Director

RE: **DOCKET NO. 432** – Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148. Draft Study.

As stated at the hearing in New Britain on December 4, 2012, after the Connecticut Siting Council (Council) issues its draft report, participants may identify errors or inconsistencies between the Council's draft report and the record; however, no new information, evidence, argument, or reply briefs will be considered by the Council.

Participants may file written comments with the Council on the Draft Report issued on this docket on or before close of business on January 17, 2013.

LR/FOC/cm

Enclosure

DOCKET NO. 432 – Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148.	}	Connecticut Siting Council
	}	January 4, 2013

DRAFT 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, "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 provider and each such provider's plans concerning such backup power. Any information provided in the

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[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

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); Cellco 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(b) 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 Council, DEEP, DESPP and PURA do not have jurisdiction over CMRS providers' network reliability

[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

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... must have an emergency backup power source (e.g. batteries, generators, fuel cells) for all assets

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[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.*

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 markets, dynamic network management and particular site characteristics represents the best approach to

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[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.

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,

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[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 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 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

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[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.

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.

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 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]

[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.
[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.

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;
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]

[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.*
[52] *Id.*

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 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 furthers describes designation as an ETC by a state public utility commission, as follows:

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[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).
[61] IOWA ADMIN. CODE R.199-39.2 (2012).
[62] 47 U.S.C. §214 (2012).

> "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.

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

a. Technical Feasibility

Network Operations

Public Act 12-148 was promulgated to examine commercial mobile radio services (CMRS) ability to have sufficient backup power at its tower and antenna facilities. What the public act did not contemplate is the symbiotic relationship with the traditional wire line communications sector. Typically, towers and antenna locations are connected via wire line to switching offices where signals are either routed to another tower or antenna location for wireless transmission or to the wire line network to a wire line end user. This portion of the network is known as backhaul which is owned and operated by other entities. Resiliency of this portion of a macro-network system needs to be raised in context of this feasibility study. A holistic view of service continuity extends beyond the existence of backup power.

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[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.

The examination for the need of backup power to telecommunication sites fails to first examine the failure of commercial electric power. First and foremost CMRS providers are commercial electricity customers. Loss of commercial power affects cellular network operations. Sprint contends further examination of commercial electric power provisioned to telecommunications sites need to be improved through hardening, restoration planning, and other means.[69] Access to commercial power, backhaul facilities and limits imposed by landlords related to utilities are among some of those items a CMRS provider does not exclusively control. However, it would be impractical to expect that CMRS networks could be 100 percent operational 100 percent of the time as a result of the inherent design of these networks and the practical limitations of not having exclusive control of all inputs within the macro-network.[70]

CTIA oversees a Business Continuity/Disaster Recovery Program which provides a ten-point plan that provides guidance and certifies participants that implement such a plan. (Attached as Exhibit 1) CTIA implemented this program in 2006 "requiring 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."[71] AT&T, Sprint Nextel, T-Mobile, and Verizon certified its compliance each and every year since 2006.[72] MetroPCS is not a CTIA participant; however, MetroPCS does plan, prepare, respond and recover similarly to the other CMRS providers. Furthermore, CMRS providers operate its own emergency operating center to assess its network needs and communicate outages to the appropriate utility and reports to PURA and the FCC its disaster information. AT&T is the only CMRS provider who is embedded at the State EOC during a time of declared emergency. This presence by AT&T is partly based on the predominant wire line ownership in the state who is tracking infrastructure damage. AT&T wireless believes it is a prudent measure to be present for similar reasons. The CMRS providers favor voluntary, market-driven industry solutions to promote network resiliency and service reliability. One-size-fits-all mandates are not well suited or flexible enough for diverse and unpredictable events that may damage infrastructure or cause network outages. Such mandates would deter innovation and competition as well as increase cost unnecessarily.[73]

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 provider's own practices to ensure operation of their own networks in an emergency situation.

CMRS providers' networks in Connecticut have significant overlapping continuous coverage. This alone allows cell sites to fully or partially compensate an inoperative neighboring site. As reported in the media, 25 percent of cell sites were down across selected counties in ten states as a result of Storm Sandy. As a result of widespread damage to the electric grid and flooding in the hardest hit areas, AT&T and T-Mobile took extraordinary efforts to open each other's respective networks, via a roaming arrangement, that enabled customers to place calls as they normally would at no extra cost. [74]

Presently, each CMRS provider is upgrading their network to 4G technology that will support a greater coverage footprint and a greater capacity to assume capacity in a mass calling event or an increase in

[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.,* Sprint Response to Council Interrogatories Set I, Question 14, dated October 24, 2012.
[72] *Id.,* AT&T Response to Council Interrogatories Set I, Question 13, dated October 25, 2012.
[73] *Id.,* MetroPCS Response to Council Interrogatories Set I, Questions 5 and14, dated November 27, 2012.
[74] *Id.,* T-Mobile Response to Council Interrogatories Set II, Question 33, dated November 26, 2012.

demand during outages. A question posed often: "Can a carrier just turn up power to compensate for sites out of service?" The limiting factor is the cell phone ability to "uplink" to an antenna. Increasing power output from an antenna accomplishes little if the phone cannot 'talk back' to the antenna located on a building or tower.

Cell phone battery capability is the power source for the end-use consumer and is the limiting factor within the wireless network. Battery power is consumed at a higher rate when the cellphone is used in voice mode compared to text mode. Users of the cellphone network are reminded during times of eminent network disruption to communicate in text mode not only for reserving battery power for the user's cellphone but affect efficient network operations.[75]

CMRS providers continually educate the public on the distinction between wireless voice and text communications during times of high demand and congestion. Voice calls will require more bandwidth and direct connectivity compared to text messaging. Thus during times of high demand voice calls may not be initiated or dropped versus a text message that is transmitted and held in queue until an open channel becomes available to complete the transmission.

Network congestion occurs more likely during times of crisis. Network infrastructure midpoint to a disaster may experience three outcomes 1) site is not damaged and no loss of power, 2) site is not damaged but loses commercial power thus switching to backup power, or 3) site is damaged and loses all power capability. Based on the combination of these scenarios the CMRS provider needs to assess network continuity, resiliency, and recovery capability.

A CMRS provider switching office is the first link to the wire line side of telephony and would be the first priority to have backup power. Moreover, CMRS providers revealed ongoing upgrades from existing copper T1 lines to new ethernet fiber backhaul technology which will increase resiliency. In addition CMRS providers have employed microwave backhaul to sites that presently have Ethernet fiber connection to switching offices. Ethernet fiber has the following advantages over copper T-1:

- Ethernet has 99.99% availability vs. copper T1 with 99.9%;
- Equipment is new;
- Less susceptible to lighting damage; and
- Not susceptible to water damage.[76]

Sprint provided a tiered view of cell sites and the other CMRS providers concurred having similar designations. 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, like the State of Connecticut Emergency Operations Center (EOC), which are determined by CMRS provider public sector account teams, local market knowledge, and public safety agencies. Tier 2 sites are considered coverage sites in populated areas and primary transportation corridors and Tier 3 sites are capacity sites. In a recovery scenario CMRS providers will restore coverage according to that pre-designated scheme based upon input from customers, the public sector and public safety agencies.

Lessons Learned

Last year's storms in Connecticut resulted in widespread commercial power outages that provided post response opportunities for the CMRS providers to refine its in-state operational and situational preparedness for storm impacts and wireless network restoration. CMRS providers pre-staged crews, fuel

[75] *Id.*, AT&T Response to Council Interrogatories Set II, Question 36, dated November 26, 2012.
[76] *Id.*, Sprint Response to Council Interrogatories Set II, Question 43, dated November 26, 2012.

supply, and portable generators in the market area. This allowed the CMRS providers to autonomously respond and recover without relying on the retail market for its resources.

DESPP testified that the Make Safe Protocol, contained within the Connecticut Emergency Support Function 12 All Hazards Energy and Utilities Annex,[77] is based on the lessons learned from past storms, which places at a minimum into each town a dedicated tree crew and a line crew from the utilities to clear roadways of down trees and power lines. This effort proved fruitful during Storm Sandy. This also facilitated the CMRS providers to gain access to its sites in an efficient manner.

Physical Backup Power Components

Backup power sources include batteries, internal combustion engine, and fuel cell. The type of backup power needed at a facility is determined upon facility constraints (space, weight restrictions, lease restrictions and zoning restrictions) environmental limitations and liabilities, capital and operating/maintenance costs, network functionality, and fuel availability.

CMRS providers employ a bank of batteries at every tower and/or antenna location in the State of Connecticut. These batteries provide on average 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 available space and structure to support the added weight.

Fuel cell power generators publicize a green energy profile yet are expensive. While Sprint and T-Mobile have deployed fuel cells all the CMRS providers continually review its applicability.

Internal combustion generators involve a permanent installation or portable units transported to a cell site. Generator technologies vary in electrical output and physical dimensions which the CMRS providers assess for each individual site's needs. Thus space and weight will be considered for those cell sites with confining locations such as rooftops and steeples.

Fuel types (gasoline, diesel, natural gas, propane, hydrogen) have specific storage requirements. Typical generators are fueled by diesel with some portable units fueled by gasoline. Fuel storage is incorporated in the unit and includes secondary containment. In instances where natural gas is available it would the fuel of choice for both firm delivery and low emission profiles. Hydrogen and propane require some further element for on-site fuel storage and refueling including regulatory requirements regarding the storage of such sources on, in or adjacent to occupied buildings.

For sites with multiple CMRS providers, including state and municipal emergency services, a centralized backup power source or shared system may offer certain environmental and economic benefits. In reality such shared systems are far and few between. Locations such as emergency operating centers, hospitals, airports, university campuses, corporate/private buildings requiring 24/7 power may support CMRS provider-owned antennas at these locations which are integrated into the onsite micro grid. Hence, backup power is available. To require tower facilities with multiple users to share a backup power system raises legal issues, and liability and maintenance issues respective to the tower/structure site owner. Moreover a shared fixed generator is larger due to increased load demand requiring a larger engine and may not be

[77] 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

appropriate in various wireless facility settings. Shared generators also present a limiting factor with respect to each CMRS provider's current and future planning given wireless technology is ever evolving. Moreover these shared backup power systems are no more or less likely to fail than generators providing backup power to a single CMRS provider. If a shared power system were to fail then each individual CMRS provider would deploy a temporary/portable generator.[78]

Costs

CMRS providers will need to allocate significant capital and operating costs for typical battery and generator systems as follows:

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

Generators – varies from $5,000 to $20,000 for typical sites with some of the larger sites possibly reaching $50,000 for installed cost. Installed first cost per kW metric ranges from $800 to $1,400.[79]

By example, one CMRS provider has 578 tower sites in the State. Assuming a median battery expense of $17,500 times 578 locations equals an initial capital expense of 10.1 million dollars for battery installations. Assuming a typical size generator with a power output of 50,000 Watts (50kW) times a median expense of $1,100 per kW times 578 locations equals an initial capital expense of 31.8 million dollars for generator installations. Maintenance and operating costs have not been included.

b. Legal Feasibility

In addition to the jurisdictional issues related to backup power requirements, there are also legal issues. First, CMRS provider participants 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.[80] 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 provider participants would be confronted with regulatory compliance issues. 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, DEEP 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. Backup power systems may use backup batteries and generators that contain lead, sulfuric acid, oils, and other flammable liquids that

[78] *Id.;* AT&T Responses to Council Interrogatories Set II, Question 40, dated November 27, 2012.
[79] Reliability Standards for Telecommunications Emergency Backup Power Systems and Emergency Notification Systems, Final Analysis Report, May 9, 2008, California Public Utilties Commission, pp. 57 and 71
[80] 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

may subject the equipment to environmental laws that restrict their placement and use.[81] Therefore, a statewide backup power mandate may not comply with federal, state and local regulations.

Third, several CMRS provider participants have indicated that a backup power mandate in the state of Connecticut would force carriers to take cell sites offline because they could not comply with the mandate and would compromise competition in the telecommunications industry. CMRS providers have significantly invested in backup power and a mandate would create less incentive for consumers to choose a particular wireless carrier if all of the carriers are forced to provide more backup power.[82] Furthermore, the costs associated with retrofitting existing cell sites with backup power to comply with state requirements would be prohibitive and the use of backup power requirements could minimize availability of new cell sites.[83] Therefore, a statewide backup power mandate may increase costs and decrease the availability of service to consumers.

Lastly, although technically feasible, use of a centralized backup power source raises transaction cost, maintenance and liability concerns. The most widely cited constraint by the CMRS provider participants relative to a shared backup power source is the entity responsible for monitoring and maintenance.[84] Furthermore, the overarching concern with a backup power source is that when the source is down, all of the cell service connected to it goes down as well. Given the legal feasibility issues with lease re-negotiation, transaction costs, regulatory compliance, competition and diverse infrastructure, there is no feasible, one-size-fits-all statewide backup power solution.

4. The environmental issues concerning such backup power; and

Typical environmental issues concerning such internal combustion backup power associated with CMRS provider facilities are the potential for batteries or fuel to leak from storage, visual presence, noise particularly during weekly exercising of the generator unit, and air emissions.

Certain back-up power systems may have hazardous materials and waste detrimental to human health and the environment. Presently backup power systems may consist of a battery system (lead based, nickel-cadmium, or lithium) and/or fossil-fueled generator. Each system has its own storage and containment criteria consistent with a spill prevention and control plan. These plans protect the health and safety of the public under typical operating scenarios. Batteries are self-contained units linearly-linked and under constant charge by commercial power. Batteries have a life span between five and ten years. Both leakage and disposal of the batteries has created environmental concerns. Propane/natural gas fueled generators are not subject to spills but may leak gas into the environment creating risks of explosion or depleting atmospheric ozone. However, these systems would be vulnerable to both natural and man-made catastrophic events.

Visibility of backup power systems are in most cases not an issue because most systems are housed within equipment buildings. Units located outside are typically a self-contained unit on a concrete pad. Batteries are supported inside cabinets secured above ground.

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[81] 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

[82] *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

[83] PCIA Testimony on HB 5544, March 20, 2012, *available at* http://www.cga.ct.gov/2012/ETdata/Tmy/2012HB-05544-R000320-PCIA-TMY.PDF

[84] Connecticut Siting Council, Docket No. 432, Feasibility study of back-up power requirements for telecommunications towers and antennas pursuant to Public Act 12-148, December 4, 2012 Transcript at page 143.

The two most obvious environmental concerns related to operating internal combustion backup power generators are noise and air emissions. Noise suppression methods include baffled enclosures, mufflers or increased distance to noise receptor. Typically land use ordinances address allowable noise emission levels and the CMRS providers review and comply as necessary with such regulations. State of Connecticut noise regulations exempt the operations of emergency generators. Regulations of Connecticut State Agencies §22a-69-1.8 exempts "noise created as a result of, or relating to, an emergency" and "noise generated by transmission facilities, distribution facilities and substations of public utilities providing electrical powers, telephone, cable television or other similar services and located on property which is not owned by the public utility and which may or may not be within utility easements."

Operation of internal combustion backup power generators creates air emissions. The manufacturer typically specifies guidance to exercising the generator on a weekly basis to monitor its reliability. Both permanent and portable back-up generators are viewed as stationary sources of air emissions by DEEP. DEEP requires a permit to operate if pollutant criteria threshold of 15 tons per year is exceeded. Otherwise owners of stationary sources would only need to follow rules established by DEEP to operate its generators.

In the anticipation of Hurricane Sandy DEEP released an authorization on October 26, 2012 for the temporary operation of emergency engines without regard to limitations on hours of operation, sulfur content of such fuel, or the quantity of fuel consumed. This authorization included operation of any emergency engine on or about October 27, 2012 through November 14, 2012. The owners and operators of emergency engines shall make and keep records of the fuel usage and resulting emissions associated with such operations, and shall identify the portion of the fuel usage and resulting emissions allowed under this temporary authorization in any annual reports submitted to the Department of Energy and Environmental Protection.

Operation of back-up generators has associated electrical safety and occupational hazards. The National Electric Code and Office of Safety and Health Administration rules would govern personnel activity in proximity of these devices. Of particular concern is water infiltration to such equipment either through leaking enclosures or flooding water that will cause equipment to fail and in some instances cause arcing and/or fire potential. To protect potential fire outbreaks equipment could be turned-off in advance of water penetration similar to what the Connecticut utilities did with its substations during Storm Sandy. While this action may be temporary until the rain stops or waters recede, this action would cause service outage to the wireless network during times of urgent need.

The types of permits for backup power involve Council application/petition/exempt modification filings or municipal zoning applications and a municipal building permit. To the extent that such backup power generators involve air emissions, like a diesel fuel unit, DEEP "permit by rule" would suffice.

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 Proposal and in its final decision, PURA found the Wireless Proposal to be responsive and satisfactory to PURA's needs in conveying outage/restoral information to other state agencies. During Super-storm Sandy, the Wireless Proposal was implemented and the results were favorable. Representatives from CMRS provider participants were available and interfacing with the state in the EOC.[85]

[85] *Id.,* December 4, 2012 Transcript at page 18.

CONCLUSIONS

Legal

- On November 21, 2012, the FCC announced the intention to examine new challenges to resiliency of communications networks during natural disasters and other times of crisis. This may result in conflicting requirements if Connecticut decides to mandate backup power requirements.
- CTIA suggests use of the PURA Wireless Proposal. Not all CMRS provider participants are members of CTIA. Not all CMRS provider participants are signatories to the Wireless Proposal. CTIA further suggests use of an approach similar to T-Mobile's situational status report utilized in New Jersey in response to Super-storm Sandy. Unfortunately, the situational status report was not attached to T-Mobile's late-filed exhibit submitted in this proceeding.
- 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.
- PUCs in other states condition ETC certification on provision of backup power. Not all CMRS provider participants are ETCs in the state of Connecticut.

Technical/Environmental

- Resiliency of the macro-network system needs to be considered in context to the feasibility study. A holistic view of service continuity extends beyond the existence of backup power.
- Prioritization of commercial electric power to telecommunications sites needs to be considered and improved through hardening and/or restoration planning.
- CTIA Business Continuity/Disaster Recovery Program and CSRIC best practices are successful and the iterative improvements need to continue.
- Assessment and implementation of best available backup power technology shall continue.

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.