

**Sprint**

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*via Overnight Delivery*

October 24, 2012

Connecticut Siting Council  
Attn: Chairman Robert Stein  
Melanie Bachman, Esq.  
Ten Franklin Square  
New Britain, CT 06051

**RECEIVED**  
OCT 25 2012  
CONNECTICUT  
SITING COUNCIL

Re: Responses to Interrogatories  
CSC Docket No. 432 – Feasibility study of back-up power requirements for  
telecommunications towers and antennas pursuant to Public Act 12-148

Dear Sirs,

Sprint Spectrum, L.P. and Nextel Communications of the Mid-Atlantic, Inc. (collectively “Sprint”), wholly owned subsidiaries of Sprint Nextel Corporation, hereby elect to respond to interrogatories issued by the Connecticut Siting Council (“CSC”) on October 11, 2012. Sprint’s election to respond to these interrogatories does not constitute any waiver of Sprint’s rights to object to the requirements of Section 8(a) on jurisdictional or other grounds, Sprint reserves the right to do so at such time as may be necessary or convenient, and Sprint reserves the right to object on other grounds as well.

Sprint notes that state and local governments’ jurisdiction over the construction and placement of wireless facilities is carefully and narrowly construed under the Communications Act, 47 U.S.C. § 1 *et seq.* While the Communications Act allows state and local governments to exercise authority over matters of zoning and land use, such authority cannot overreach and interfere with technical and operational standards of communications systems. In exercising its mandate to study and issue and report on “the *feasibility* of requiring backup power for telecommunications towers and antennas,” (emphasis added) the CSC and its partner agencies will undoubtedly conclude that they are jurisdictionally proscribed from imposing any such requirements.

Finally, Sprint would like to clarify that the information it is submitting pertains exclusively to its CDMA voice network. At the present time Sprint operates two voice



communications networks in Connecticut, its CDMA and iDEN networks. Sprint Nextel Corporation has publicly announced that it will fully decommission and shut down its iDEN network nationally in the near term, potentially as early as June 30, 2013. As Public Act 12-148 requires a report to be issued, by no later than January 1, 2013, with forward-looking recommendations regarding back-up power, it would not be helpful to include in that report any details regarding a network that will be fully and completely decommissioned shortly after the report is issued. Inclusion of information regarding the iDEN network would not further the purposes of the report and could potentially hinder its production as information pertaining to that network would need to be qualified at a minimum, and perhaps afforded entirely different treatment. Furthermore, as the iDEN network approaches and passes the decommissioning date, there is no certainty that any data now submitted regarding that network will remain static and accurate.

Any questions regarding the enclosed report should be addressed to the undersigned counsel.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Benjamin J. Aron", written over the typed name.

Benjamin J. Aron

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

_____	)	
Feasibility Study of Back-up Power	)	
Requirements for Telecommunications	)	Docket No. 432
Tower and Antennas Pursuant to	)	
Public Act 12-148	)	
_____	)	

**Sprint Spectrum, L.P. and Nextel Communications of the Mid-Atlantic  
Written Objections and Responses to Interrogatories**

Sprint Spectrum, L.P. and Nextel Communications of the Mid-Atlantic, Inc. (collectively “Sprint”), by its attorneys, responds to the Interrogatories of the Connecticut Siting Council propounded upon Sprint (collectively “Data Requests”) as follows.

**GENERAL OBJECTIONS**

Sprint makes the following general objections to the Connecticut Siting Council’s (“CSC”) Data Requests. Unless otherwise specified, each of the following General Objections is continuing, and is incorporated into the response to each request propounded by CSC as if fully set forth therein. The assertion of the same, similar or additional objections in any specific response does not waive Sprint’s general objections set forth below.

1. Sprint objects to the instructions provided by CSC to the extent such instructions impose obligations different or greater than set forth in the applicable procedural and discovery rules.

2. Sprint objects to these Data Requests to the extent that they are not reasonably calculated to lead to the discovery of admissible evidence and are not relevant to the subject matter of this proceeding.

3. Sprint objects to each and every Data Request to the extent that it purports to seek information about matters outside of the State of Connecticut.

4. Sprint objects to each and every Data Request to the extent it purports to seek information or documents that are protected from disclosure by the attorney-client privilege, attorney work product doctrine or other privilege.

5. Sprint objects to each and every Data Request to the extent CSC seeks confidential, proprietary, and/or trade secret information or documents that are protected from disclosure.

6. Sprint objects to each and every Data Request to the extent that it purports to require disclosure of information or documents that are not available to Sprint or that are equally or more readily available to CSC.

7. Sprint objects to these Data Requests to the extent that they are unduly burdensome, expensive, oppressive, or excessively time consuming as written.

8. Sprint objects to these Data Requests to the extent they seek information that is already in the possession of CSC or already in the public record before the CSC or another Connecticut agency, or elsewhere.

9. Sprint objects to Data Requests that seek to obtain "all" documents or information to the extent that such a Data Request is overbroad, unduly burdensome and seeks information that is neither relevant nor material to the subject matter of this proceeding nor reasonably calculated to lead to the discovery of admissible evidence.

10. Sprint objects to these Data Requests to the extent that they seek to impose an obligation on Sprint to respond on behalf of subsidiaries, affiliates, or other persons that are not

parties to this proceeding on the grounds that such requests are overly broad, unduly burdensome and oppressive.

11. Sprint objects to these Data Requests to the extent that they are vague, ambiguous, overly broad, imprecise, or utilize terms that are subject to multiple interpretations but are not properly defined or explained.

12. Sprint, and its corporate parents and affiliates, is a large corporation with employees located in many different locations. In the course of its business, Sprint creates countless documents that are not subject to retention of records requirements. These documents are kept in numerous locations and are frequently moved from site to site as employees change jobs or as the business is reorganized. Therefore, it is possible that not every document will be provided in response to these discovery requests. Rather, Sprint's responses will provide, subject to any applicable objections, all of the information obtained by Sprint after a reasonable and diligent search conducted in connection with these requests. Sprint shall conduct a search of those files that are reasonably expected to contain the requested information. To the extent that the Data Requests purport to require more, Sprint objects on the grounds that compliance would impose an undue burden or expense.

13. The objections contained herein are not intended to nor should they be construed to waive Sprint's right to other discovery involving or relating to the subject matter of these Data Requests, responses or documents produced in response hereto.

14. Sprint's agreement to respond partially to a Data Request should not be construed to mean that any documents or information responsive to the Data Request exist.

15. Sprint objects to these interrogatories to the extent that they seek information regarding its telecommunications system which is deemed critical infrastructure under federal

law and that disclosure of such information could lead to public safety risks and risks to Sprint's system. As defined at 42 U.S.C. § 519C(e), "the term "critical infrastructure" means systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters." The federal Department of Homeland Security has established a Protected Critical Infrastructure Information ("PCII") Program for the controlled and secure submission of Protected Critical Infrastructure Information in a manner designed to ensure that critical infrastructure information ("CII"), including information relating the weaknesses, vulnerabilities and sensitivities of critical infrastructure, is handled in a manner designed to ensure the protection of such information. To the extent that the CSC's interrogatories seek disclosure of information that information could lead to public safety risks and risks to Sprint's system, or seeks disclosure of information contrary to federal law, rules or applicable programs, Sprint objects to such interrogatories.

16. Sprint objects on the grounds that the Federal Communications Commission ("FCC") has promulgated rules "pertinent to the reporting of disruptions to communications and to the reliability and security of communications infrastructures," 47 C.F.R. § 4.1, and the Authority's interrogatories seek information beyond the rules and process established by the FCC.

17. Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint Nextel as pertains to the subject matter of the current docket.

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1. Provide a list of web-links for similar studies, laws or initiatives in other states other than those listed in the Council's Administrative Notice List.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects on the grounds that the materials requested are publicly available and as available to the CSC as they are to Sprint. Sprint objects on the grounds that the information sought is not relevant to the subject matter of the matter at bar and will not lead to the discovery of admissible evidence. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint objects on the grounds that the term "similar studies laws or initiatives" is not defined, not an understood term of art, and without a singular and obvious definition. Sprint also objects to the extent that the list referred to in the question is without any obvious limitations insofar as the materials referenced therein have no readily discernible limiting theme or commonality, and this renders the sphere of potentially responsive materials potentially infinite – and thus obviously overbroad. Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Sprint has no such list in its possession. Sprint is unaware of any backup power laws or rules in other states, although it is unclear from the question whether that is in fact the point of the question.

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2. Of the laws listed in the Council's Administrative Notice List identify the states in which your company does business and describe how your company complies with these requirements.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects on the grounds that the information sought is not relevant to the subject matter of the matter at bar and will not lead to the discovery of admissible evidence. Sprint further objects insofar as the question assumes that the laws listed contain requirements that are either relevant in the first instance, or binding on Sprint in its capacity as a wireless carrier. Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Sprint objects to the question insofar as it seeks a legal opinion. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Sprint is a national carrier and has operations either directly or through affiliates in every state for which a law is listed in the CSC's Administrative Notice. Sprint's approach to compliance with the laws of each state in which it operates is uniform: Sprint analyzes all relevant legal requirements and takes all reasonable and appropriate steps to ensure that its operations are conducted and maintained in strict compliance with all relevant laws, rules, regulations and requirements.



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3. Describe the Federal Communications Commission recent endeavors to resume/initiate an investigation on backup power.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects to the question insofar as it seeks a legal opinion. Sprint objects on the grounds that the question seeks a special study of materials that are entirely matters of public record and available to the CSC to the same extent as the same are available to Sprint. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Sprint has no study in its possession that is responsive to the question. Sprint is active in many proceedings before the Federal Communications Commission, and Sprint's comments are available on-line via the FCC's website ([www.fcc.gov](http://www.fcc.gov)).

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4. Does the Safe Port Act and Stafford Act sufficiently address the carriers need to access each and every site in the State?

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects to the question insofar as it seeks a legal opinion. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Sprint has no study in its possession that is responsive to the question.

5. Describe the need for backup power requirements.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that the question seeks a response that would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects to the question insofar as it seeks a legal opinion. . Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket generally and this question specifically. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Connecticut should recognize that fundamental to the question of backup power to telecommunications sites is the inescapable fact that telecommunications carriers are commercial electricity customers, and the loss of commercial electricity is the root cause of power outages affecting cellular networks. An examination of the need for backup power to telecommunications sites that fails to first fully examine the precursor issue of the failure of commercial electrical power is inherently and fatally flawed. Efforts must be undertaken to examine whether the reliability of commercial electrical power provisioned to telecommunications sites can be improved through hardening, restoration planning, and other means. To examine the question of wireless carrier provisioned backup power to telecommunications sites without first addressing the fundamental question of better ensuring continuity of commercial electrical power to those sites is inappropriate. To the extent that continuity of mobile telecommunications service is to be examined, that examination *must* be

preceded by an examination of how continuity of commercial power to telecommunications sites can be better ensured.

At this time there is no need for backup power requirements. While Sprint agrees that the availability and reliability of backup power is an element that can be considered as part of an examination of service continuity, it is not the only one. In some cases, in fact, the availability of backup power may not be a primary element, especially if other parts of the network are damaged by floods, tornadoes, fires, earthquakes, high winds, or other causes. Backup power also does not address outages caused by failure of the data lines connecting each tower to the macro-network. In those cases, the existence of backup power may be irrelevant or premature to restoration efforts as service providers must focus on rebuilding or replacing other infrastructure, such as damaged equipment, towers and cables.

Backup power provides a varying degree of greater reliability in different parts of the country. With every investment in greater reliability, there is an increased capital cost, and generally an increased perpetual operating expense as well. Wireless carriers manage these costs along with other costs such as the rising costs of deploying faster networks. Any such investment should be weighed against the likelihood of the investment providing consumers with benefits relative to the cost. Sprint has already reported to the Siting Council on its battery backup power provisioning in Connecticut, and Sprint's battery backup deployment represents a comprehensive approach to ensuring continuity of service. Sprint, not Connecticut or any other state government, must be allowed to make its own decisions on the extent of backup power deployment and the type of backup power most suitable for deployment. Sprint's decisions are appropriately shaped and informed by the pressures and demands of the competitive marketplace.

Purely by way of example: a carrier could elect to pursue an extended power backup strategy in their top 20-40% of markets rated by risk exposures. Within these markets, carriers may elect to power harden with fuel cells or generators a sufficient number of cell sites to maintain on-street coverage in X percentage of the normal market signal footprint. Providing the extended power backup necessary to achieve the desired on-street coverage percentage could be accomplished by outfitting a fraction of the overall cell sites. This is accomplished by identifying those higher coverage sites ("Coverage Sites") that by themselves could efficiently provide coverage within the target footprint. Telecom responders, utilities and first responders could utilize this 'skeleton' coverage to respond to needs such as restoration of the remainder of the wireless networks. This is in line with existing Wireless Priority Service programs that focus on critical footprint being available for critical users, but not necessarily the normal capacity, provided by "capacity" sites.

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It is also important to note that substantial collaborative efforts have been long underway to address issues related to system management and restoration during disasters and outages. Those collaborative efforts have involved participants from the carriers, public safety, federal and state regulators, and other experts. The recommendations, guidelines and best practices that have been developed are invaluable to the carriers. Sprint believes that so long as carriers have robust plans in place that are informed by existing best practices guidelines and remain engaged in the further development and refinement of existing standards, there is no need for additional backup power requirements that dictate how service providers build reliable networks and restore service. Even if additional requirements were necessary – a point Sprint does not concede, the correct approach is for national requirements to be developed through collaborative efforts rather than through legislative or regulatory fiat.

Connecticut should take a holistic view of service continuity and recognize that many factors influence service providers' decisions regarding backup power. Among these factors are the geographic location of the site, infrastructure served by the site, site-specific space and weight constraints, varying legal constraints applicable to sites individually, the technical needs of the network, and other factors. Sprint believes that service providers are in the best position to evaluate these factors and make decisions regarding backup power.

6. Describe the types of back-up power technologies for temporary/portable backup power and for permanent on-site power that are feasible, available and cost functional for deployment during a prolonged power outage. List the criteria used in determining what type of generator is utilized at any one particular antenna site.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects on the grounds that much of the material requested is publicly available and as available to the CSC as it is to Sprint. . Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket generally and this question specifically. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Different types of backup power have different benefits and shortfalls. Below, we have outlined the advantages and disadvantages of all the current forms of extended backup power. The factors listed below generally illustrate the criteria considered in order to determine what type of extended backup power source can be deployed at an individual site, and whether it can be implemented broadly. This list is illustrative and not necessarily exhaustive because each site can have individual challenges that are unique to the site and such challenges may not be illustrated below. Additionally, in providing this way, Sprint provides only an insight into the general nature of each type of backup power currently available, but Sprint is in no way providing any insight into its determinative process. The information provided below is of general applicability and is not specific to or illustrative of Sprint's own determinative process.

**Diesel Generator:**

- Pros:
  - Easy to procure, proven technology, reliable when maintained properly, easy access to fuel, and refueling infrastructure is mature. 48-72 hours runtime.
  
- Cons :
  - Requires significant leased space and set-back (which are not always available) increasing Operating Expense (“OPEX”) in the form of landlord lease payments.
  - Requires significant maintenance including fuel ‘polishing’, increasing OPEX in the form of required preventative maintenance, and break/fix.
  - Fuel is hazardous to the environment if spilled. Diesel oil spillage can affect large impact on wildlife and plant life, and humans whose livelihood depends on a healthy ecosystem can also suffer as a result.
  - In order to maintain readiness, diesel generators should be “exercised” once per week, however, the emissions from diesel generators is harmful to the environment. The exhaust contains a number of pollutants that can be harmful to public health and the environment. Harmful emissions include fine particulate matter, hydrocarbons, nitrogen oxides, carbon monoxide, and other toxic air contaminants recognized as hazardous air pollutants.
  - Generators must meet EPA SPCC compliance (Spill, Prevention, Control Countermeasure).
  - Diesel generators are not suitable for rooftop sites due to size, weight, noise, refueling accessibility, and vibration.
  - Diesel generators are loud when they run and are not conducive to urban/suburban environments where noise ordinances are enforced. Even without noise ordinance considerations, neighbor complaints are extremely common with diesel generator operation.

**Liquid Propane / Natural Gas Generator:**

- Pros: Easy to procure, proven technology, reliable when maintained properly, and for natural gas there is no need for refueling. Long or indefinite run time.
  
- Cons:
  - Requires significant lease space and very stringent set-back requirements (which are not always available) increasing OPEX in the form of landlord lease payments.

- Leasing restrictions -- many landlords will not permit flammable natural gas running at their multi-tenant sites.
- Natural gas is often not available or easy to provision to cell sites.
- Liquid Propane is very difficult to refuel in a disaster environment due to size of the refueling vehicle.
- Refueling Propane is more expensive than diesel, which leads to a higher relative OPEX.
- Increases OPEX in the form of required preventative maintenance, and break/fix.
- Liquid Propane/Natural Gas (“LPG/NG”) generators are loud when they run and are not conducive to urban/suburban environments where noise ordinances are enforced. Even without noise ordinance considerations, neighbor complaints are extremely common with LP/NG generator operation.
- LPG/NG generators are not suitable for rooftop sites due to size, noise, refueling access, and vibration.

### **Gaseous Hydrogen Fuel Cell**

- Pros: Burns clean hydrogen, quiet, no emissions, and few moving parts so it requires less maintenance than a diesel or LPG/NG generators.
- Cons:
  - Short runtime.
  - Assets are very expensive and require significant Capital Expense (“CAPEX”) to deploy.
  - Require set-back from electronic equipment and increases leased space requirements; often times there is not enough space in a multi-tenant site.
  - Requires significant lease space and very stringent set-back requirements increasing OPEX in the form of landlord lease payments.
  - Refueling is not currently scalable, the infrastructure and access to gaseous hydrogen is not in place for a large scale disaster operation where hundreds of sites may need to be refueled in a 24 hour period.
  - Refueling very expensive increasing OPEX.
  - Not suitable for rooftop deployment due to size and refueling access.

### **Hydrogen Methanol Reformer**

- Pros: Burns a clean methanol water mixture to power a hydrogen fuel cell, no emissions, and few moving parts requires less maintenance than diesel or LPG/NG generators, easy to refuel, and quiet.



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- Cons:
  - Assets are very expensive and require significant CAPEX to deploy.
  - Refueling, while scalable in terms on vehicular delivery (fuel can be delivered by a F-150 type vehicle outfitted with proper tanks), is ultimately not currently scalable as the limited infrastructure and fuel access cannot yet support a wide-spread deployment of Hydrogen Methanol Reformers.
  - Refueling very expensive – increasing OPEX.
  - Limited in the power output, 5kw is current limit (although 7.5kw and 10kw output units are in development).
  - Not suitable for rooftop deployment due to refueling constraints.

**Extended battery backup:**

- Pros: Where no other solution is feasible –such as a rooftop sites –carriers can explore augmenting batteries to support extended runtimes.
- Cons:
  - Environmental impacts: The widespread use of batteries has created many environmental concerns, such as toxic metal pollution.
  - Space and weight restrictions.
  - Significantly increases CAPEX.

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7. Discuss operating conditions as they relate to fuel type, availability, and deliverables?

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects on the grounds that the materials requested are publicly available and as available to the CSC as they are to Sprint. . Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Please see response to Interrogatory 6.

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8. What is the useful life of a battery backup power source and when does it need to be replaced?

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects to the question insofar as it seeks a legal opinion. Sprint objects on the grounds that the materials requested are publicly available and as available to the CSC as they are to Sprint. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

The expected useful life of most available battery backup power sources for telecommunications sites is 7-10 years. Replacement should be expected every 7-10 years.

9. Is a shared backup power source technically, environmentally, economically and legally feasible for sites with multiple carriers on cell towers/buildings?

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects to the question to the extent it seeks a legal conclusion. . Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

There is no single all-inclusive answer to this question. Each cell site has its own unique set of factors that bears on any answer to this question. At any given site issues related to leases, space, weight, access, zoning, environmental concerns, noise ordinances, etc. are unique. Even if an answer is given for one site in a carrier's network, the answer may differ at each adjacent site. No global answer on feasibility can be provided. Nevertheless, Sprint offers the following general conceptual observation on the matter of shared backup power sources.

Most telecommunication providers own less than 10% of their sites – and one national carrier recently announced its intention to sell a substantial portion of its owned sites. Stand-alone cell towers are primarily owned by companies referred to as Tower Aggregators. When all carriers at multi-tenant sites can tie into a Tower Aggregator provisioned diesel generator, it becomes the most effective and environmentally friendly way to back up the telecommunication infrastructure. Rather than each carrier providing their own extended backup power source, a Tower Aggregator or other landlord can provide a fixed generation asset that carriers can access

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at a reasonable monthly charge. Rather than each carrier needing its own space – and space issues becoming increasingly more difficult for each sequentially arriving carrier – a single generator model achieves efficiencies. Additionally, a single generator rather than multiple generators lowers CAPEX and OPEX and avoids escalating environmental, noise, space, and other similar issues. Unfortunately, the industry has primarily not gone in this direction and few Tower Aggregators have invested in and offered this model to carriers.

Some leased building sites –such as those in an office building or on rooftops – do have an on-site landlord-owned generator that carriers can tie into. These are typically diesel or LP/NG generators.

10. What criteria are used to determine whether a particular site is critical or that a particular site would not require backup power?

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects on the grounds that much of the material requested is publicly available and as available to the CSC as it is to Sprint. . Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Sprint's approach to battery backup provisioning in Connecticut has previously been explained in the confidential portion of Sprint's earlier report submitted to the CSC. Sprint's approach to backup power reflects a comprehensive approach to ensuring network reliability and continuity of service. Nevertheless, even the most comprehensive plan will encounter instances where space, weight or other issues preclude the placement of backup power at some sites. Sprint has also provided the CSC, as part of Sprint's report filed on October 1, 2012, with certain of Sprint's interrogatory responses to a set of interrogatories propounded by the Public Utilities Regulatory Authority. Those interrogatory responses provide substantial information regarding Sprint's three (3) tier site priority ranking (see CMRS 19) and Sprint's approach to determining backup power prioritization. Additionally, please review Sprint's response to Interrogatory 6 as the response provided includes a comprehensive review of the many generic factors that inform determinations regarding the types of backup power generally available and whether a particular type of backup power may be implementable at any particular site within a network.

11. Describe network reconfiguration associated with cell sites out of service? How does this strategy minimize lost coverage?

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. . Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

It should be stressed before more fully addressing the question that network reconfiguration is a restoration methodology that should not be considered except as a matter of last resort for permanent or semi-permanent (i.e. long term) site loss. Network reconfiguration is generally a method reserved for instances of catastrophic impacts to the macro-network. Network reconfiguration is not rapidly implementable, and it requires a reversal of implementation upon a return to regular operations. In short, network reconfiguration is better understood as a tool to ameliorate infrastructure damage causing permanent or semi-permanent impacts to the macro-network, not a tool to alleviate conditions caused by power outages.

There are a variety of methods that can be implemented to accomplish network reconfiguration. A Cell-site On Wheels ("COW") can be placed in a coverage footprint to replace a site out of service. This is a solution that ordinarily involves advance planning since COWs require a dedicated data line (T1 or greater) to provide service. Such lines need to be provisioned in advance by a LEC and can take several weeks to be provisioned. Additionally, a power solution needs to be available – whether via a portable generator (if implementable) or via

commercial electric power being provisioned. COWs are best understood as tools to increase capacity when the need is known and planned for in advance. The lead time to implementation and operational dependence on externally provisioned resources makes them poorly adaptable to disaster recovery functions. A Satellite Cell-site On Light Truck (“Sat Colt”) is a self-contained cell-site solution that can be rapidly deployed, but Sat Colts, while rapidly deployable, are generally considered short-term solutions. Finally, parameter changes at adjacent sites can be made to increase their coverage areas to address coverage lost from a site out of service. To fully implement this solution, however, system engineering must be conducted, and adjacent sites need to be visited by technicians to optimize the increased coverage by adjusting site equipment in order to cover the newly targeted footprint. The above described methods of network reconfiguration – other than Sat Colt deployment – are generally solutions for mitigation of the permanent or long-term loss of a site, and are not practical as solutions to outages driven by loss of commercial power.

Sprint’s wireless network provides significant overlapping continuous coverage areas throughout our market areas, which often allow cell sites to fully or partially compensate if a neighboring site is inoperative. Sprint’s next-generation network (“Network Vision”) will feature a larger coverage footprint and greater footprint overlap – and both factors will increase the network’s ability to compensate – by design alone – for sites out of service. Network Vision hardware has greater capacity than the current network and therefore greater capacity to aid with overlap sites’ ability to assume capacity in mass calling events or standard demand increase during outages. Additionally, Network Vision deployment includes upgrades from copper T1s to fiber Ethernet backhaul which will increase resiliency.

The question is often posed: “why carriers can’t just ‘turn up the power’ at a neighboring site to compensate for sites out of service?” This is not a solution for the following reasons. Cell phone communications relies on a ‘balanced path’ between the cell phone and the tower. Increasing power output from the tower accomplishes little if the phone cannot ‘talk back’ to the tower. In rural areas, footprint is limited by the handset’s ‘uplink’ power in the ‘link budget’. There are FCC limits on handset transmission power, and emissions at towers, primarily for RF exposure reasons. Handheld power limits are a major factor in system footprints. Stated differently, a customer’s ability to send information to the tower is limited primarily by the handset’s power, so increased power output at the tower does not necessarily equate to a viable call path to the customer.



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12. Provide the hierarchy for restoring commercial power for community infrastructure.  
(Where do switching office, remote terminals, and cell sites fit in that hierarchy?)

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

All Core Network Facilities including Points of Presence (POPs), Regenerators (Regens), Optical Line Amplifiers (OLAs), Mobile Switching Centers (MSCs), Central Offices (COs) and Data Centers have permanent (and in many cases N+1) fixed generator backup power with several days' worth of fuel onsite, as well as battery backup. If one of these sites were to lose commercial power, and experience a failure of its fixed generator(s), a large mobile generator can typically be deployed before the batteries expire. In the extremely unlikely scenario that all of these facilities lost their commercial power, backup generator(s) and battery power, the priority for restoration would be 1) Wireline CO, 2) MSC, 3) Data Centers 4) POP, 5) OLAs, and 6) REGENs.

Regarding Cell Sites, Sprint has provided the CSC, as part of Sprint's report filed on October 1, 2012, with certain of Sprint's interrogatory responses to a set of interrogatories propounded by the Public Utilities Regulatory Authority. Those interrogatory responses provide

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substantial information regarding Sprint's three (3) tier site priority ranking (see CMRS 19) and Sprint's approach for site priority and restoration.

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13. Provide a copy of the CTIA The Wireless Association (CTIA) Business Continuity/Disaster Recovery Program. (Annual 10 step certification program for wireless carriers who met planning standards and objectives). Identify each year the carrier has received CTIA certification. If not, identify all other best practices the carriers adhere to and include web links, if applicable.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

A copy of the CTIA Business Continuity/Disaster Recovery program is attached. The program was established in 2006 and Sprint has been certified every by CTIA every year since the program's inception.

Sprint has also participated in Working Group 6 of the Communications Security, Reliability and Interoperability Council (CSRIC) which developed recommendations for CSRIC's consideration regarding the Critical Best Practices whose implementation would enhance the security, reliability, operability and resiliency of infrastructure for communications industry segments. CSRIC's mission is to provide recommendations to the FCC to ensure, among other things, optimal security and reliability of communications systems, including telecommunications, media, and public safety.

Sprint has evaluated and implement those Best Practices which were deemed appropriate, were not already implemented into Sprint's total business continuity plan, did not diminish the elements already comprising Sprint's total business continuity plan, and which were implementable into Sprint's total business continuity plan. Furthermore, Sprint has institutionalized the review of Best Practices as part of the planning processes to update and improve the security, reliability, operability and resiliency of infrastructure operations. It is essential to note that Best Practices are intended as guidance to companies to assist them in the development and implementation of viable, comprehensive operational plans.

14. Compare and contrast the CTIA program with Network Reliability and Interoperability Council (NRIC) Power-Related Best Practices.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

The CTIA Business Continuity/Disaster Recovery Program (the "CTIA Program") was established in 2006. The CTIA Program incorporates ten key steps which reflect carriers' efforts to ensure network reliability during power outages. The CTIA Program requires companies 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. The CTIA Program is comprehensive, guiding companies through all stages of the process, from project initiation to training and maintenance. The CTIA Program also provides adherents the necessary flexibility to address such issues as may arise. Such issues are identified as part of the CTIA Program's vulnerability assessment; and may include operation in a flood plain, hurricane zone, areas which frequently experience hurricanes or earthquakes, and locations with a likelihood of terrorist attacks.

The CTIA Program identifies factors that are common to all carriers' recovery plans. Obviously, carriers must take efforts to ensure network reliability and resilience. To realize that goal, carriers provision their cell sites and switches with batteries to ensure continuous operation when commercial electricity fails. Carriers may also provision permanent generators at all of the switches and at critical cell sites. They may also maintain an inventory of backup generators to ensure continuous operation during extended commercial power failures. Cell sites are also

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typically designed to withstand high winds. Construction of sites on buildings, water towers, and other permanent structures may improve structural integrity. Mobile switching centers are routinely built on pilings or located on upper floors of commercial buildings to avoid flooding problems.

The Network Reliability & Interoperability Power-Related Best Practices (“NRIC Best Practices”), on the other hand, focus solely on placement and management of back-up power resources. The NRIC Best Practices establish standards for placement of these resources, maintenance, and redundancy of equipment such as generators, batteries, and fuel cells. While the NRIC Best Practices are a key tool for planning back-up power resources during incidents of power interruption, the CTIA Program is a broader, more comprehensive measure addressing the full measure of wireless carriers’ service restoration efforts. The CTIA Program recognizes that the carriers themselves are the primary experts regarding their respective network resources, assets, and performance.

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15. Provide the total number of wireless antenna sites in the State and identify the percentage of back-up power for each of the following: None, 0-8 hours, 8-12 hours, 12-24 hours, one day, and more than one day.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Sprint objects on the basis that the question requests information that is already in the CSC's control. Sprint objects on the grounds that the CSC does not have jurisdiction over Commercial Mobile Radio Service carriers' operations or systems under either Connecticut or federal law, and therefore lacks the jurisdiction over Sprint as pertains to the subject matter of the current docket. Sprint objects on the grounds that the information sought is defined as Critical Infrastructure Information ("CII") by the Department of Homeland Security ("DHS"); and the manner in which the information is sought is contrary to programs established by the DHS for the handling of CII information. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

The CSC has in its possession lists of all of Sprint's tower and non-tower sites in the state. Sprint has elsewhere herein and in its October 1, 2012 confidential report provided the CSC with information regarding the extent of Sprint's backup power in Connecticut. Bearing in mind that the projected run time of a battery backup is up to 8 hours, Sprint directs the CSC to the aforementioned sources as they directly answer this question.

16. In response to the Statewide Hurricane Exercise that was held in July 2012, municipal representatives question whether their local emergency responders can assist with the provision of fuel or other assistance to re-start or maintain telecommunications towers. Please respond to this inquiry.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

While Sprint appreciates the willingness and desire of local emergency responders to assist with recovery activities, any cooperative role they play in restoration must be limited to assistance external to telecommunications sites and the equipment itself. The most appropriate roles for local emergency responders include road clearing and other restoration of site access. In those capacities, experience has shown that coordination of road clearing with available state and local resources can provide a benefit to the pace of restoration. At times local emergency responders can remove trees from public roads and otherwise restore site access efficiently. That resource was helpful during the October snowstorm. Additional utilization of local emergency responders is inadvisable, however. The list of issues in that regard is numerous. For instance: there may be legal issues related to site access and liability issues for injuries to local emergency responders or damage to property on the site compound; there are questions regarding whether the local emergency responder personnel possesses knowledge and ability to work on complex telecommunications equipment; and there are overwhelming coordination issues. It must also be noted that telecommunications equipment cabinets and shelters are invariably locked, and therefore, any role local emergency responders might play beyond site access is hard to envision.

The availability of local emergency responders would be of little value if that resource is not carefully coordinated with the carrier. Non-coordinated efforts by local emergency responders are highly likely, at a minimum, to result in duplication of effort – and therefore wasted man hours and resources – if carriers are not directing all restoration efforts. Even the

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coordination of efforts, however, itself takes time – a factor that must be carefully considered. To the extent that carriers were encouraged to include local emergency responders into their response plan, those carriers are essentially being asked to implement a resource that is not familiar to the carriers, not part of their established restoration practices, and of unknown quantity and availability. Incorporating unfamiliar, external factors and assets of unknown quantity and availability into restoration efforts simply complicates an already complex, multifaceted and difficult task. Carriers have plans and practices in place that are intended to fully restore operations with no external assistance, and these plans have been successfully implemented many times in the past. Sprint's preference is to implement its restoration plans without the inclusion of external resources, but is willing to engage in a dialogue regarding local emergency responders assisting in site access restoration and as a resource for road closure information.



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17. List the type(s) of permit(s) required for installing back up power.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

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. In short, there is no single specific answer that can be provided due to the unique aspects of each site.

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18. List constraints that limit types of backup generators, including, but not limited to, space weight, environmental, legal and safety.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

The question states many of the relevant constraints. Other factors include, but are not limited to site access, capital expense, operating expense, security of equipment, and necessity. Please also see Sprint's response to Interrogatory 6.

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19. Identify alternative backup power sources to responses to Question 18.

**Objection:** Sprint objects to the question on the grounds that the question is unduly burdensome, overbroad, and not narrowly tailored, and would cause unreasonable annoyance, oppression, burden and expense. Sprint objects to undertaking the special study that would be required to provide a response to this question. Sprint also objects to the question on the grounds that the question seeks information that is subject to the work product doctrine, the attorney-client privilege, or other privilege. Sprint objects that some of the information requested, and the manner in which it is requested to be produced, would reveal proprietary information, confidential business information, and trade secrets regarding Sprint's business interests and operations. Subject to and without waiving the foregoing objections, Sprint provides its response below.

**Response:**

Please see Sprint's response to Interrogatory 6.

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20. Provide a copy of the Wireless Proposal as approved in PURA's Docket 11-09-09 – PURA Investigation of Public Service Companies' Response to 2011 Storms. Is the wireless carrier a participant in the proposal? If not, would the wireless carrier be willing to participate in the proposal?

**Objection:** Sprint provides its response below.

**Response:**

Sprint is a participant and the Wireless Proposal is attached.