**Response to the FCC Notice of Inquiry**

**RedSky Technologies, Inc. Chicago, IL**

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| In the Matter of  Inquiry Concerning 911 Access, Routing, and Location in Enterprise Communications Systems | **)**  **)**  **)**  **)** | PS Docket 17-239 |

NOTICE Of INQUIRY

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**Reply Comment Date: December 15, 2017**

By the Commission: Chairman Pai and Commissioners Clyburn, Carr, and Rosenworcel issuing separate statements.



# DISCUSSION

## State of the ECS Industry

*18. ECS Operators and Vendors*. ECS operators and vendors offer an array of equipment and service types. In order to understand the scale of systems currently in place and the scope of potential provision of E911 by ECS, we seek information on the number and types of ECS operators and ECS equipment and service vendors, the types of ECS offered, including non-IP, IP, and hybrid systems, non-hosted and hosted arrangements, and the E911 capabilities each provides. What are the E911 capabilities of ECS desk stations and other premises equipment, including hard phones, soft-phones, and wireless devices?

RedSky Response: For the most part current phone sets on ECS systems do not have any understanding of location and do not participate in the establishment of the location of the phone. This is true for TDM based MLTS as well as IP based ECS systems. Some legacy MLTS systems have the capability to adding location information to a specific phone in a “station screen” for that phone. You could identify the Building Name, Floor and Room in the station screen and this information could be exported and modified into a NENA II record however the free form text nature of these systems makes this effort difficult. These systems are rapidly being replaced by IP- based ECS.

To what extent are the ECS in use today IP-based rather than circuit-based? How rapidly is the industry migrating from premises-based to cloud-based service offerings? To what extent are ECS operated by enterprise owners versus hosted by third-party service providers?

RedSky Response: Enterprises are rapidly replacing their legacy TDM MLTS systems with IP-based ECS. Virtually all Fortune 500 companies and most mid-tier enterprise have made this transition. 99% of enterprises install and manage their ECS systems in-house. Only now are we beginning to see the outsourcing of voice communications to cloud based ECS systems run by third party providers but powered by BroadSoft, Cisco, Microsoft, and home built systems. The only verticals where legacy MLTS systems still reside in any number are in State, County and Municipal government including school districts and Universities.

*19. Subscribers, Total Connections, and Usage*. To help the Commission understand the extent to which consumers might rely on ECS for calls to 911, we seek information on the type and number of subscribers, businesses, enterprises, and other entities employing legacy and IP-based ECS, including whether such subscribers are using premises-based or cloud-based systems. We also seek information on the total number of individual telephone numbers associated with ECS, as well as data on the percentage of 911 traffic originating from ECS. The 2016 National 911 Progress Report issued by the National Highway Traffic Safety Administration (NHTSA) contains data from 11 states on the total number of incoming 911 calls from ECS.[[1]](#footnote-2)

How frequently do ECS 911 calls get routed to a non-local PSAP or a backup center?

RedSky Response: In our experience, this is very infrequent occurrence. When an enterprise properly sets up their ECS and properly manages their locations, all 9-1-1 calls are routed to the correct PSAP. This situation only occurs if a) The enterprise adds phones at new location and they do not assign a location and an ELIN to that location or b) the enterprise makes changes in the ECS that affect the routing of 9-1-1 calls (User Error). Both of these situations are quickly caught and rectified.

How many entities operate ECS where service footprints may extend across city, county, or state lines and/or service multiple locations or campuses, potentially making information collection more challenging?

RedSky Response: We have over 500 enterprise customer using our national cloud 9-1-1 routing service and 90% have service footprints extending across geographies that are served by multiple PSAPs.

Are there data on the number and consequences of failed 911 calls from ECS? Are there data about 911 calls placed from settings frequented by more transient occupants, such as hotels, airports, or educational institutions?

RedSky Response: We are not aware of the existence of this data

*20. Broadband Access, Teleworking, and Smart Buildings*. Does the availability of broadband service affect the deployment and reliability of IP-based ECS?

RedSky Response: The typical migration path of an enterprise is to first implement new SIP trunking services because of significant cost savings, then implement an IP-Based ECS.

What impact, if any, do smart buildings with distributed antenna systems (DAS), advanced Ethernet switches, and ubiquitous Wi-Fi coverage have on the provision of IP-based ECS E911 service?

RedSky Response: Many enterprises have installed ubiquitous WiFi networks and soft voice clients on laptops and smartphones are very common in enterprise with ECS. RedSky and others have solutions to automatically track the location of the soft phone user on WiFi Networks.

What is the impact on E911 connectivity of teleworking arrangements in which an employee working at home uses ECS equipment or services provided by his or her employer?

RedSky Response: Many, many of our customers have remote workers working from home offices. On-IP based ECS systems, these remote workers are easily supported over their home broadband connections.

Will an increase in broadband access likely lead to an increase in the deployment of ECS?

RedSky Response: In our opinion, broadband access is not a gating item to the deployment of ECS.

*21. E911 Capabilities of ECS*. We seek comment on the existing E911 capabilities of the various ECS available today. To what degree do ECS enable and support direct access to 911, routing to the correct PSAP, and the provision of accurate location information about the end user?

RedSky Response: All modern ECS systems today provide the capability to automatically establish the location of the phone when it moves inside the enterprise. There are two primary techniques to do this type of automated network discovery of devices. The most common techniques is commonly referred to as “Layer 3 Network Discovery” which divides the voice network into subnets. Each subnet has a physical location, typically called an Emergency Response Location (ERL). This is typically a building address + Floor + Quadrant (NW, NE, SW, and SE). This method allows the enterprise the ability to carve up their enterprise into ERLS that comply with the square footage requirements of State E911 regulation. Each ERL has an associated Emergency Location Information Number (ELIN). When a phone moves into a subnet, it is “discovered” based on its IP address and, if it dials 9-1-1 from within that subnet, the ELIN for the subnet is sent out by the ECS. When the ELIN arrives at the PSAP, the PSAP bids for the location record (ERL) associate to the ELIN. Once this system of subnets, ERLs and ELINs is set up, phones can move anywhere in the enterprise and be automatically discovered. The second common technique for tracking the location of ECS phones is commonly called “Layer 2 Network Discovery”. In this method a phone will move and plug into the enterprise’s voice LAN. The phone will register with the ECS which captures the IP address for the phone. A network discovery is launched whereby Layer 2 network switches are queried to find the device. In this method, Enterprises can assign an ERL/ELIN to a network switch or assign an ERL/ELIN to a single port on the switch which achieve a very granular location method.

How frequently and under what circumstances are 911 calls originating from an ECS dropped, misrouted, or delayed because location information was not provided to properly route the call?

RedSky Response: This is very rare and is only the result of end user programming errors. Once E911 is properly set up using Layer 3 or Layer 2, it functions without error.

During hurricanes and other natural disasters, do ECS services face technical challenges different from those faced by other systems trying to reach 911?

RedSky Response: ECS systems only fail to deliver 9-1-1 calls if a) their trunking to deliver the 9-1-1 call goes down b) if there is a Wide Area Network failure or c) if the PSAP and the PSAP network becomes overwhelmed by the sheer volume of people calling 9-1-1.

22. How precise should location information be when a caller uses ECS to attempt to reach 911?

RedSky Response: The NENA model legislation defines 7,000 sq. ft. as the maximum size of an Emergency Response Location (ERL). Certain state like Florida require location definition down to the desktop location of the phone.

In the case of an office building or multi-unit dwelling, should ECS provide the precise location of the office or apartment from which the ECS call was made?

RedSky Response: ECS has the capability to provide location to the exact office, cubicle or apartment. Most State and local regulations require a service provider who is provide ECS as a service to multiple tenants, that they provide a precise location for each tenant apartment. Hotels should be required to provide a precise location to every room. Enterprises that purchase and run an ECS themselves, typically follow NENA model legislation guidelines and divide their enterprise into zones that are 7,000 sq. foot or less.

How frequently is location information provided with ECS 911 calls insufficient to ensure that emergency services will be dispatched to the actual location of the call?

RedSky Response: This is rare and only occurs when an enterprise with an ECS does not set up the proper routing for 9-1-1 calls in the ECS. Once an enterprise experience an issue like this, they are usually very quick to rectify the situation.

In what ways, if any, are the E911 capabilities and limitations of IP-based systems or cloud-based systems different from those of legacy circuit-based systems?

RedSky Response: IP-based ECS systems are much more capable in terms for E911 that their legacy counterparts. ECS systems can automatically update the location of a caller who moves a phone with no human intervention once the system is set up properly. Legacy systems require human intervention every time a phone is moved.

Are newly-deployed systems typically using extensions or direct-dial (10-digit) phone numbers?

RedSky Response: They are typically using DID numbers.

How do VoIP-based ECS differ in terms of technology from carrier or over-the-top (OTT) interconnected voice services?

RedSky Response: IP-Based ECS systems are currently far more capable of performing automated E911 discovery versus hosted carrier ECS platforms. This has to do with security restrictions placed on the carrier by the enterprise regarding access to the enterprise’s network.

Are there any technical barriers that would need to be addressed to enable ECS to provide E911 service, or more reliable or accurate E911 service, to all end users?

RedSky Response: There are no technical barriers. ECS systems have all the capabilities necessary to provide reliable and accurate E911 service. ECS system are now beginning to adopt NG911 techniques which will make premise based ECS and carrier hosted ECS even more capable of establishing and sending precise location when a 9-1-1 call is made.

23. We also seek comment on the role of onsite emergency or security personnel in ECS configurations. To what extent are ECS configured so that 911 calls are routed solely to an answering point within the enterprise, such as a campus police station or facility guard desk?

RedSky Response: All major ECS systems in the market today can provide a “trap” or a notification that a 9-1-1 call is in progress. These notifications can be sent to third party systems like RedSky which can create a wide variety of notifications over different networks. For example, notifications can be sent via a “screen pop” to security guards on computers. SMS Notifications can also be sent over cellular networks and email notification s can be sent to enterprise administrators. All these notifications provide the location of the person that is dialing 9-1-1.

To what extent are ECS configured to route calls to an external emergency answering point but also to notify an onsite emergency contact?

RedSky Response: All major IP-based ECS systems have this capability as noted above.

What are the advantages and disadvantages of these configurations, and what safeguards or best practices should be followed with them?

RedSky Response: It is our experience and that of our ECS customers that these type of notifications can save 2-3 minutes in emergency response time when a 9-1-1 call is made.

26. Some cloud-based VoIP providers appear to support 911 for enterprise customers.[[2]](#footnote-3) Do these cloud-based VoIP providers provide location information for individual stations in the ECS and, if not, are they capable of doing so. If they provide location information, is it based on registration of the location, either by the enterprise owner or the end user?

RedSky Response: Cloud-based VoIP provides typically place the responsibility on the end user to establish the location of phone by providing a portal where the end user can update their location. Unlike premise based ECS, this is a manual process and the burden is on the end user.

Do any of these (or other) cloud-based VoIP providers provide ECS end user location information automatically without relying on registration?

RedSky Response: No

Is it technically feasible to do so and, if so, how?

RedSky Response: Yes, it is technically feasible. RedSky is working with hosted platform providers and major phone providers to implement NG911 techniques to automate phone location discovery and provide the location of the phone with the 9-1-1 call.

Are there mechanisms that can enable ECS automatically to generate, update, and authenticate location information for end user locations?

RedSky Response: Yes.

For example, could ECS leverage in-building location information from existing or future databases such as the National Emergency Address Database (NEAD)?[[3]](#footnote-4)

RedSky Response: The Next Generation 9-1-1 functional element Location Information Service or LIS can and will be leveraged to provide device location information to the 9-1-1 system.

*28. Standards*. We also seek comment on current accepted industry standards for ECS E911 delivery. The NENA Model Legislation suggests that standards work is needed, particularly for small ECS.[[4]](#footnote-5) We seek comment on this observation as it pertains to both legacy and IP-based ECS.

RedSky Response: The only National Standard in place regarding ECS E911 is the NFPA 1221. It captures both Kari’s Law and the NENA Model Legislation in terms of requirements.

Are there other areas where industry standards are still in development or areas where standards development has not been initiated? How do ECS standards or their practical implementation differ from those used for VoIP systems?

RedSky Response: Due to the wide variance in State and local requirements, there is no “standard” approach. This has led to similar wide variances in implementation approaches.

We also seek comment on the technological solutions current ECS use to support E911 calling, including signaling architecture and protocols designed to produce an automatic display of caller information and location at the PSAP.

RedSky Response: Current technology supports every signaling protocol from POTS to PRI to SIP. Signaling is not a technical limitation.

Are there industry standards governing interconnection between ECS operators and telecommunications or broadband service providers?

RedSky Response: Yes, ATIS Standards apply here.

Are there standard tests or other procedures that ECS vendors use to ensure equipment and services are providing E911 to PSAPs prior to initiation of service?

RedSky Response: While no Standards exist, best practices do.

We also seek information on any testing procedures ECS operators use to test 911 connectivity when they add new telephone numbers to existing services.

RedSky Response: Our recommended best practices to the ECS operator include try it before you trust it. We guide our customers to work with PSAPs to ensure location information is accurately defined, transmitted, and received.

Finally, we seek comment on any related standards that might affect the provision of E911. For example, what role, if any, do state or local fire codes play in annual testing of ECS?

RedSky Response: NFPA 1221 v2016 requires ECS operators to meet the requirements of NENA Model Legislation in terms of location provisioning and granularity.

*29. Business Arrangements*. The Commission also seeks comments that will provide insight into the typical commercial arrangements for provision of ECS and their impact on the ability of ECS to provide reliable E911 access. Are there specific business or contractual relationships that make it harder or easier for ECS to provide E911 service?

RedSky Response: Companies that purchase an ECS system do not own the network, so they must contractually engage either the local LEC to establish a PS-ALI account or engage any number of third party 9-1-1 network providers in order to establish a complete E911 solution.

What are the typical responsibilities of ECS operators vis-a-vis carriers, enterprise owners, and end users (e.g., employees or consumers)?

RedSky Response: ECS operators (operators of hosted ECS services) have to comply with FCC requirements for VoIP service providers and/or state regulations.

Are there gaps in accountability or liability issues that impede the provision of E911 service?

RedSky Response: We are not aware of any such gaps.

Have cost considerations led to an increase in ECS over time?

RedSky Response: ECS costs are dropping due to the use of soft clients rather than hard phones

What cost savings are realized by ECS?

How do ECS costs in states with E911 regulations or commonly used best practices compare to costs in other states?

RedSky Response: There is a cost to provide ECS E911 in those states that require E911. However, these costs are modest and there is a robust third party market for E911 ECS solutions that is constantly evolving technically to provide E911 for remote ECS soft phones, WiFi clients and soft clients on smartphones.

*30. Next Generation 911 (NG911) Capabilities of ECS*. We also seek comment on the impact of the IP-based NG911 transition on ECS.[[5]](#footnote-6) Will ECS 911 communications be affected as PSAPs transition from legacy 911 to NG911 operations and, if so, how?

RedSky Response: The mechanism the PSAP uses to receive all incoming 9-1-1 calls is not as important as who delivers the call and how. For example, if the LEC acts as an aggregator that provides all 9-1-1 calls into the ESINet, the same is to be said for location information. If the current 9-1-1 service provider continues to provide location data, there should be no impact. In the event the ESINet desires the ECS to provide location information either by value or by reference, the technology to accomplish this is available off the shelf today.

Do current legacy or IP-based ECS have the capability to deliver 911 traffic, and associated call-back and location information, to ESInets or NG911-enabled PSAPs?

RedSky Response: Yes. This technology exists today through the use of third party gateways and E911 Management Systems.

*31 .Indoor Location Accuracy*. In 2015, the Commission revised 911 location accuracy requirements for wireless providers to improve location of wireless 911 calls from indoor locations.[[6]](#footnote-7) In connection with this, the national wireless carriers have committed to designing and building the NEAD, a national database of media access control (MAC) addresses and Bluetooth Public Device Addresses (BT-PDA) of fixed indoor access points (e.g., Wi-Fi and Bluetooth) that will be used to determine the specific indoor location of wireless 911 callers.[[7]](#footnote-8) We seek comment on whether MAC addresses associated with ECS could be entered in the NEAD and used to help improve indoor 911 location accuracy for ECS.

RedSky Response: Yes, it is technically feasible based on the NEAD published requirements.

What, if any, impediments exist to using the NEAD for improved location accuracy for ECS?

RedSky Response: This is up to NEAD LLC and it’s system operators to reply. On the ECS side, device end point manufacturers would have to include transceivers capable of communicating using both Wi-Fi and Bluetooth technologies. Our knowledge of the marketplace has indicated that there are several manufacturers that support both for various purposes. New firmware would be required to collect and pass beacon data for use in location determination. It is feasible in the future.

## Costs and Benefits of Supporting E911

32. We seek information on the costs of provisioning ECS to support E911 access, routing, and location. Who bears these costs and how are they apportioned in the marketplace? How do the costs differ for legacy systems as opposed to IP-based systems, as well as for hosted as opposed to non-hosted systems?

RedSky Response: The costs to deploy E911 for legacy systems historically have been two fold. One, there is the human overhead cost to build the database of locations for each phone. Second is the cost to the enterprise of opening a PS-ALI account with the local ILEC who maintains the regional ALI database and the selective routers that send 9-1-1 calls to the PSAP. To open a PS-ALI account with the ILEC typically requires signing a contract with the ILEC which consists of an initiation fee and then an on-going monthly fee for each telephone number and location record in the PS-ALI database. The trend nationally has been for ILECs to eliminate initiation fees to open a PS-ALI account and a number of ILECs are actively removing themselves as gate keepers of the Regional ALI database and PS-ALI accounts. IP-based ECS are not in and of themselves an end-to-end E911 solution for the enterprise. While the ECS has the capability to track the location of phones, assign ERLs and ELINs and route the 9-1-1 call out, it still requires a third party solution to deliver the location records to the regional ALI databases and route 9-1-1 calls to the right PSAP based on the location of the callers. IP-based systems have a cost advantage over legacy systems because of their ability to use ERLs and ELINs and segment their networks into logical subnets or zones. This approach allows enterprises to define locations within their buildings and campuses using only a small number of ERLs and ELINs. RedSky’s E911 Anywhere® service can be provisioned for as little as a $2,500.00 one-time service initiation fee and $100.00 per month. This give the Enterprise ECS access to over 5,500 PSAPs in the US and all the regional ALI databases plus provide 9-1-1 call notifications to enterprise security personnel.

Are the costs greater in non-urban areas and, if so, why and to what extent?

RedSky Response: The costs is the same.

Is the magnitude of costs likely to impact enterprise owners’ decisions to use ECS as a cost-saving substitute for multiple unique lines?

RedSky Response: Not in our experience.

How will the transition to NG911 affect the costs of provisioning ECS to support E911?

RedSky Response: The transition to NG911 will have a negligible effect on the costs of provisioning ECS.

NENA has noted that ECS operators have an economic incentive to comply with E911 requirements as part of their risk management considerations.[[8]](#footnote-9) We ask commenters to provide specific examples of such incentives. For example, do liability insurers provide incentives for enterprise owners that implement E911 capabilities?

RedSky Response: RedSky is not aware of any liability insurance providers that provide incentives to enterprises to deploy E911.

We also ask commenters to demonstrate the effectiveness of this incentive by comparing E911 access, routing, and location in states that have legislation and/or regulations mandating some form of E911 service by ECS to those states that do not. In the states that have E911 legislation and/or regulations for ECS, is there any evidence that the cost of complying with the legislation has had a substantial adverse effect on the purchase and deployment of new ECS?

RedSky Response: We have seen no evidence that the cost burden of the State Legislation requiring E911 has had any impact on the deployment of new IP-based ECS.

33. We seek comment on whether improving access to E911 in an ECS environment can improve the speed at which emergency personnel and services can reach the caller, with a resulting improvement in the health and safety of the caller, and the magnitude of this presumed benefit.

RedSky Response: There is no question that E911 in an ECS environment can improve the speed of Emergency Response. Placing a detail, accurate location record in the hands of emergency responders can save 3-5 minutes in response time particularly in complex environments (campuses, high rises, industrial sites) . ECS E911 also encompasses, 9-1-1 call notifications whereby ANYONE in the enterprise can be notified of 9-1-1 call in progress, and given the location of the 9-1-1 caller. This greatly enhances the situational awareness of on-site campus police or emergency responders and improves response time.

How common are failed 911 calls from ECS?

RedSky Response: In our experience, this situation is very rare.

*34. Consumer Expectations*. Consumer expectations are very important in emergency situations. We seek comment, on what expectations consumers may have when calling 911 from an ECS station. Given that the emergency number 911 is one of the most ubiquitous fixtures in the American public safety landscape, do consumers expect that 911 calls from an ECS will be quickly routed to the correct PSAP and that help will be promptly dispatched to the caller’s location?

RedSky Response: We believe that consumers expect that if they dial 9-1-1 on an ECS phone that the call will be connected to the location appropriate PSAP and that the 9-1-1 call taker will know the location of the caller.

Are consumers aware of different steps in calling 911 (depending on environment), the difference in type and depth of information callers may have to give to the 911 call taker, and other unique requirements that may apply in an ECS environment?

RedSky Response: Consumers are generally not aware of different steps in calling 9-1-1. We have seen instances where the enterprise will place a sticker or label on phone telling the end user not to dial 9-1-1 on this particular phone in an emergency.

35. In many instances, consumers in office buildings, campus, hotel and other enterprise environments have access to their personal wireless phones as well as to ECS facilities. In such circumstances, what impact, if any, does the availability of wireless phones have on consumer decisions whether to use ECS or wireless to make a 911 call?

RedSky Response: Consumers expect that if they dial 9-1-1 that the call will be answered by a trained operator, whether they dial on a wireless phone or an ECS phone.

Are consumers aware that there may be differences in how an ECS 911 call is treated when compared to a wireless 911 call?

RedSky Response: No.

Are consumers more likely to use wireless phones to call 911 in hotel or business environments due to uncertainty regarding the ability to access 911 from ECS facilities in those environments?

RedSky Response: We believe consumers are more likely to dial 9-1-1 from their cell phone rather than an ECS phone in a hotel or business environment because they are more familiar with how to dial on their cell phone versus the ECS phone.

We seek comment on the extent to which consumers might know that within an ECS environment, the ability to dial 911 directly, and have that call received by a PSAP, is not universal. We also are interested in consumer expectations for 911 location accuracy in the context of an ECS environment. For example, when calling 911 via ECS from a multistory building, what, if any, information do callers expect the PSAP to receive identifying the floor and room in which the call originated?

RedSky Response: In general, a caller expects the 9-1-1 call taker to know where they are, independent of the device used to call 9-1-1.

Are there unique issues that persons with disabilities may encounter when calling from an ECS environment?

RedSky Response: Potentially. Some ECS VoIP systems will not accurately capture TTD/TYY tones provided to a VoIP end user device.

## Updating the Record on Options

36. In the *E911 Scope Order*, the Commission expressed concern that the lack of effective implementation of ECS E911 could create an unacceptable gap in the emergency call system and have a deleterious effect on public safety.[[9]](#footnote-10) Nevertheless, the Commission concluded that state and local governments were better positioned to devise rules to ensure effective E911 deployment over multi-line telephone systems in their jurisdictions.[[10]](#footnote-11) The Commission stated that it might reconsider its decision not to implement national ECS rules if states failed to fill existing gaps in E911 implementation.[[11]](#footnote-12)

RedSky Response: While up to 22 states have implemented E911 statutes that require enterprises with ECS to provide E911 to their employees, major states like California, New York and Texas have failed to enact state-wide E911 statutes. This has resulted in uneven E911 protection to a wide enterprise ECS user base. It is clear that leaving this matter to the States has failed to offer equal access to 9-1-1 from ECS users for millions of Americans.

We seek to update the record on the extent to which the states have passed statutes or implemented rules that require ECS operators to provide E911. As the Commission sought in its 2004 *Public Notice* on this subject, we specifically ask commenters to identify and discuss relevant state activity by: (1) citing particular statutes or regulations, or proposed statutes or regulations; (2) identifying any corresponding state web page or other materials where these activities are presented or discussed; (3) identifying the date any final legislative or regulatory action became effective or is expected to become effective; (4) discussing any requirements placed on carriers, ECS equipment manufacturers, enterprise owners, ECS operators, or any other persons; and (5) discussing how the statute and/or regulation is enforced.[[12]](#footnote-13)

How has model legislation such as NENA’s proposal influenced the states’ approaches to this issue?

RedSky Response: NENA Model Legislation has definitely had an influence on state E911 regulations and has been used as the guideline by multiple states to enact E911 regulations. for ECS. However, the lack of a national standard has led to a hodgepodge of state regulations and it is difficult for an enterprise that has an ECS and has operations in multiple states to navigate the state E911 regulations.

Have any states passed statutes or implemented rules that have served to inhibit the development or deployment of E911 for ECS?

RedSky Response: RedSky is not aware of any such rules.

Are there differences between the states’ approaches to E911 implementation that have created challenges for enterprise owners, ECS operators, or any other parties that have taken steps to implement ECS E911 nationwide? If so, describe those challenges and the actions that enterprise owners, ECS operators, or others are taking to address them.

RedSky Response: RedSky deals with many Fortune 500 companies that have state-of-the-art ECS systems. These companies typically have operations in multiple States that have E911 laws. The typical behavior that we see from these companies is that they first implement E911 so that they are compliant with the laws in each State. However, almost uniformly, they take the next step, which is to provide E911 to all of their operations in all States, even those in States without E911 legislation. We believe that they do this so they are not discriminating between employees by providing E911 protection to some but not to others. So, even though all States have not passed E911 legislation, there are enough major states that have legislation to cause large companies that operate in one or more of the States that have legislation, to adopt E911 across their entire enterprise, even in those States that do not have legislation. However, this still leaves thousands of employees that are using ECS in companies located in California, New York and Texas without ECS E911 protection, because these states have no E911 statues. Our Best Practice recommendation is to apply the most stringent ECS E911 regulations to all locations, independent of local rule.

37. Does it continue to be the case, as the Commission found in the *E911 Scope Order*,[[13]](#footnote-14) that the unique needs and circumstances of residential and business ECS users are suited to state-level action?

RedSky Response: No. Leaving this important matter to the States has failed. Major states like California, New York and Texas have failed to pass E911 Statues, leaving millions of employees in companies with ECS systems in these states without E911 protection. If even one State fails to require ECS E911, every American will not have equal access to E911.

Have there been developments in technology, operations, industry standards, or public expectation that cause commenters to conclude that the public would find greater benefit in federal rules that facilitate the effective and uniform deployment of E911?

RedSky Response: Yes. The public expects that the 9-1-1 call taker knows where they are. This dates back to the technology shown on National television in the program Rescue 9-1-1.

How have the statutes or regulations in question been tailored to address special circumstances within each state’s jurisdiction?

RedSky Response: There are no unique technical situations in telephony technology. Every telephone that connects to the PSTN must comply with National Standards.

How important is it for the E911 capabilities of ECS to be uniform on a nationwide basis?

RedSky Response: Currently, ECS E911 capabilities across most modern voice platforms are uniform in their ability to recognize and output a 9-1-1 call such that the call will identify the location of the caller.

As the nation’s workforce becomes increasingly mobile and ECS supports that mobility, the end user expectation is that 9-1-1 will work the same independent of their location.

Is such uniformity important for all aspects of E911 (access, routing, and location)?

RedSky Response: Yes.

Is there a particular state that should serve as a guide to possible federal regulation? On the other hand, has the variety of state regulation proven that this should remain a state issue?

RedSky Response: The variety of State approaches to this matter has proven confusing to the ECS operator. This has led to an inequality of access to 9-1-1 across State boundaries that is unnecessary.

38. We also seek comment on any action that we should consider to encourage voluntary implementation of E911 for ECS. What roles, if any, should voluntary best practices or voluntary technical or operational standards play in supporting access to E911 for ECS users?

RedSky Response: Voluntary implementation of ECS E911 has led to a wide variance in capabilities for end users. Some have ECS operators instructing end users not to dial 9-1-1 from the ECS device and others have full device location and call routing capabilities. National regulations and Standards are the only way to address the inequity.

To what extent do best practices and voluntary standards exist today?

If best practices or voluntary standards exist, to what extent are they adhered to by ECS manufacturers and operators?

RedSky Response: To a great degree, the E911 feature set in modern ECS systems has been developed in the normal course of competition between ECS OEMs. For example, the current feature for 9-1-1 callback on VoIP ECS platforms has been adopted by nearly all major OEMs based on the simple logic of the design. Likewise, the adoption of Layer 3 Network Discovery has been adopted nearly universally because of the way that IP voice networks are constructed. The industry has done a good job of self-selecting the appropriate feature set for ECS E911. ECS operators on the other hand i.e. those that operate ECS platforms as hosted platforms and who offer ECS as a service, meet the minimum requirements of the States and local jurisdictions, including not allowing 9-1-1 access to end users.

Have these existing practices or standards proven effective? Have any states acted to establish voluntary best practices or technical or operational standards that support access to E911 for ECS users?

RedSky Response: To a certain degree, lax regulations are no better than voluntary best practices. This approach has not lead to a uniform, wide spread adoption of ECS E911.

If so, have such best practices and standards proven effective?

RedSky Response: No.

39. Should additional voluntary best practices or voluntary technical or operational standards be established to support access to E911 for ECS?

RedSky Response: No.

By which entities, and via what processes, should such best practices or standards be established, and who should monitor their implementation?

RedSky Response: The Commission should adopt national standards for ECS E911 in the same fashion that they created and adopted rules for Wireless Location Accuracy and VoIP Service providers access to E911.

What role, if any, should the Commission play in the creation of such standards or practices?[[14]](#footnote-15)

RedSky Response: The Commission should adopt national standards for ECS E911 in the same fashion that they created and adopted rules for Wireless Location Accuracy and VoIP Service providers access to E911.

What specific issues should standards resolve?

RedSky Response: National Standards for the implementation of ECS E911 service based on the NENA Model Legislation will provide the 9-1-1 call taker the location of an ECS end user dialing 9-1-1, independent of their location or State.

40. What goals should best practices or standards aim to accomplish?

RedSky Response: The goal of a national ECS E911 standard should be to establish a baseline requirement for ECS E911 capabilities that is aligned with NENA Model legislation and the NG9-1-1 standards. The implementation of this standard should be left to the ECS OEMs, third party network providers and technology companies

Are there any differences in the motivations of ECS owners, ECS vendors, and ECS operators that the Commission should consider when exploring ways to encourage the implementation of E911 over ECS?

RedSky Response: As stated previously, all modern ECS platforms are capable of performing E911 in line with the NENA model legislation. The issue is the enterprise that runs the ECS. State E911 regulations mandate that the enterprise that owns the ECS implement E911. However, since there are large states that have not adopted E911 regulations, the enterprise does not have to adopt E911 for tis employees, contractors or visitors.

Are there any technical or regulatory barriers to implementation of E911 for ECS? If so, what action, if any, could the Commission or other government agencies take to address them?

RedSky Response: There is one technical barrier that is preventing the advancement in ECS E911. This is not a technical issue of the ECS per se but rather of the end device, in particular, the smartphone. Enterprise are rapidly deploying ECS soft clients on smartphones. The soft client is connected to the ECS over the corporate WiFi network or the cellular data network. Smartphone manufacturers should be required to allow access to the dial pad in order to recognize that 9-1-1 has been dialed so that third party providers or network providers can capture of the GPS coordinates of the phone and send them with the 9-1-1 call to the PSAP. Android smartphones allow access to the dial pad but Apple iPhones block access to the dial pad so that 9-1-1 calls cannot be recognized. This is a serious situation that the FCC should address.

41, We seek comment on whether we should continue to refrain from adopting rules requiring ECS implementation of E911. Do significant gaps currently exist in the 911 system due to failures to effectively implement E911 for ECS? Can these gaps be observed in any states that have previously addressed this issue by statute or regulation? What harms to life and property have arisen from any such gaps in the 911 system? To what extent have enterprise owners and/or ECS operators voluntarily implemented E911, despite the lack of a state or local mandate? Are such implementations more common in some settings, e.g., college campuses or hotels, than in others? Commenters should specify how such owners or ECS operators implemented E911, the experience of PSAPs in receiving E911 calls from these systems, the strengths and shortfalls of these implementations, and whether these implementations are achievable by all ECS providers nationwide. In its Model Legislation, NENA advises that unless state regulators mandate 911 system upgrades for ECS, uniform 911 support, especially in non-urban areas, could take a long time.[[15]](#footnote-16) How rapidly are ECS acquiring E911 capability in states that have not adopted legislation? Have urban areas implemented ECS E911 capability more rapidly than non-urban areas? If so, what has given rise to this difference?

RedSky Response: It is clear that allowing the States to adopt their own devised regulations has failed to provide equal access to 9-1-1 for ECS end users. This is no different than the FCC establishing location accuracy for wireless carriers, independent of what State the 9-1-1 call originates in.

42. If significant gaps in the 911 system caused by ECS remain unaddressed, what actions should the Commission consider to close these gaps?

RedSky Response: The FCC should adopt NENA’s Model Legislation as the basis for a new Rule covering all ECS operators.

In the *E911 Scope Order*, the Commission found that it had jurisdiction to adopt 911 rules “for both wire and radio communications” and cited, *inter alia*, the Wireless Communications and Public Safety Act of 1999.[[16]](#footnote-17) The Commission declined, however, to address the question whether it had authority to adopt E911 requirements for ECS operators or equipment manufacturers.[[17]](#footnote-18) We seek comment on any statutory provisions that grant the Commission authority to adopt rules that would apply to enterprise owners, ECS operators (including hosted service providers), and ECS vendors or equipment manufacturers.[[18]](#footnote-19) If the Commission has such authority, we seek comment on whether it should consider proposing rules to address existing shortfalls and, if so, what those rules should require. Should the Commission consider updating or streamlining any existing rules to better support implementation of E911 for ECS? For example, are the Commission’s existing 911 rules for interconnected VoIP providers,[[19]](#footnote-20) commercial mobile services,[[20]](#footnote-21) and telecommunications carriers suited,[[21]](#footnote-22) in whole or in part, to be applied to IP-based, cloud-based, and legacy ECS systems?

RedSky Response: The Commission should perform its due diligence to determine the applicability of existing Rules in other technologies. The goal is clear. An ECS end user must have the same access to E911 or NG911 independent of the originating service provider’s technology.

1. *See* National Highway Traffic Safety Administration (NHTSA), 2016 National 911 Progress Report at 23 (2016), <https://www.911.gov/pdf/National-911-Program-2016-ProfileDatabaseProgressReport-120516.pdf>. For the 11 states that reported data, the total number of incoming 911 calls from ECS was 1,549,199. Comparison of data from the 2015 National 911 Progress Report shows that in California, the number of incoming calls from ECS increased from 563,178 to 674,719. *See* *id*; National Highway Traffic Safety Administration (NHTSA), 2015 National 911 Progress Report at 19 (2016), https://www.911.gov/pdf/National-911-Program-2015-ProfileDatabaseProgressReport-021716.pdf. [↑](#footnote-ref-2)
2. *See, e.g.*, Top 10 Best Business VoIP, Top Cloud Phone Systems for VoIP of 2017, <http://www.top10bestvoipproviders.com/cloud-phone-system> (last visited Sept. 1, 2017); RingCentral, RingCentral Emergency Services, <https://www.ringcentral.com/legal/emergency-services.html> (last visited Sept. 1, 2017). [↑](#footnote-ref-3)
3. The NEAD is a national database being developed by the major wireless carriers that will use media access control (MAC) addresses and Bluetooth Public Device Addresses (BT-PDA) of fixed indoor access points to determine the specific indoor location of wireless 911 callers. *See infra* para. 31. [↑](#footnote-ref-4)
4. *See* Model Legislation at 18. [↑](#footnote-ref-5)
5. *See NG 911 Deployment NOI*, 25 FCC Rcd at 17877, para. 18 (noting that NG911 relies on IP-based architecture rather than the PSTN-based architecture of legacy 911 to provide an expanded array of emergency communications services and functionality, including the ability to process emergency calls that include non-voice (multimedia) messages and the ability to acquire and integrate additional data useful to call routing and handling). [↑](#footnote-ref-6)
6. *See* *Wireless E911 Location Accuracy Requirements*, Fourth Report and Order, 30 FCC Rcd 1259 (2015) (*Indoor Location* *Fourth Report and Order*) and rules at 47 CFR § 20.18(i) *et seq*. The four national wireless carriers are AT&T, Sprint, T-Mobile, and Verizon. *See Indoor Location Fourth Report and Order*, 30 FCC Rcd at 1260, para. 5. [↑](#footnote-ref-7)
7. *See Indoor Location Fourth Report and Order*, 30 FCC Rcd at 1279-87, paras. 54-73. [↑](#footnote-ref-8)
8. *See* Model Legislation at 22. [↑](#footnote-ref-9)
9. *E911 Scope Order*, 18 FCC Rcd at 25361, para. 50. [↑](#footnote-ref-10)
10. *Id.* [↑](#footnote-ref-11)
11. *Id.* at 25363, para. 53. [↑](#footnote-ref-12)
12. *See 2004 ECS Public Notice*, 19 FCC Rcd at 23803. [↑](#footnote-ref-13)
13. *E911 Scope Order*, 18 FCC Rcd at 25364, para. 55. [↑](#footnote-ref-14)
14. *See* Model Legislation at 19. [↑](#footnote-ref-15)
15. *Id*. at 23. [↑](#footnote-ref-16)
16. *See E911 Scope* Order, 18 FCC Rcd at 25346, para. 13 (citing Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286, codified at 47 U.S.C. §§ 222, 251(e)). [↑](#footnote-ref-17)
17. *Id*. at 25367, para. 63; *see also id*. at n.216 (declining to address whether the Commission has jurisdiction over ECS operators). [↑](#footnote-ref-18)
18. For example, the Twenty-First Century Communications and Video Accessibility Act of 2010 provides that the Commission has authority to promulgate regulations implementing the recommendations of the Emergency Access Advisory Committee (EAAC). *See* Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 124 Stat. 2751, 2764, § 106(g) (2010) (codified at 47 U.S.C. 615c(g)). The EAAC has recommended that the FCC base its regulations for 911 accessibility on the assumption that users can only effectively call 911 using the same devices, solutions, features, or programs that they use daily for communication where there is a reasonable expectation that emergency communications will be supported. Emergency Access Advisory Committee, Emergency Access Advisory Committee (EAAC) Report and Recommendations at 33 (Recommendation T4.1, “Familiarity”) (2011), <https://apps.fcc.gov/edocs_public/attachmatch/DOC-312161A1.pdf>. [↑](#footnote-ref-19)
19. 47 CFR §§ 9.1 *et seq.* [↑](#footnote-ref-20)
20. 47 CFR §§ 20.18 *et seq.* [↑](#footnote-ref-21)
21. 47 CFR §§ 64.3001 *et seq.* [↑](#footnote-ref-22)