BEFORE THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C.

In the Matter of	)	
	)	
Remote Identification of Unmanned Aircraft Systems	))	Docket No. FAA-2019-1100

COMMENTS OF THE EDISON ELECTRIC INSTITUTE,
THE AMERICAN PUBLIC POWER ASSOCIATION AND
THE NATIONAL RURAL ELECTIC COOPERATIVE ASSOCIATION

The Edison Electric Institute (EEI), the American Public Power Association (APPA), and the National Rural Electric Cooperative Association (NRECA) welcome the opportunity to submit comments on the Federal Aviation Administration's (FAA's) *Remote Identification of Unmanned Aircraft Systems Proposed Rule*.[1] Collectively, our organizations represent the needs and interests of the utility industry that provides electric power to almost every home, business and building in the nation. Unmanned Aircraft Systems (UAS) play an important role in our members' ability to ensure the safety, security and reliability of the nation's electric grid—and we expect that their importance in our daily operations will only increase. We appreciate the FAA's continuing efforts to more fully integrate UAS into the National Airspace System and look forward to working with the FAA to create a regulatory landscape which will allow this technology to reach its full potential, while also ensuring public safety.

While a remote identification (ID) requirement represents a step forward in the evolution of UAS operations, the utility industry is eager to leverage UAS technology to fly Beyond Visual

[1] *See Remote Identification of Unmanned Aircraft Systems*, 84 Fed. Reg.72438 (Dec. 31, 2019) (Docket No. FAA 2019-1100) (Proposed Rule).

Line of Sight (BVLOS) missions without ground-based radar or visual observers. Mitigations, such as ground-based radar or visual observers, significantly limit the possibility of BVLOS flights for utilities, because they are typically prohibitively expensive and limit operations to pre-defined corridor areas with radar coverage. The FAA should allow the utility industry to develop truly scalable BVLOS UAS operations for the automated inspection of infrastructure. With a long-distance, cost-efficient BVLOS UAS inspection platform, a utility could routinely inspect assets and ensure they are repaired or replaced prior to failure. This would allow utilities to both increase safety for workers and the public, by conducting unmanned automated inspections. Costs would also be reduced, because UAS would be able to quickly and affordably access and inspect remote transmission networks.[2] The increased safety and efficiency of using UAS to inspect infrastructure following extreme weather events is especially important. Ultimately, adopting rules that provide the utility industry with the flexibility to operate BVLOS across varied terrain and at all times of the day in response to different conditions will not only help to further the FAA's mission to expedite the safe integration of UAS into the National Airspace System,[3] but will also further the significant public interest in the safe, reliable, secure and resilient delivery of electricity to customers.

In response to the Proposed Rule, our comments below explain the importance of electric reliability, the role small UAS currently play in meeting this demand, and how changes to current regulations can enable more useful deployment of UAS technology. These comments

[2] For example, one utility estimated the cost of a helicopter transmission tower at $5,000 per tower and that the same inspection can be done with a drone, which provides higher data quality and granularity, for an estimated $200-$400.

[3] *See e.g.,* Section 333(c) of the FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, 126 Stat 11. (Section 333 directs the FAA to "establish requirements for the safe operation of [unmanned aircraft systems] in the national airspace system" if the Secretary of Transportation determines that certain unmanned aircraft systems may operate safely in the national airspace system).

offer clarifications and suggestions for improvements to accommodate the unique needs of the electric utility sector. We ask the FAA to consider and incorporate these suggestions into the final rule.

I. Background

EEI is the national association of U.S. investor-owned utility companies, with international affiliates and industry associates worldwide. Investor-owned utility companies provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia and directly and indirectly employ more than seven million people in communities across the United States. EEI's members invest more than $110 billion each year to build a smarter energy infrastructure and to transition to even cleaner generation resources.

APPA is the voice of not-for-profit, community-owned utilities that power 2,000 towns and cities nationwide. It represents public power before the federal government to protect the interests of the more than 49 million people that public power utilities serve and the 93,000 people they employ. Approximately 70 percent of APPA's members serve communities with less than 10,000 residents.

NRECA is the national service organization for nearly 900 not-for-profit rural electric utilities that provide electric energy to over 42 million people in 47 states. Electric cooperatives own and maintain 2.6 million miles or approximately 42 percent of the nation's electric distribution lines, covering 56 percent of the U.S landmass.

Collectively, our organizations cover the spectrum of utilities responsible for providing safe, secure and reliable electricity to the overwhelming majority of Americans. Carrying out this responsibility is critical to the economy, national security, public health, safety and welfare.

A. UAS Role in Electric Power Reliability

Providing safe, reliable and efficient electric power to the public is essential to the health and wellbeing of the U.S. economy and its citizens. In recognition of this fact, the electric utilities are subject to mandatory and enforceable reliability standards, established by the North American Reliability Corporation (NERC) and approved by the Federal Energy Regulatory Commission. This makes this sector one of only two critical sectors to have such mandatory and enforceable standards.[4] Electric utilities take numerous steps to ensure reliability, including routinely inspecting and repairing electric power equipment such as substations, transformers, conductors and pole attachments. The ability to quickly inspect and identify damaged equipment is even more critical following a storm, natural disaster or other power outage where a rapid response is necessary to minimize hazards to life, economic harm and threats to national security.

Working on and around electric transmission and distribution equipment is hazardous, costly and time consuming. The hazards that exist during routine inspections are significantly increased when the equipment has been damaged, or the surrounding terrain has been made more dangerous by storms or other events. Historically, electric utilities primarily conducted inspections and damage assessments visually, by using personnel working from the ground, from a bucket truck, climbing structures or in a manned aircraft. This visual assessment must be completed before electric utilities can deploy restoration workers and request additional support from other utilities.[5] Using traditional forms of aviation to inspect infrastructure after storms

[4] The nuclear sector also has mandatory and enforceable standards.

[5] The utility industry has found common cause to work together to operate the system reliably, to defend it, and to facilitate restoration. The utility industry is particularly proud of its mutual assistance program, in which utilities voluntarily send staff and equipment to help other recover from emergencies.

may not be practical, especially in the wake of a natural disaster or major event when manned aircraft may be grounded, further complicating restoration efforts.

UAS technology gives electric utilities the ability to conduct these same inspections without endangering personnel. Additionally, the technology has the potential to provide utilities with better information than visual inspection on a faster timeline and at a lower cost. The evidence is compelling:

- With the use of a UAS equipped with an infrared camera, "what used to take three days takes two hours instead."[6]
- UAS inspections of solar facilities "take less than 10 minutes per MW and save, on average $1200/MW in costs" over traditional inspections.[7]
- UAS inspections of wind turbines "reduce man-hours and turbine downtime for maintenance checks by over 75 percent."[8]

Electric utilities also have found innovative ways to use UAS when responding to outages caused by storm damage or natural disasters.[9] For example, electric utilities have used UAS to map their systems prior to a storm in order to more quickly identify storm related

[6] *See* Jason Reagan, *Inspection Drones Illuminate Duke Energy's World*, Drone Life, (Mar. 12, 2018), https://dronelife.com/2018/03/12/inspection-drones-illuminate-duke-energys-world/ (Apr. 2, 2019); *see also* Jessica Wells, *How Duke Energy Used Drones to Restore Power in Puerto Rico*, T&D World (Dec. 12, 2019), https://www.tdworld.com/disaster-response/article/21114512/how-duke-energy-used-drones-to-restore-power-in-puerto-rico (last visited Feb. 24, 2020).

[7] *See* Measure, *The Case for Drones in Energy* at 15, https://www.measure.com/hubfs/whitepapers/The-Business-Case-for-Drones-in-Energy-Operations.pdf (Apr. 2, 2019).

[8] *Id.*

[9] *See* Katie Flash, *2017: The Year of Natural Disasters and Putting Drones to Work* InterDrone, (Dec. 27, 2017), https://www.interdrone.com/news/emergency-services/2017-the-year-of-natural-disasters-and-putting-drones-to-work/ (Mar. 29, 2019).

damage,[10] inspect equipment that is hard to reach as a result of storm damage,[11] and even assist in restoring power.[12] In the face of extreme weather, UAS technology enables utilities to prepare better prior to a weather event[13] and respond more efficiently to an outage.[14]

The introduction of the Part 107 regulations has allowed more utilities to integrate UAS into their operations. However, the nature of these UAS operations require flexibility to realize maximum benefits. UAS must be able to inspect diverse structures, from tall wind turbines, to miles long transmission lines across varied and potentially remote terrain, to substations that may be in more urban environments. In response to weather and other outage events, UAS are needed at all times during the day to respond to these emergency situations. As a result, electric utility UAS operations are likely to occur in proximity to people, roadways and buildings and

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[10] *See* Jack Stewart, *As Hurricane Florence Looms, Drone Pilots Prepare for Recovery*, WIRED (Sept. 13, 2018), https://www.wired.com/story/hurricane-florence-drone-recovery/; *see also* Isabella Lee, *Florida Power & Light Deploys 58 Drones in Emergency Response to Hurricane Dorian*, FAA Coordinates Evacuations and Relief Efforts, UAV Coach (Sept. 5, 2019), https://uavcoach.com/hurricane-dorian/.

[11] *See* Dusty Weis, *Hurricane Responses Demonstrates Growing Role of Drones in Utility Industry*, Association of Equipment Manufacturers (Nov. 30, 2017), https://www.aem.org/news/november-2017/hurricane-responses-demonstrate-growing-role-of-drones-in-utility-industry/; *see also* Joseph S. Pete, Government Technology, "Indiana Utility Uses Drones for Power Line Inspections" (Feb. 20, 2020), https://www.govtech.com/products/Indiana-Utility-Uses-Drones-for-Power-Line-Inspections.html.

[12] *See* Jessica Wells, *Duke Energy uses drones to restore power in Puerto Rico*, Duke Energy Illumination (Feb. 15, 2018), https://illumination.duke-energy.com/articles/duke-energy-uses-drones-to-restore-power-in-puerto-rico.

[13] *See* Reed Karaim, *Predictive Maintenance: Sophisticated vegetation-management systems help co-ops battle storm outages*, Rural Electric Magazine (July 18, 2018), https://www.cooperative.com/remagazine/articles/Pages/predictive-maintenance-vegetation-management-storm-outages.aspx; *see also* 4CBS Miami, *Drone Technology Used to Better Prepare for 2019 Hurricane Season* (June 3, 2019), https://miami.cbslocal.com/2019/06/03/miami-dade-fire-rescue-drone-prepare-hurricane/.

[14] *See* John Lowery, *The Era of the UAS: Drone use gets boost from 2017 hurricane recovery efforts* Rural Electric Magazine (Jan. 2, 2018), https://www.cooperative.com/remagazine/articles/Pages/electric-co-ops-drone-uas.aspx *see also* Bruce Henderson, *Hurricane Hugo Left Charlotte in the Dark. The Electric Grid is Smarter Now*, THE CHARLOTTE OBSERVER, (Sept. 20, 2019), https://www.charlotteobserver.com/news/local/article235229007.html.

may occur at night. As discussed in more detail below, the rules must be flexible for UAS technology to provide maximum benefits for electric utilities and their customers.

II. Discussion

Electric utilities share the FAA's desire to further integrate UAS operations into the National Airspace System. To accomplish this, any final rule should provide reasonable operational flexibility that allows utilities to use UAS in ways that recognize the unique needs and obligations of the sector. A remote ID requirement is a step towards developing a traffic management system for UAS that can then lay a foundation for more complex operations, such as those like BVLOS at low altitudes. BVLOS operations are the single most important operational flexibility that the FAA could provide to electric companies that would maximize the technology's ability to increase reliability for customers, while decreasing risks and costs.[15] If the Proposed Rule is adopted, BVLOS would require operating standard remote ID UAS, because these are the only aircraft that will have the capacity for operations beyond the short range that would be possible for limited remote ID or no-remote ID UAS operations. Ultimately, the FAA should develop a traffic management system for UAS that can identify UAS in-flight to create improved situational awareness for other aircraft. Therefore, the Proposed Rule is a good

[15] *See* T&D World, *Kansas Leads Nation in First-Beyond-Line-of-Sight Drone Flight* (Aug. 16, 2019), https://www.tdworld.com/electric-utility-operations/article/20972970/kansas-leads-nation-in-first-beyondlineofsight-drone-flight; *see also* Dexter Lewis, *Flying High: Drones Find Many Applications in Electric Power*, T&D World (September 9, 2019), https://www.tdworld.com/overhead-transmission/article/20973069/flying-high-drones-find-many-applications-in-the-electric-power-industry (describes research effort of the Electric Power Research Institute on key UAS topics including BVLOS operations); *see also* Michael Hartnack, *Glimpse Into the Future: UAVs Bring the Next Generation of Energy Infrastructure Inspection with BVLOS Flight*, Energy & Utilities, Surveying & Mapping (Oct. 17, 2019), https://www.commercialuavnews.com/infrastructure/uavs-energy-infrastructure-inspection-bvlos (describing safety and operational benefits of BVLOS operation for energy and infrastructure).

step forward toward increasing the safety and expanding the operational capabilities of UAS that may lead to allowing utilities to conduct BVLOS UAS operations.

Electric utilities are concerned about the integration of UAS in the FAA's management of the nation's airspace, not only from the perspective of owning and operating UAS, but also as owners and operators of energy infrastructure with an interest in ensuring the safety and reliability of the energy infrastructure. The FAA should establish remote ID regulations, because such requirements should help law enforcement identify and distinguish authorized UAS from those that may pose a security threat. Threat assessment requires real-time identification of UAS in the airspace. For example, a remote ID requirement should allow the FAA to monitor and address concerns around the operation of drones over areas like airports, stadiums and energy infrastructure. In addition, remote ID requirements may aid in the management of increasing air traffic generally, especially as more companies are increasingly using drones for commercial purposes.

A. Applicability and Registration

The FAA should establish a registration system for remote ID that gathers all necessary data to support unique identification of UAS. This requirement is necessary because the current registration requirements do not capture specific data for all aircraft. Aircraft registration requirements are the foundation for both identifying aircraft and for promoting accountability, with the goal of the safe and efficient use of the airspace by both manned and UAS. The FAA should tie remote ID requirements to the registration requirements so that the remote ID data that is broadcasted to or transmitted from a UAS is able to be correlated to the registration data of the

remote ID UAS.[16] Towards this goal, the FAA should require all owners of UAS to register each unmanned aircraft and that all registrations of remote ID UAS include the serial number assigned by the producer of the UAS.[17]

The FAA should additionally require remote ID UAS that are registered under Part 48 to display a unique identifier, in this case the serial number assigned by the producer, that is readily accessible and visible upon inspection of the aircraft.[18] This would be consistent with the requirement for the serial number for every UAS at the time of registration and for the owners of any standard remote ID or limited remote ID USA to list the serial number in the Certificate of Aircraft Registration.[19]

As part of the registration information requirements, the FAA should require owners and operators of remote ID UAS to include one or more telephone number(s) to assist the FAA and law enforcement in disseminating safety and security information to the registrant in real-time.[20] However, the FAA should be clear that the requirement to provide a telephone number is not person-specific and a company may provide a designated telephone number that can be supported on a 24/7 basis.

Finally, the FAA should be careful that the registration process does not present a financial or administrative burden on operators that will seek to register multiple UAS.[21]

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[16] *See* Proposed Rule at 72,461.

[17] *See id.* at 72,461-62.

[18] *See id.* at 72,463-64.

[19] *See id.* at 72,463-65.

[20] *See id* at 72,464.

[21] *See id.* at 72,463.

B. Operating Requirements for Remote ID

The FAA should require all UAS with remote ID to broadcast or transmit the appropriate remote ID message elements from takeoff to landing and to prohibit the operation of UAS with remote ID, if the remote ID equipment has been disabled without authorization.[22]

The FAA should also require labeling of drones to indicate whether the UAS complies with the remote ID requirements.[23] It is important, as a matter of safety, that a company or law enforcement be able to determine the type of UAS and whether it has remote ID capability simply by visual inspection of the UAS.[24] Similarly, the FAA should adopt its proposal to require all persons responsible for the production of UAS with remote ID to declare that the UAS meets the minimum performance requirements of the proposed rule, using an FAA-accepted means of compliance by submitting a declaration of compliance for acceptance at the FAA. It is also a helpful transparency measure for the FAA to provide a list of all FAA-accepted declarations of compliance on its website to notify the public when its acceptance of a declaration is valid and to identify declarations of compliance that have been rescinded.[25]

C. Standard Remote ID UAS requirements

For standard remote ID UAS, the FAA should require that if internet is available from takeoff to landing, a standard remote ID UAS would be required to: (1) connect to the internet and transmit required remote ID message elements through that internet connection to a Remote

[22] *See* Proposed Rule at 72,465.

[23] *See id.*

[24] See *id.*

[25] *See id.* at 72,468.

ID USS; or (2) broadcast the message elements directly from the UAS.[26] It is therefore very important that the FAA require all UAS with remote ID equipment to incorporate cybersecurity protections for the transmission and broadcast of the message elements, as appropriate.[27]

If internet is unavailable at takeoff or during the flight such that drone can no longer "transmit" through an internet connection to a Remote ID USS, then it is reasonable that the FAA would require standard remote ID UAS to broadcast the message elements directly from the UAS from takeoff to landing.[28] Given issues regarding lack of availability of internet connectivity in many areas of the nation, it is very important that if the internet is not available at takeoff, then a standard remote ID UAS would only be required to broadcast the message elements directly.[29] The proposed requirements for standard remote ID, therefore, make sense only as long as the rule maintains the optionality of transmitting the required message elements, because much of the U.S. (particularly rural areas) does not have mobile data access. Without such optionality, drone use may be limited, particularly when it may be needed most by electric utilities, such as after weather events, which may have impacted not only electric service, but telecommunications services. Broadcast solutions will therefore be essential, and the FAA has experience with this technology.[30]

[26] *See* Proposed Rule at 72,465.

[27] *See id.* at 72,468.

[28] *See id.* at 72,465. The FAA also proposes that if internet is available, but the UAS cannot connect to a remote ID USS, the UAS would be designed such at it could not takeoff.

[29] See *id.*

[30] For example, the FAA has already used DJI's broadcast remote ID to solve problems and pursue investigations.

In case of inflight loss of broadcast capability, FAA reasonably proposes that a UAS would have to land "as soon as practicable," and that standard remote ID should have a monitoring feature that would notify the operator if the broadcast capability was lost.[31] The FAA does not define the phrase "soon as practicable." The FAA should clarify that this language is in line with common usage. For example, the term "land as soon as practical" could be defined to mean the landing site and duration of flight are at the discretion of the pilot and extended flight beyond the nearest approved landing area is not recommended.[32]

D. Internet Availability and Transmission to a Remote ID USS

The FAA proposes to require an internet-based solution where UAS with remote ID would automatically connect to the internet when it is available, similar to how wireless devices connect automatically when there is sufficient signal strength. If the internet is available but the operator's remote ID USS is not working, the operator would be required to either connect to another remote ID USS or the UAS would be restricted from taking off.[33]

The FAA seeks comment on how to address the unlikely event that all remote ID USS become unavailable such that no standard or limited remote ID UAS would be able to take off.[34] In an area where there is internet connectivity, if the remote ID USS provider(s) has technical difficulties, then a substantial portion of a civilian drone fleet could be unintentionally grounded without warning. This could have a negative impact on the ability to use UAS for life-saving missions, including those intended to help with electric service restoration after an outage.

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[31] *See* Proposed Rule at 72,465.

[32] *See id.* at 72,468. *See also* Federal Aviation Administration PHAK Glossary.

[33] *See id.* at 72,467.

[34] *See id.*

Different stakeholders will have different risk-tolerances for this unlikely scenario, but that risk suggests it is important for the FAA to allow private development of Remote ID USS to meet those demands. In this regard, it is helpful that the FAA anticipates there will be some remote ID USS available to the general public and others will be private. This approach means that utility companies may consider establishing private remote ID USS to exclusively manage a fleet of UAS to meet their requirements and those of other stakeholders. The FAA is thus correct not to propose specific requirements regarding the remote ID UAS business, however, charging fees and user agreements should not be not excessive in cost or complexity.[35]

It is also important that the operator of a UAS receives an indication that the connection to a remote ID USS has been lost.[36] To avoid interruption of operations, particularly in the context of electric system restoration activities after disaster events, it is important for the utility industry that standard remote ID UAS can continue to broadcast even when there is a loss of internet connectivity for transmitting remote ID message elements.[37]

E. Law Enforcement Access to Remote ID and Registration Information

The FAA should facilitate near real-time access to remote ID message elements (paired with certain registration data, when necessary) for accredited and verified law enforcement and Federal security partners.[38] Remote ID would serve an important interest by assisting in providing law enforcement and security agencies information to locate a UAS and help with preliminary threat identification. This is important, not only to those electric utilities that operate

[35] *See* Proposed Rule at 72,467. The FAA should monitor to ensure multiple Remote ID USS services will be available at reasonable costs in remote areas.

[36] *See id* at 72,468

[37] *See id.*

[38] *See id.* at 72,470.

drones, but also for those who are concerned about maintaining the safety, reliability, security and resiliency of critical electric infrastructure.

As part of the Proposed Rule, the FAA conducted a Privacy Impact Assessment, and it is important that the FAA's remote ID requirements are supported by standards that provide a flexible and scalable way to remotely identify UAS, while protecting operator privacy. To this end, the FAA should restrict access to registry data to FAA and law enforcement for security purposes.[39] However, given that the FAA contemplates requiring the transmission of information through the internet or broadcast via Radio Frequency connection, and the fact that the message elements include not only the location of the UAS, but also that of the control station, knowing the location of the control station would provide the location of the person operating the UAS. Making the location of the operator public does raise some security concerns about the safety of the operator. Therefore, the location of the control station should also be limited to FAA and law enforcement.

III. Conclusion

APPA, EEI and NRECA appreciate the efforts the FAA has taken to incorporate small UAS into the National Airspace System. The utility industry's use of small UAS continues to grow and, under the right regulatory environment, has the potential to increase the reliability and security of the national grid, while reducing the risk to the men and women who work diligently to keep the lights on. The FAA's proposal to require the remote ID of UAS is a key step towards enabling UAS technology to reach its full potential. At the same time, the utility industry is eager to leverage UAS technology to have the ability to fly BVLOS missions without ground-

[39] *See* Proposed Rule at 72,471.

based radar or visual observers. BVLOS operations are the single most important flexibility that the FAA could provide to electric companies that would maximize the technology's ability to increase safety and reliability while decreasing costs. We thank the FAA for considering our comments in this docket and look forward to continuing to work with the FAA on these matters.

Sincerely,

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