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Docket Operations, M-30
U.S. Department of Transportation
1200 New Jersey Avenue, SE.
Room W12-140
West Building Ground Floor
Washington, DC 20590-0001.

(Submitted electronically via <http://www.regulations.gov>)

**RE: Comments on Operation and Certification of Small Unmanned Aircraft Systems;
Docket No.: FAA-2015-0150; Notice No. 15-01.**

To Whom It May Concern:

I write on behalf of more than one million members of the National Association of REALTORS® (NAR) to comment on the Federal Aviation Administration (FAA) Notice of Proposed Rulemaking, ‘Operation and Certification of Small Unmanned Aircraft Systems’. The rule proposes requirements governing the use of small unmanned aircraft systems (UAS), which weigh less than 55 pounds¹.

The National Association of REALTORS® is America’s largest trade association. REALTORS® are involved in all aspects of the residential and commercial real estate industries and belong to one or more of some 1,400 local associations or boards, and 54 state and territory associations of REALTORS®. REALTORS® practicing commercial and residential real estate across the country are excited about the prospect of using unmanned aircraft systems (UAS) in their businesses, including by using UASs for aerial photography, videography, and property inspection.

Personal safety and privacy issues related to UAS are also of concern to REALTORS®, and we appreciate the actions FAA has taken to further those goals. Safe operation of this emergent technology is a critical objective of these proposed rules and REALTORS® are committed to working with the FAA to create a culture of safety surrounding the use of this technology. As potential end-users of this technology, either as operators or through hiring third-party vendors, REALTORS® also understand the role that real estate professionals play in the UAS services market. NAR is a supporter of the *Know Before You Fly* safety campaign. NAR is a participant in the FAA’s Beyond Visual Line of Sight (BVLOS) Working Group. REALTORS® appreciate the FAA’s leadership in this issue and look forward to being responsible users of this technology.

NAR views the proposed rule as an excellent first step toward integrating UAS technology into the National Air Space (NAS) and allowing the UAS industry to flourish. The rule’s risk- and safety-based approach comports with what NAR believes is a common sense, reasonable approach to this technology. NAR supports the FAA’s attempt to address different levels of risk posed by different sizes and uses of UASs. The risk present in a scenario where an operator is using a small, lightweight UAS in a limited flight path to take



¹ Pub. L. No. 112-95, sec. 331(6).

pictures of a home or commercial building is much different than in situations where bigger, heavier devices are being used.

The FAA should strive to ensure that the final regulations govern safety in a way that does not unnecessarily restrict the ability of users to access the NAS. Safety concerns should be balanced with the opportunities presented by the applications of this technology. The final rule should create a regulatory regime that is efficient and of minimal burden to the user. The final rule should also acknowledge the different risks presented by different UAS and the varying settings in which UAS will be used.

I. Applications of UAS Technology in Real Estate

The potential applications for UAS technology in the real estate industry are plentiful. The images and videos obtained using UAS technology are the next step in consumer information for the digital age.

A residential real estate practitioner can use a video or images obtained through UAS technology to create a robust web-based listing for a property that can be viewed by potential purchasers. Buyers can see the interior and exterior of the home, and views afforded by different vantage points that currently are too difficult or expensive to access. The aerial imagery made possible through UAS technology will bring a new level of sophistication and accessibility to images and information, and make it available to both the real estate practitioner and their clients.

This imagery is an incredible tool for potential homeowners moving to a different city, buying a second home, or trying to streamline the research process necessary to buy a new home. Being able to easily view the information obtained through the use of UAS technology will help better inform the consumer. Just as digital photography made it easier to create high-quality, affordable images, real estate practitioners look forward to using UAS technology to take their listings into the next level in technical creativity and quality.

Many structures are not well suited for conventional photography due to their size, height, or unconventional shape. Introducing UAS technology will be very helpful to commercial real estate practitioners who work with properties such as strip malls, office parks, parking lots, or farms. Commercial properties such as a shopping center, an office building, or a restaurant often can't be seen as a whole in a single image. Using images taken from an UAS can help the real estate practitioner efficiently market complex properties. The ability of a potential buyer or tenant to examine a several thousand square foot office building, including exterior walls, parking structures, roof, and other fixtures from the safety and comfort of his or her office is an invaluable advantage afforded by the use of UAS technology.

Building owners and property managers can use an UAS in similar ways to inspect and maintain properties. Sending an UAS to the roof of a building to examine its condition regularly or after a storm is faster and safer than sending up a person. Owners and managers can get information about hard-to-access parts of their buildings faster, cheaper and safer by using an UAS instead of a person. This is not only a useful tool for routine maintenance, but an indispensable asset after a vandalism incident, storm or other natural disaster. Owners and managers using an UAS can get better information about building damage faster, can communicate quickly and effectively with their insurance companies, and ideally get their properties back to normal after a destructive event using the information gained from one or a few short UAS flights to gather information and images.

Traditionally these properties have been photographed using a helicopter or small plane to obtain images. Using an UAS is less expensive, less time consuming, and less dangerous to everyone involved.

The same benefits also apply to land sales. Real estate practitioners often work on deals with properties that are hundreds or thousands of acres of farmland, timber, or undeveloped land. Potential buyers can see the topography, geography, hydrogeology features, as well as examine what plants are growing and what animals live on the property. Reviewing the images collected from an UAS is more efficient and safer than spending hours or days driving around a property or even flying above it in a chartered plane or helicopter.

Any consumer making a real estate purchase or entering into a lease can benefit from the images obtained by using an UAS. The images are another tool for a real estate professional to help a consumer make an informed decision about the property he

or she is considering purchasing. UAS-obtained images are a cost-effective way to get more information to the consumer, when compared with previous methods for aerial photography such as a helicopter or small airplane.

Just like online listings and 360 degree virtual tours changed the way real estate practitioners do business and serve their clients, UAS-obtained imagery is a new advancement of technology that will allow brokers and agents to better serve their clients, and allow consumers to make better informed decisions.

II. Discussion of the Proposed Rule

NAR is pleased to see the FAA moving forward with its integration of UAS into the NAS. Like the FAA, NAR is committed to the safety of all citizens and users of the NAS. A one-size-fits-all approach will not effectively integrate technology as diverse as UAS into a complex air space. NAR supports FAA's approach to address the varying needs of the UAS community and the NAS.

NAR is committed to educating its members about the importance of safety in UAS operations. The consumer power that REALTORS® have as users of UAS technology and UAS services puts them in a unique position as an influential market participant. REALTORS® want to use these services and they want to work with responsible operators or become responsible operators themselves. REALTORS® support FAA's efforts to create a safety-focused community of UAS users and service providers. So far, NAR has focused its conversation on UAS use in real estate on safety for all involved. Our participation in the *Know Before You Fly* safety campaign is merely part of our efforts to talk about UAS with safety as a key priority. Through education sessions, materials, and web site content, NAR has informed its members about the safety precautions necessary when using this technology.

NAR believes that more education on UAS rules is needed within the FAA and the industry overall. Because so much of the authority for integrating UAS into the NAS will fall to FAA regional offices, NAR urges the FAA to ensure its regional offices are educated about the requirements governing UAS use. The FAA should also use its position to lead industry education about requirements governing UAS use. With so many different industries competing to work with UAS technologies in a myriad of ways, the conversation has been clouded about what is truly necessary to create a regulatory framework that both protects safety of users of the NAS and citizens, and also allows for these varied uses of the technology. Increased industry education about safety standards from the FAA, the voice of safety in aviation, will go a long way toward creating uniform standards within the industry.

Creating a regulatory regime in which commercial UAS operations can be safely integrated into the NAS is the first step toward realizing the potential of this technology. The industry best practices that spring up around the rules will be the real proof of success in this arena. These best practices could include operator education, insurance programs and an ongoing dialogue among UAS users, FAA headquarters, and the FAA's regional offices.

A. Safety

i. Operations and Accountability

NAR believes that transparency and accountability of UAS operations are essential to the successful integration of this new technology into the NAS. Just as cars, boats, airplanes and other movable machines have registration requirements, so should UASs. To understand the identity of the owner and operator of the machine is to create a culture of accountability within the UAS user community. We support the Rule's registration and marking requirements and believe this is a logical step in furthering the FAA's safety objectives.

ii. Bystanders

NAR appreciates the common-sense approach that the FAA has taken in addressing the safety of bystanders to the UAS operation. Prohibiting flight over non-participants, except in the case of people standing under protective structures, is a solid starting point for a discussion on bystander safety. But more guidance is needed in terms of the operator's obligations for communicating with bystanders that an UAS flight will occur in the

area. NAR believes that one of the first steps of a safe UAS flight is providing adequate notice to people nearby the operation who are not directly participating in the operation of the UAS. Developing a proper protocol that will acknowledge safety and privacy concerns for both the operator and bystanders is essential for successful integration of UAS into the NAS.

Many real estate applications of UAS technology could take place in populated areas. There is currently no standardized protocol for notice to bystanders before or during an UAS flight. NAR asks the FAA to provide greater detail regarding what is expected of UAS operators when providing notice to, communicating with, and protecting the safety of individuals who are at or near the location of the UAS operation. For example, how much notice is required to clear an area of bystanders before the flight takes place? How should the notice be given? Given that the battery life of many UAS is limited to 30 minutes or less, for how long should an area be required to be cleared of bystanders? Since the UAS has the capability to fly over neighboring structures that are not the dedicated subject of the UAS flight, within what distance should bystanders be provided notice?

The safety of UAS flight over bystanders is a critical element of the safe operation of UAS technology. Until a standardized protocol for notice is developed, notice procedures will vary from operator to operator. As Section 333 waivers become more widely available and until the FAA rules for small UASs are finalized, this will result in a patchwork of practices. Citizens and consumers should be able to have a single set of standards so that notice protocols are predictable across the country. Predictability in the market will lend itself to the accountability and best practices discussed above.

REALTORS® are committed to creating a culture of safety around the use of this technology, and effective communication with non-participants will be very important to the success of this technology. NAR is committed to working with the FAA to identify common fact patterns in these situations and to help create solutions that will work for bystanders and UAS operators alike.

NAR supports policies that lead to predictability uniformity when it comes to safety and privacy of citizens. Consistent application of notice policies for UAS operation is a critical aspect of the safe integration of UAS into the NAS.

iii. Operator and Visual Observer

The FAA has proposed creating two new crewmember positions for UAS operators. The operator is the person who manipulates the flight controls of a small UAS. The visual observer is a person who assists the small unmanned aircraft UAS operator in seeing and avoiding other air traffic or objects aloft in flight or on the ground. NAR supports this proposition, as it reflects the unique nature of the UAS operation and the machine itself.

In this regime, the operator would bear the brunt of the regulatory burden via education, certification, and safety compliance. This makes sense, as it would be the operator who has control of the machine. The visual observer is an option the operator can choose, depending on the circumstance of the operation. NAR supports this flexibility, as not all flights will require an observer. NAR also supports the flexibility built into the rule by not requiring the operator to get an airman certificate. Keeping a low regulatory burden for this as-needed position is a reasonable decision.

NAR asks the FAA to be more specific in what is required for the methods of communication between the operator and visual observer. Operators should have some degree of choice in how they work with a visual observer, who is ostensibly a partner in the operation, but some guidance would be helpful. NAR does not believe that it is necessary that the observer should be required to stand close enough to the operator to allow for unassisted verbal communication, as communication-assisting devices are available, reliable and efficient at enabling communication between the operator and visual observer. Further, the FAA acknowledges that the visual observer could be used to extend the flexibility of the UAS operation, so any requirement to mandate the observer to stand within a certain physical proximity to the operator would defeat that stated purpose.

B. Training of Operator

NAR supports the FAA's proposal to create a separate class of airman certificate for UAS operations, and to establish testing standards within this operator class. This action balances the need for industry standards and regulations with the realities of operating an UAS within the NAS. NAR understands the FAA's role in regulating access to the NAS, both through the machines and technology used, and the people who are operating them. NAR understands that the FAA works cooperatively with other agencies to ensure the safety of the NAS through sharing information such as pilot background checks and operator safety records. We also understand the national security implications of devices and people within the NAS. For these reasons, we support the FAA's efforts to create operational standards and official records for users of UAS technology.

The education, testing, re-testing, reporting, and drug and alcohol screenings contained within the proposal represent a well-structured regulatory regime governing the use of UAS within the NAS. Integrating UAS safety into the successful FAA framework for pilot safety, education and testing is a reasonable and logical step and addresses the national security concerns inherent in operating an UAS in the NAS. NAR believes that industry-wide educational, performance, and accountability standards will make for a safe integration of UAS into the NAS, and will create a well-disciplined industry from the start.

The FAA's proposed testing regime is a practical solution to creating industry safety and knowledge standards while making entrance into the UAS industry a possibility for many. The FAA understands that some operators come to the UAS space with extensive piloting experience, while others may have minimal or no piloting experience. However, the UAS operations contemplated under this rule have very different requirements and challenges than flying a manned vehicle.

Because the FAA already has a testing regime set up for pilots of manned aircraft, it follows that the UAS operators would receive the same treatment. The Initial Knowledge Test, as proposed, covers many of the essential basics required to properly and safely operate UAS. Administering the test at testing centers throughout the United States will ensure uniform test administration, content and standards. Requiring all users of the UAS to demonstrate aeronautical knowledge is a basic effort toward safety that will protect individuals on the ground and UAS operators.

The Recurrent Knowledge Test every 24 months fits in with current FAA safety requirements. The same standard should be extended to UAS operators.

C. Visual Line of Sight/Beyond Visual Line of Sight

NAR recognizes the obstacles in addressing beyond visual line of sight (BVLOS) safety operations. NAR has been working through some of these issues through its participation in the FAA's BVLOS Working Group. Maintaining visual contact with the aircraft is the essential element to the safety precautions built into the observer/operator partnership, especially as most UAS lack sense-and-avoid technology. However, many applications for UAS use in real estate could be in BVLOS situations, such as filming or photographing a farm, ranch or office building. NAR encourages the FAA to consider some alternate solutions.

First, NAR suggests that the FAA consider a tiered system for BVLOS operations depending on the location of the flight path, the population within the flight path, and any other infrastructure or other hazards within the flight path. It's not hard to imagine the hazards of an UAS that has strayed from the operator's sight within a more populous area such as a suburban community or a downtown area. But for many real estate professionals who work in more rural settings and deal with properties such as farmland, ranches or woodlands, the risk is much less. Creating some sort of regulatory framework for situations where a BVLOS flight would be acceptable would solve many challenges for real estate professionals and UAS operators in these situations.

Second, while the FAA has specifically prohibited a 'daisy-chain' of observers working with a single operator of an UAS, NAR suggests that the FAA consider a relay system of operators rather than observers in a BVLOS flight

situation. The main difference between the observer and the operator in the schema that the FAA has presented is that the operator actually has control of the machine and visual contact, where the observer has only visual contact with the machine. Since maintaining control of the machine is the key challenge here, it is worth considering the possibility of multiple operators who could relay control of the machine to one another as the circumstance dictates. Many of the larger parcels of land, taller structures and unique structures that real estate professionals work with would be well-suited to UAS imagery, but only if the BVLOS conditions can be addressed. In a relay situation, the multiple operators could both observe and control the machine, rather than merely observe. The real-time corrections necessary to perfect an UAS flight could be made instantaneously, rather than the observer communicating with the operator and there being a lag in the time the correction is orally given and then made within the operation.

The safety challenges surrounding BVLOS operations are complex, and NAR supports the FAA's efforts to work through them. NAR looks to the FAA for leadership to create rules within this rulemaking context that would support the safe use of UAS in a BVLOS setting.

D. Micro UAS Category

NAR is pleased to see that the FAA recognizes the unique nature of micro UAS². Many consumer UAS currently fit into this category and the numbers will only expand as the technology becomes more affordable and easier to use. As many other countries have established this same structure in their UAS regulations, it is only natural that the United States follows suit. Even though the U.S. airspace is distinctive in terms of its complexity and variety, there are regulatory models from other countries already integrating UAS in their airspace and from which the FAA could and does take inspiration. NAR appreciates the FAA's creativity in looking to other, successful regulatory models.

The micro UAS are smaller, lighter, and have shorter battery lives than the UAS contemplated in the NPRM. Because the risk presented by these micro UAS is lesser than the risk presented by small UAS, NAR supports the FAA's attempts to create a regulatory schema that acknowledges and accommodates the different risk factors.

III. Conclusion

NAR is committed to working with the FAA to create a culture of safety surrounding the use of UAS, while still enabling users to employ the technology with ease and efficiency. NAR's participation in the *Know Before You Fly* campaign and the FAA BVLOS Working Group are two examples of NAR's efforts to raise NAR members' awareness of safety issues surrounding UAS operations, and we will continue to pursue the conversation on UAS safety in the years ahead. NAR believes that the FAA's proposed rule goes a long way toward successfully integrating UAS into the NAS. NAR supports the FAA's efforts and looks forward to the FAA addressing NAR's comments and questions outlined in this letter.

Sincerely,



Chris Polychron
2015 President, National Association of REALTORS®

² A micro UAS as proposed in the NPRM is an UAS that weighs no more than 4.4 lbs.