

**SUPPORTING STATEMENT  
REQUEST FOR GRANT OF EXPERIMENTAL STA  
WKAR-TV, East Lansing, MI (Facility ID 6104)**

The Board of Trustees of Michigan State University (“Licensee”), licensee of noncommercial educational television station WKAR-TV, East Lansing, MI (Facility ID 6014) (“WKAR-TV”), respectfully requests that the Commission extend for an additional six months the Experimental Special Temporary Authority (“Experimental STA”) granted January 29, 2020.<sup>1</sup> This extension is requested because the COVID-19 pandemic prevented WKAR-TV from engaging vendors whose assistance is needed to perform the work necessary to shift the experimental operation of its ATSC 3.0 testbed facility (the NextGen Media Innovation Lab (“NMIL”)) to a new channel (Channel 35) with low power transmission.

The facts stated in this Supporting Statement remain largely the same as they were when Licensee filed its January 13, 2020 application for the Experimental STA, except that the need for enhanced remote learning capabilities caused by the pandemic has served only to heighten WKAR-TV’s commitment to developing new NextGen TV applications that further the public service mission of public television. In light of the unprecedented circumstances resulting from the pandemic, grant of this requested extension is warranted.

**Background**

The Commission initially granted WKAR-TV an experimental STA on June 11, 2018 to operate the NMIL on Channel 36 (the “Initial STA”).<sup>2</sup> The Commission’s post-Incentive Auction repacking plan made it necessary for these operations to shift to Channel 32 in early 2019, and the Commission accommodated this change by granting Licensee’s application for a replacement experimental STA (the “Replacement STA”).<sup>3</sup> Operations under the Replacement STA have continued in coordination with WDIV-TV, Detroit, MI (Facility ID 53114), whose broadcast transmissions shifted to Channel 32 in Repack Transition Phase 8. Licensee therefore requested a new Experimental STA so that it may continue on Channel 35 its work developing important ATSC 3.0 applications, and the Commission granted that request on January 29, 2020.

**Continued Broadcast Operation of the NMIL Will Serve the Public Interest**

As the Commission knows, the Initial STA enabled WKAR-TV to become the first public television station in the U.S. to be authorized to conduct experimental ATSC 3.0 broadcasts. Licensee built the NMIL to develop ways to use NextGen TV technology to maximize the potential of public television’s mission of service to the public. NMIL operations began in August 2018, with the full facility becoming operational in January 2019. Since that time, the NMIL has made significant and demonstrable progress in developing and testing ATSC 3.0 applications in the areas of interactive children’s programming, enhanced systems for communicating information during emergencies, new methods to support agricultural technology, and other critically important services to the community.

Licensee has made the NMIL an institutional priority, with significant funding already provided

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<sup>1</sup> See Letter to Board of Trustees, Michigan State University from Kevin R. Harding of FCC, dated January 29, 2020 (FCC LMS File No. 0000096961).

<sup>2</sup> See Letter to WKAR-TV from Kevin R. Harding of FCC, dated June 11, 2018 (FCC LMS File No. 0000053377).

<sup>3</sup> See Letter to WKAR-TV from Kevin R. Harding of FCC, dated April 18, 2019 (FCC LMS File No. 0000069316).

for technology and personnel. Licensee has thus far spent over \$400,000 on equipment modifications, a mask filter, property modifications, and other gear. Through January 2, 2020, the ATSC 3.0 signal transmitted in connection with the NMIL's ATSC 3.0 testbed has been in operation for a total of approximately 4,566 hours. A task force of researchers and experts from various fields – including engineering, education, health communication, game design, journalism, computer science and human computer interaction – has provided leadership with pilot projects for the testbed. Licensee has focused the NMIL's work on use of NextGen TV technology to enhance public health and safety, economic development, and the accessibility of children's educational programming content.

The Commission's grant of the Initial STA and the Replacement STA made it possible for WKAR-TV to develop a number of innovative ATSC 3.0 applications. Licensee wants to continue to invest in the potential of public television's use of ATSC 3.0 technology to enhance the health, safety, and education of the American public, but a continuation of broadcast operations beyond July 29 2020 is needed to maximize the positive impact of these efforts. The pandemic delayed for several months the station's ability to bring in the contractors necessary to convert the ATSC 3.0 lab to low power operation on Channel 35. This work was just recently completed in mid-July.

A key NMIL research effort is the optimal design of programming with educational content that can be delivered to mobile devices, such as smartphones, tablets and IoT devices, and to other devices used as companion devices for educational outcomes. The necessity for remote learning caused by COVID-19 caused WKAR-TV to focus even more strongly on its commitment to using the NMIL to explore the potential of ATSC 3.0 in supporting a "truly virtual classroom." As the need to facilitate remote learning has come front and center, effective solutions require comprehensive support for school districts, teachers, students, and parents. The NMIL has been exploring NextGen solutions to deliver a diverse set of content and learning experiences to work seamlessly with any device to which a student might have access (TV, laptop, tablet, phone), while integrating multiple media formats such as (live video, e-books, presentations, PDFs). Real-time feedback and data collection are of utmost importance.

Any kind of transformative solution will provide support and services for all stakeholders, including teachers, the school district, and students and parents. Teachers need to actively engage students and to know if they're having an impact, districts need to distribute materials and collect data to evaluate effectiveness, students need tailored instruction and equitable access. Because of the convergence of broadcast and broadband, we can now position ourselves to not just leverage our reach and our spectrum but build on that foundation to create and manage a comprehensive learning ecosystem for our education partners.

MSU has launched a major initiative on mobility, transforming its 5,200-acre campus into a live, connected ecosystem to drive mobility research and development to advance smart-vehicle technology and better understand the human element. With much of this transformation already complete across its urban, suburban, industrial and rural zones, MSU's controlled infrastructure and active campus make it ideal to test emerging technologies for new mobility solutions. Those include ATSC 3.0 transmission, solutions for "first mile/last mile" transportation, and validation of technologies for automated and connected vehicle systems. MSU's proximity to Detroit and its engineering faculty's ongoing collaborations with the region's automakers have opened opportunities for research on the potential application of ATSC 3.0 technology in the future of connected and autonomous automobiles. For example, in the fall of 2019, the NMIL successfully used ATSC 3.0 technology to test mobile connectivity in a vehicle traveling at 70 miles per hour on a highway.

With a community of students, faculty and staff that approaches 70,000 people, and an athletic stadium of 75,000 seats, emergency communications to MSU's staff and visitors is the highest priority. The NMIL enables MSU to test prototype systems that augment communications with first responders

on campus and with the University community, and that may be deployed at MSU, other universities, and public first responder departments in Michigan and elsewhere. The NMIL explores the potential of ATSC 3.0 to expand the availability and impact of local information, and it serves as a platform for developing and testing areas such as on-demand access to local content, interactivity, geographic targeting, potential applications for local government agencies and area nongovernmental organizations. These efforts are enhanced by the deep experience and expertise both in research and in practice of the faculty at MSU's top-ranked School of Journalism and Communications Arts and Sciences Department.

The NMIL also is testing ATSC 3.0 applications designed to make roadways smarter and safer through the use of ATSC 3.0 signals that carry real-time traffic information to road signs that can alert motorists to such things as speed limit changes due to hazardous conditions and upcoming slowdowns due to accidents. Licensee has been collaborating with the University of North Carolina to replicate the UNCTV demo with first responders, utilizing its Advanced Warning and Response Network (AWARN). Instead of relying on mobile phone networks, which can become overburdened and unusable during an emergency, AWARN uses terrestrial broadcasting to deliver rich-media, geo-targeted content, such as emergency alerts, evacuation routes and additional information. WKAR-TV has enjoyed the support of the Michigan State University Police in testing this application and is planning a simulation inside Spartan Stadium this winter. With the requested Experimental STA, Licensee also will work with MSU Police to build a dashboard for viewing first responder body cams in real time, as well as placing receivers in patrol cars. Additional tests will include accessing the campus camera network and providing targeting emergency and evacuation alerts across monitors in all buildings.

For the past several years, WKAR-TV has produced a children's science and engineering program called *Curious Crew*. Along with the educational content of the show itself, WKAR-TV offers Curiosity Guides, comprised of supplemental content, tutorials, and other instructional material. Curiosity Guides have been available through the station's website, but families lacking broadband connectivity at home are left out. Using ATSC technology and a modified gateway device obtained from Triveni, the NMIL has circumvented this limitation by bundling supplemental content via the broadcast, enabling families that lack a broadband connection to receive and benefit from it. Licensee has successfully integrated the Curiosity Guides feature into the broadcast and provided demonstrations at the PBS TechCon and National Association of Broadcasters ("NAB") conferences in April 2019. Since then, Licensee has developed additional experiments with supplemental content for the companion screen that offers learning reinforcement, analytics and the ability for participants to share their own experiments in a social media-like environment. It is this work on which Licensee intends to build a true virtual classroom that includes all forms of network, device and content delivery options, including real-time feedback and data collection.

In addition, Licensee has established a partnership with the Lansing School District, through which 3,000 PBS Playtime Pads tablets have been distributed to kindergarteners. Licensee is building on this partnership by developing an ATSC 3.0 app that will enable the Playtime Pads to serve as a platform to test companion screen applications. Through this project, Licensee has developed professional development for teachers and engagement initiatives for parents, solidifying these partnerships to provide the groundwork for experimentation of companion screen testing. This project is allowing Licensee to test new models of intervention for elementary math and literacy, and early research data is showing improvements by students in these areas.

The tablet partnership is just one example of the type of project Licensee is pursuing as a PBS station. Other ideas under consideration are telehealth and distance education to underserved and rural communities with limited broadband penetration. Using a combination of broadband and broadcasting, Licensee is developing methods for delivering rich, interactive media using a thin back channel.

In addition to the efforts described above, the Commission's grant of the Initial STA and the Replacement STA allowed WKAR-TV to gain valuable experience that led to its recent announcement (with Gaian Solutions, Inc.) of the launch of a new NextGen TV accelerator platform called the Apollo PublicTV Platform, which offers public broadcasters a suite of services including NextGen TV master classes, ATSC 3.0 receiver and transmitter starter kits, access to NextGen TV broadcast chains, and the capability to conduct lab and field trials.<sup>4</sup> Grant of the requested Experimental STA will further enhance WKAR-TV's ability to serve as a resource for public broadcasters across the country that will accelerate their adoption of ATSC 3.0 in ways previously unimaginable due to the timely need spurred by the pandemic.

### **Operations Under The Experimental STA Will Cause No Harmful Interference To Other Television Stations**

As demonstrated in the Engineering Statement attached to Licensee's January 13, 2020 application for the Experimental STA, because of the low power at which the NMIL would operate on Channel 35, the proposed facility will not cause more than 0.5% new interference to any other surrounding co-channel or adjacent channel facilities or more than 2% new interference to any LPTV facilities. (That Engineering Statement is incorporated herein by reference.) The proposed facility will comply with all FCC out-of-band emission requirements for full-service DTV stations through the use of a mask filter, and Licensee will make a good faith effort to identify and notify local health care facilities within the predicted service area of its proposed operation on Channel 35.

### **Conclusion**

The Commission has authorized experimental ATSC 3.0 operations in response to similar requests by other licensees, mostly in the commercial television industry. These worthwhile efforts advance innovative new commercial broadcast business models, such as micro-targeted advertising. As with Licensee's previously granted applications for the Initial STA, the Replacement STA, and the Experimental STA, the instant request seeks to enable WKAR-TV to continue to further the core values of noncommercial television licensees – education and the betterment of our communities – through ATSC 3.0 applications. Continued operation of the NMIL through the extension requested herein will unquestionably serve the public interest.

In light of the foregoing, Licensee respectfully requests that the Commission process this application expeditiously and promptly extend the Experimental STA for an additional six months.

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<sup>4</sup> See Press Release, *WKAR at MSU Announces Launch of Apollo PublicTV Platform in Partnership with Gaian Solutions*, available at <https://comartsci.msu.edu/about/newsroom/news/wkar-msu-announces-launch-apollo-publicity-platform-partnership-gaian-solutions>.