

**Corporation for Public Broadcasting
Infrastructure Funding Request and
Justification FY 2021**

*Submitted to the Office of Management and Budget
and to the House Energy and Commerce
Committee and Senate Commerce Committee*

April 28, 2021

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Overview of Public Media

Since the 1920s, people across the United States have launched public broadcasting services in their communities to champion the principles of diversity and excellence of programming, responsiveness to local communities, and service to all.

Today's public media system reaches nearly 99 percent of the U.S. population over-the-air with free educational, news and public affairs programming and public safety services. Public media utilizes multiple traditional and digital platforms to provide essential public service to rural and urban communities.

The Corporation for Public Broadcasting (CPB) supports 395 grantees, representing 1,170 public radio stations and 158 grantees representing 356 public television stations. These independently managed and operated noncommercial, non-profit local public television and radio stations are each licensed by the Federal Communications Commission and overseen by a local governing body. Public media's infrastructure provides the broadest, nationwide communications platform, delivering educational, informational, and public safety services to the American people.

Public media creates and distributes content that is for, by and about Americans of all backgrounds, and its service fosters dialogue between and among the American people. In addition to providing free high-quality, educational programming for children, local journalism, and award-winning current affairs programming, public media stations provide life-saving public safety and emergency alert services. In a world where there are numerous outlets for information, public media continues to be America's most trusted and reliable institution for news and educational programming.

Public television and radio stations have long played an integral role in our nation's emergency alert system, and the partnership among PBS, NPR and local stations provides unsurpassed resilience for of our nation's public safety systems. With a national-local structure, public media entities can distribute national, state and regional emergency alerts, and provide encrypted, geo-targeted alerts to local communities in times of need.

The COVID-19 crisis has been a demonstration of how the public media system provides universal access to indispensable education, information, and public safety services to all Americans, including in unserved and underserved areas. Simply put, the public broadcast telecommunications infrastructure provides an essential lifeline to news and public affairs, community resources, critical health and safety information, and the education needs of our nation's children.

Section I- Public Media Infrastructure Funding Request

CPB supports a \$300 million request for public media's equipment and infrastructure needs

The Corporation for Public Broadcasting (CPB) joins with the public broadcasting community in supporting a \$300 million appropriation for a Public Telecommunications Infrastructure Modernization Program (PTIMP) within the U.S. Department of Commerce and administered by the National Telecommunications Information Administration (NTIA). This competitive grant program will safeguard more than 50 years of investment in the public media system by the federal and state governments and ensure structural viability for public media stations across the country.

This request is grounded in a 2017 System Technology Assessment commissioned by CPB, which cataloged more than 60,000 pieces of equipment throughout the system that need to be either updated or replaced. This Assessment projected that the system's financial capacity to address equipment repair and replacement would see a cumulative shortfall of more than \$300 million by 2020.

From 1962 to 2011, public media stations had access to infrastructure funding through the Public Telecommunications Facilities Program (PTFP), administered by the NTIA at the Department of Commerce. The Program had been the primary source of support for infrastructure needs for both public television and radio. PTFP grants were utilized by stations for maintenance, repair, and replacement of aging equipment. Since the elimination of PTFP's critical federal funding more than a decade ago, as well as flat federal funding for CPB, public broadcast stations have struggled to finance equipment replacements, resulting in a growing funding deficit for stations nationwide as aging infrastructure and natural disasters challenge the nation's public media networks.

Now, ten years after PTFP's last appropriation, stations are facing hundreds of millions of dollars in infrastructure repair and/or replacement needs. The demand for maintenance, repair, and replacement of transmitters, microwave systems, studio transmission lines, encoders and other equipment will continue, reliability will decrease, and failure will ensue. If funds are not made available, the equipment funding shortfall will grow. Funding for the public media system's aging infrastructure protects the investment that the federal government has already made in public media and assures that future generations will have access to quality, noncommercial, public media content and services.

The System Technology Assessment further found that 86 percent of TV stations and 75 percent of radio stations tend to postpone replacing their technology equipment when faced with a lack of funds. By postponing replacements and pushing out refresh cycles, stations are at a greater risk of going off the air, not being able to fulfill their missions, and/or are squeezed to make purchases without having the lead time to negotiate better equipment deals. Almost half of TV stations and a quarter of radio stations stated that they scale back their equipment replacement plans with less optimal specifications due to lack of funding. As the public media system postpones replacing aging equipment beyond its end-of-life, local stations face increased risk of

technological failure, lost production and broadcast time that ultimately affects the educational, informational and public safety services to their communities.

The onset of the coronavirus crisis in 2020 exacerbated this funding gap for public media infrastructure and put a virtual halt to plans for equipment refresh and replacement. The operational and financial challenges caused by the pandemic forced many CPB-supported stations to postpone planned equipment replacement and redirect those dollars to operations. As capital campaigns to supplement operational expenses were suspended, and stations reacted to maintain programming while ensuring a safe work environment for their staff, there was little time or money for new equipment.

Without resources to maintain and replace broadcast transmission infrastructure, as well as recover from the gap in maintenance during COVID-19, TV and radio licensees of all sizes and types could face significant operating challenges nationwide, disrupting the essential services these stations provide.

CPB requests the Public Telecommunications Infrastructure Modernization Program be administered by the NTIA. The NTIA has 50 years of institutional knowledge and experience in working closely with the nation's public media stations to distribute grant dollars for facilities and infrastructure. Like the origins and legislative intent of PTFP funding, the new PTIMP should not focus on a particular technology or software, but should fund facilities and infrastructure to extend, increase and strengthen the services provided by public telecommunications facilities.

Public media is justifiably proud of its public-private partnership model, where a majority of the funding for the system comes from non-federal sources.¹ Infrastructure funding is urgently needed to maintain and modernize the physical infrastructure of our nation's public media system so that public media can continue to provide valuable and innovative services to current and future audiences.

With no targeted federal support for more than a decade, stations' growing unfunded infrastructure needs are jeopardizing their ability to continue to provide their communities with the highest-quality programming and services. Funding for the public media system's aging infrastructure would protect the investment that the federal government has already made in public media and assures that future generations will have access to quality, noncommercial, public media content and services.

Public media is a public information resource that is improving the lives of millions as it embraces innovation in content and technology, strengthening the diversity of talent and programming, and inspiring civic responsibility. The federal appropriation's contribution to this successful public-private partnership will enable CPB-supported stations to continue to tell America's dynamic story in a way that enhances our civil society and connects us to one another. Congress's support of this request will allow public broadcasting to fulfill its longstanding

¹ In these unprecedented times of economic crisis, the \$250 million total provided by the CARES Act and the American Rescue Plan Act was critical in stabilizing the operations and services of local stations. Without these dollars, stations would have had to further reduce staff, content production, and local educational, informational, and public safety services. This funding, however, is insufficient to address the significant funding shortfall for infrastructure.

commitment to serving the rich diversity of Americans, particularly the unserved and underserved, in all 50 states, the District of Columbia, and U.S. territories.

CPB appreciates the Congress's consideration of this critical infrastructure request.

PROPOSED APPROPRIATIONS LANGUAGE

Federal Funds

DEPARTMENT OF COMMERCE- NATIONAL TELECOMMUNICATIONS INFORMATION ADMINISTRATION (NTIA)

Of the amounts made available to the National Telecommunications Information Administration for fiscal year 2021, \$300,000,000 for the Public Telecommunications Infrastructure Modernization Program, including up to 3 percent for administration.

Budget Language

Public Telecommunications Infrastructure Modernization Program- This recommendation includes \$300,000,000 for the Public Telecommunications Infrastructure Modernization Program, including up to 3 percent for administration. The Committee expects NTIA to seek input from the Corporation for Public Broadcasting as it establishes and implements this program for public telecommunications entities, as defined by 47 USC 397(12).

Appendix A

By the Numbers²-The total number of transmitters needing replacement by 2020.

TRANSMITTERS/ANTENNAS

Largest category of costs: Transmitters and Antennas

TOTAL transmitters needing replacement by 2020: **294 TV (81% of total 362) and 356 radio (31% of total 1157)**

Total Cost Transmitter/Antenna Replacement (**excludes repack**) **\$118M (17.5% of total costs)**

TV Transmitters: **\$44 million**

TV Antennas TV: **\$44 million**

Radio Transmitters: **\$22 million**

Radio Antennas: **\$8 million**

STATIONS BY SIZE

Smaller station transmitters needing replacement by 2020: 112 (38% of reported replacements)

% of funding gap for Smaller station: 24% (182 radio, 73 TV/45% of system)

% of funding gap for Medium station: 28% (88 radio, 44 TV/ 23% of system)

% of funding gap for Larger station: 47% (132 radio, 51 TV/32% of system)

Note TV: Smaller = Revenue <5M, Medium = Revenue >5M and <10M, Larger = Revenue >10M

Note Radio: Smaller = Revenue < 1M, Medium = Revenue >1M and <3M, Larger = Revenue >3M

² Eagle Hill Consulting. May 2017.

Appendix B

Highlights of Public Television and Public Radio Equipment Needs³

Alabama Public Television

6 Antenna with V Pol and interim antennas	\$4,000,000
Whole House UPS for 5 Transmitter sites	\$700,000
Datacasting equipment for each transmitter site	\$450,000
TOTAL:	\$5,150,000

Alabama- WBHM-FM (Birmingham)

Standby EAS unit-SAGE	\$4,000
Backup RDS Encoder	\$1,100
External Antennas for Monitoring Stations	\$400
Public Service Radio Monitors	\$800
Auxiliary Transmitter	\$70,000
TOTAL:	\$76,300

Alaska- KCAW-FM (Sitka)

3 Backup Generators	\$21,000
Studio Transmission Lines (STL)	\$62,000
HVAC for Cable House	\$25,000
Codec Replacements	\$10,000
Tower Facility Enclosure	\$38,000
Antenna Replacement	\$4,500
FM/AM Transmitter/Translator Replacement	\$213,800
TOTAL:	\$374,300

Alaska- KUAC-TV/FM (Fairbanks)

TV Transmitter	\$250,000
Uninterruptable Power Supply (UPS)	\$150,000
IP Network Site Transmission Line (STL)	\$100,000
Back-up STL & Network for Transmitter Remote Control for TV & FM	\$6,000
TOTAL:	\$506,000

Alaska- KOTZ-AM, KINU-FM (Kotzebue)

1 FM Transmitter	\$20,000
HVAC Replacement	\$20,000
Power over Ethernet (PoE) Switchers	\$7,500
Computer Replacement	\$5,000
TOTAL:	\$52,500

Alaska- KUCB-FM (Unalaska)

Network rewire and router replacement	\$15,000
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Alaska- KNBA-FM (Anchorage)

Streaming encoder replacements	\$15,000
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³ This is just a sample of critical local public broadcast station needs and is not intended to be an exhaustive list.

Alaska- KHNS-FM (Haines and Skagway)

Transmitter	\$15,000
Remote Pickup Unit (RPU)	\$10,000
UPS replacement	\$1,000
2 Codex	\$4,000
Firewall switcher	\$1,500
TOTAL:	\$21,500

Arizona- KJZZ and KBAQ Public Radio (Tempe)

Transmission Site Generators and UPS	\$18,000
STL and TX Distribution Networks	\$160,000
Translators/Single Frequency Network	\$50,000
Other RF Broadcast (replace BPF)	\$160,000
Cybersecurity Software	\$30,000
Station Generator and Uninterruptible Power Supply	\$20,000
Other Common Infrastructure	\$120,000
TOTAL:	\$558,000

Arizona PBS (Phoenix)

Routing Switcher	\$1,248,000
Production switchers	\$678,000
Transmitter	\$350,000
8 Translators	\$280,000
TOTAL:	\$2,556,000

California- Public Media Group of Southern California

2 TV Back Up Transmitters - Mt. Wilson	\$850,000
2 TV Back Up Antennas - Mt. Wilson	\$350,000
HVAC System Replacement Mt. Wilson	\$650,000
Fire Suppression System Mt Wilson	\$550,000
UV/HEPA/Ion Virus Filtering HVAC Upgrades (Studio/Offices)	\$750,000
2 TV Receiver/Antenna/Synchronization Equipment	\$90,000
4 TV Translator Transmitters	\$450,000
4 TV Translator Antennas	\$385,000
4 TV Translator Encoders	\$200,000
5 TV Receiver/IRD	\$20,000
5 IP Microwave Links (Mt Wilson and Translator Network)	\$350,000
2 Routing Remote Access	\$140,000
Satellite Receive/Uplink Antennas	\$350,000
CAL Office of Emergency Services	\$50,000
NextGen TV Test and Monitoring Equipment	\$200,000
NextGen TV DA and Modular Equipment	\$100,000
2 NextGen TV EAS Encoders	\$25,000
Network Interfaces (Network, Routers, etc.)	\$250,000
2 TV Encoding Systems KOCE and KCET	\$600,000
Cabling, Racks, Mounting Hardware	\$60,000
GPU-Accelerated Enterprise Transcoding Server	\$40,000
UX Testing / QA / Demo Hardware	\$12,000

2 Streaming encoders	\$100,000
	TOTAL: \$6,572,000

Colorado- Rocky Mountain Public Media

10 Translators	\$60,000
CAT DV Archiving System	\$102,000
KTSC Raydom Replacement	\$37,000
The Drop Replacement Transmitter	\$9,000
2 IT Switch Catalyst 9300 48-port UPOE	\$16,000
Portable HD/SDI Test Generator & Monitor	\$5,000
KUVO DROP & JAZZ Phone System	\$12,000
Rooftop Network Infrastructure Buildout	\$7,000
KRMA/KTSC/KRMJ/KRMU MPEG and RF Analyzer Replacements	\$62,000
Vidcheck Module for Vantage	\$16,000
Masterpiece Teleconference	\$30,000
	TOTAL: \$356,000

Connecticut Public Media

7 Uninterruptible Power Sources (UPS)	\$35,000
WEDN-TV Transmitter	\$365,000
WPKT-FM Radio Transmitter and Antenna	\$80,000
WRLI-FM Radio Transmitter and Transmission Line Replacement	\$80,000
WRLI Backup Generator	\$100,000
WEDW Backup Generator	\$100,000
Microwave Transmission System	\$250,000
	TOTAL: \$1,010,000

Florida- WEFS-TV (Cocoa)

Cocoa Tower Anchor and Guide Cable Reinforcement	\$132,000
Tower, Satellite Downlinks, Broadcast Equipment Grounding & Lightning Protection	\$50,000
Transmission Chain Update	\$375,000
Studio to Transmitter Link (STL)	\$100,000
Station UPS	\$70,000
Router (Multi-viewer)	\$45,000
	TOTAL: \$772,000

Florida- WUFT-TV, WUFT-FM, WJUF-FM (Gainesville)

WUFT-TV Transmitter, line, and antenna	\$1,500,000
WUFT-TV/FM STL Equipment (transmitter/receiver)	\$200,000
WUFT-TV House Sync Generator	\$18,000
House UPS	\$233,300
WUFT-FM Transmitter	\$80,000
HD Modulation Monitor	\$9,000
WJUF-FM Transmitter	\$80,000
	TOTAL: \$2,120,000

Florida- WJCT-TV (Jacksonville)

Studio Building Backup Generator	\$160,000
Studio Building UPS	\$120,000

Transmitter Site Backup Generator	\$80,000
Transmitter Site UPS	\$60,000
Transmission Chain Update (Encoding, EAS, WARN)	\$485,000
IP Studio-Transmitter Link (STL)	\$15,000
Importer/Exporter	\$20,000
FM Axia Nodes	\$25,000
ENCO Radio Automation	\$30,000
	TOTAL: \$995,000

Florida- WFSU Public Media (Tallahassee)

Transmitter and Antenna Replacement for WFSU-TV	\$1,700,000
Broadcast Operations Equipment Update (Encoding, EAS, WARN)	\$470,000
Replacement of Fuel Tank for Back-up Generator	\$50,000
	TOTAL: \$2,200,000

Florida- WEDU Public Media (Tampa)

Transmission Chain Update (Encoding, EAS)	\$495,000
Transmitter	\$300,000
Dielectric Antenna	\$300,000
Monitoring System	\$20,000
UPS	\$100,000
Updated Generator	\$700,000
Tower Repairs	\$200,000
	TOTAL: \$2,115,000

Georgia- Public Broadcasting Atlanta

Backup Audio processing for FM/HD	\$75,000
Automation System Hardening – Backup and Servers	\$150,000
GHZ Microwave transmission line replacement	\$400,000
Microwave replacement	\$300,000
Solid State FM/HD transmitter	\$250,000
TV and audio control room	\$1,000,000
UPS System	\$200,000
Transmitter Site Coax Switch	\$150,000
IT infrastructure upgrade/hardening/security	\$165,000
Azure storage for TV/Digital	\$200,000
News automation software/hardware	\$125,000
	TOTAL: \$3,015,000

Hawaii PBS

KHET Transmitter	\$170,000
KMEB Transmitter	\$170,000
KHET Antenna System	\$470,000
KMEB Antenna System	\$570,000
Station Networking Infrastructure	\$300,000
	TOTAL: \$1,680,000

Hawaii- KKCR-FM (Kaua'i)

Backup emergency Generator, Transfer Switch, Electrical	\$20,000
FM transmitter	\$20,000

FM broadcast Antenna	\$20,000
Digital Audio consoles	\$25,000
UPS Backup Power	\$12,000
Inter-Island Microwave System	\$20,000
	TOTAL: \$137,000

Idaho Public Television

4 Transmitters (Dual Exciter)	\$1,400,000
4 Antennas	\$1,000,000
4 Installations	\$200,000
4 Transmission lines	\$154,000
4 Duplex Studio Transmission Lines	\$360,000
Delivery & Signaling Server	\$15,000
5 IP Gateway Devices	\$59,500
Virtualized Modulator/IP Switches	\$25,000
Encoding Plant Upgrade	\$30,000
File Server Upgrades	\$250,000
5 Test Monitoring Sets	\$250,000
46 Transcoder Front Ends for Translators	\$825,000
	TOTAL: \$4,318,500

Idaho- Boise State Public Radio (KBSU-FM, KBSW, KBSX)

Generators, Backup power

YFRP Generator, Transfer Switch, Electrical	\$95,000
UPS for SMASH Downlink	\$2,500
240v UPS for KBSK, KBSQ, KBSM, battery bank	\$7,500
KBSW Generator	\$25,000
2 Generators, UPS, Transfer switches	\$45,000
Salmon, Challis UPS & Battery runtime improvements	\$6,000
Stanley School UPS, Generator	\$15,000
2 Uninterruptable Power Sources (UPS)	\$5,000
Ketchum School UPS	\$2,000

Emergency messaging and availability

EAS Endecs, receivers, route to air for KBSK, KBSQ, KBSM	\$15,000
Enhanced RDS and HD Alert messaging on KBSK, KBSQ, KBSM	\$32,200
EAS audio from Elko to KBSJ	\$5,300
Salmon coverage update, HD enabled, full messaging and alerting	\$91,650
Challis coverage update, HD enabled, full messaging and alerting	\$91,650
Cambridge transmitter, antenna, receiver replacement	\$19,000
Cascade School - transmitter, receiver	\$19,000
Stanley Coverage & alert messaging improvements, HD Alerts, MetaPub	\$131,200
Ketchum School program feed	\$5,500
KBSS Main Transmitter, Antennas, Filter, HD Alerts, MetaPub	\$96,300
KBSW HD Alerting	\$13,000
KBSJ Transmitter, Coverage upgrade, HD Alerts, MetaPub	\$133,500
KBSW Coverage improvement	\$166,000

KBSU, KBSX aux site w/ coverage improvement on KBSX	\$566,300
3 Studio Transmission Lines (STL)	\$96,000
2 coverage replacement boosters	\$120,000
Other common infrastructure	\$80,158
TOTAL	\$1,879,758

Illinois Public Media WILL-FM and WILL-TV (Urbana)

FM Transmitter	\$90,000
FM Studio Transmission Line (STL)	\$35,000
FM Transmission Antenna	\$350,000
TV Transmitter	\$181,000
TV STL	\$45,500
TV Transmission Antenna	\$900,000
Transmission Chain Update	\$450,000
TOTAL:	\$2,051,500

Indiana- WFYI-TV and WFYI-FM (Indianapolis)

15Kw Transmitter and 2 Exciters	\$600,000
FM Antenna	\$35,000
FM Backup Transmission Antenna	\$12,000
FM Backup Transmission 200' Tower Renovation	\$20,000
Transmitter Roof	\$82,000
800' Tower Painting	\$70,000
Refurbish Radio Control Rooms	\$60,000
FM Automation	\$30,000
Power Generator and Transfer Switch	\$200,000
Building Modifications to support new generator	\$15,000
Terminal Equipment	\$15,000
TV Router	\$80,000
Network Refresh	\$125,000
TOTAL:	\$1,344,000

Iowa Public Radio

1 Transmitter, Transmission Line and Antenna, WOI-FM	\$875,000
1 Transmission Line and Studio to Transmitter Link, KSUI-FM	\$325,000
TOTAL:	\$1,200,000

Kansas – PBS Kansas (Wichita)

Transmitter, Park City	\$2,025,000
Transmitter, Hutchinson	\$2,025,000
Router	\$69,000
Encoder	\$25,000
Encoder/Decoder	\$4,000
Microwave	\$35,000
Exalt PS & Surge Suppressors	\$1,500
Gateway/Firewall	\$2,500
Network Storage Solution	\$12,500
TOTAL:	\$4,199,500

Kentucky Educational Television (KET)

Localized EAS system on 16-station statewide network	\$1,500,000
FirstNet Air-to-Ground video over datacast on statewide network	\$4,345,000
Transmitter site (16 stations) emergency power, HVAC, tower lighting	\$4,063,000
Network Operations Center emergency power, HVAC, security	\$1,963,080
Statewide network transmission site expansion to increase rural access	\$12,000,000
Studio to transmitter link/broadcast chain (16 stations)	\$11,500,000
TOTAL:	\$35,371,080

Kentucky- Louisville Public Media

New generator at Station	\$75,000
New generator at Tower	\$75,000
Uninterruptible Power Source at Tower	\$60,000
Replace Studio Transmission Line (STL)	\$20,000
Music Station Collaboration Hardware	\$20,000
TOTAL:	\$250,000

Kentucky- WKMS-FM (Murray)

Back Up Transmitter	\$75,000
Studio Transmission Link (STL)	\$10,000
4 Number EAS Units	\$10,780
2 RDS Units	\$4,780
Mobile Backup Studio	\$100,000
1 Generator	\$40,000
TOTAL:	\$240,560

Louisiana- WYES-TV (New Orleans)

Transmitter	\$1,573,145
Antenna with V polarization	\$566,000
Antenna Installation	\$280,000
Transmitter Remote Control	\$32,700
Redundant Encoder	\$350,000
Hot Stand-by Studio to Transmitter Link	\$69,615
Tower Strengthening	\$100,000
TOTAL:	\$2,971,460

Louisiana- WWNO-FM and WRKF-FM (New Orleans and Baton Rouge)**WWNO**

Backup generator	\$125,000
Studio Transmission Line (STL)	\$30,000
Uninterruptable Power Supply (UPS)	\$12,000
Backup Climate Control Studio	\$60,000
EAS Encoder for Transmitter Site	\$5,000
Portable Satellite Downlink System (Shared with WRKF-FM)	\$40,000
Satellite Receivers	\$15,000
KTLN Backup Generator	\$30,000
Codecs (two pairs)	\$30,000
Backup Internet Equipment	\$10,000

Metapub improvements	\$10,000
Digital Online Infrastructure	\$10,000
Weather Equipment (FPREN)	\$50,000
Backup Studio at Office of Emergency Management- shared	\$250,000
	TOTAL: \$677,000

WRKE

Backup generator	\$100,000
Studio Transmission Link (STL)	\$30,000
Uninterruptable Power Supply (UPS)	\$12,000
Backup climate control studio	\$10,000
EAS Encoder for Transmitter Site	\$5,000
Satellite Receivers	\$15,000
Codecs (two pairs)	\$20,000
Backup Internet Equipment	\$10,000
MetaPub Improvements	\$10,000
Digital Online Infrastructure	\$10,000
Weather Equipment (FPREN)	\$50,000
	TOTAL: \$297,000

Maryland Public Television

12 Exciter upgrades to NextGen TV	\$90,000
18 Microwave Distribution upgrades	\$180,000
3 Fiber Modems	\$30,000
4 A/V Encoding / Statmux	\$160,000
1 Route Signaling / Announcement	\$35,000
5 Integration, rack and cabling	\$25,000
Integration, rack and cabling for MPT Studios	\$20,000
	TOTAL: \$540,000

Maryland- WYPR-FM (Baltimore)

Replacement Transmitter	\$136,000
Studio Generator	\$100,000
Transmitter and Generator	\$75,000
New Microwave Links to WYPR	\$20,000
3 Audio Over IP Encoders/Decoders	\$13,617
10 KVA UPS	\$10,000
Updated HD equipment for enhanced meta data and datacasting	\$20,500
New routing system and consoles	\$212,173
Telos Studio Phone VOIP System	\$8,563
XTRM Site Air Conditioning	\$5,900
	TOTAL: \$601,753

Mississippi Public Broadcasting

6 Tower Maintenance and Repair to meet current standards	\$3,420,000
5 DTV transmitters	\$4,180,000
8 FM Transmitters	\$1,600,000
18 Emergency Generators (8 Tower, 10 Microwave)	\$970,000
5 (sets) high intensity LED tower lights (Tower Site)	\$1,200,000
11 (sets) medium intensity LED tower light systems (Microwave)	\$880,000

7 HDFM antennas	\$997,000
8 LAN switches	\$32,000
1 Digital Television Analyzer	\$80,000
8 Elevator inspection and repair at tower sites	\$400,000
3 Monitor DTV/Radio transport signal	\$15,000
19 Microwave Link Equipment	\$2,000,000
2 Waveguide Transmission Lines	\$20,000
1 UPS	\$120,000
1 Monitoring and Media On Air Equipment	\$50,000
1 DTV/FM Audio Compliance Monitoring	\$15,000
	TOTAL: \$15,979,000

Missouri- KCPT Public Television (Kansas City)

NextGen TV Transmitter	\$2,200,000
Antenna with 30% Vertical Polarization	\$750,000
Studio Transmitter Link (STL)	\$100,000
Testing and Monitoring Equipment	\$50,000
	TOTAL: \$3,100,000

Missouri- St. Louis Public Radio

3 HD Transmitters	\$413,800
FM antenna and transmission line	\$280,000
HVAC units for transmitter sites	\$150,000
	TOTAL: \$843,800

Montana PBS

Routing and distribution, additional services within Network Operations Center	\$75,000
HEVC encoders and licensing	\$250,000
ATSC 3.0 Broadcast Gateway	\$75,000
ATSC 3.0 System Manager	\$50,000
ATSC 3.0 Emergency Alerting	\$25,000
Mask Filters	\$40,000
Replacement of all non-IP microwave links	\$240,000
Replacement of KUFM-TV Missoula transmitter and antenna	\$250,000
Replacement of KBGS-TV Billings transmitter and antenna	\$250,000
Replacement of KUHM-TV Helena antenna	\$100,000
Replacement of KUGF-TV Great Falls transmitter	\$150,000
Replacement of KUKL-TV transmitter	\$120,000
Network Operations Center equipment replacements	\$100,000
Test and Monitoring equipment	\$75,000
KUSM-TV NOC Emergency Generator and UPS	\$250,000
Microwave site emergency generators	\$150,000
Systems Integration	\$100,000
	TOTAL: \$2,400,000

Enhanced Public Safety Infrastructure

Montana Department of Emergency Services interconnection	\$75,000
Facilities hardening	\$150,000
Mobile communications from remote incidents	\$50,000

Origination, routing, distribution, storage/encoding equipment for improvement of Montana Public Affairs (MPAN)	\$200,000
Signal expansion in unserved communities (Lewistown, Miles City, Glendive, Dillon)	\$400,000
TOTAL:	\$875,000

New Hampshire Public Television

Live captioning system for studio	\$10,000
Master Clock system for broadcast	\$33,000
Replacement UPS for studio	\$60,000
Replace a/c for master control	\$60,000
Transmitter Saddleback	\$500,000
Transmitter Hanover	\$162,000
Burke hardware/software to replace ILC system	\$70,000
Replace Main Tower	\$1,500,00
TOTAL:	\$2,445,270

New Jersey- WBGO-FM (Newark)

VoIP Phones System Conversion	\$11,000
Update Studio Consoles	\$280,000
Update of IT Infrastructure Servers & Security	\$70,000
Update of IT Infrastructure Network Switches	\$45,000
4 IP Codecs	\$25,000
Automation System Replacement	\$40,000
2 On Air Audio Processing Replacement	\$25,000
HD Radio Exporter / Importer Replacement	\$35,000
Replacement Backup HD Transmitter	\$125,000
2 Backup STL for both Transmitter Sites	\$10,000
Miscellaneous Hardware, Cables, Connectors	\$25,000
TOTAL:	\$691,000

New Mexico- KRWG TV and KRWG FM (Las Cruces)

15 Uninterruptible Power Supplies (UPS)	\$27,000
9 Uninterruptible Power Supplies (UPS)	\$16,000
1 Generator, Transfer Switch	\$400,000
1 Generator, Transfer Switch	\$250,000
1 Generator, Transfer Switch	\$150,000
1 Generator, Transfer Switch	\$150,000
2 Compliance-Monitoring	\$65,000
7 Compliance-Monitoring	\$120,000
1 Main Transmitter \Change over switch	\$150,000
1 Audio Board	\$75,000
1 Audio processor	\$10,000
1 Back-up EAS SAGE	\$4,000
1 RDS Encoder	\$3,000
1 FM Automation	\$30,000
1 Tower LED Lighting	\$15,000
1 HVAC unit	\$250,000

1 Microwave STL	\$45,000
1 New HVAC	\$250,000
1 Partition room for new HVAC system	\$10,000
1 Replace Electrical feedline to building	\$20,000
1 Signal Analyzing Equipment	\$60,000
3 Transmitters CrownFM30	\$12,000
1 Transmitters CrownFM600	\$9,000
1 Transmitters Crown FM250	\$7,000
	TOTAL: \$2,128,000

New York Public Radio

Upgrade and modernize on-air delivery system for remote use	\$1,155,000
Upgrade Microwave STL to auxiliary transmitter site	\$146,750
Replace failed, unlicensed microwave STL to main transmitter site	\$181,160
Replace wireless intercom system	\$67,000
Replace auxiliary transmitter site for WNYC-FM and WQXR	\$262,000
1 new generator for WNJP-FM transmitter site	\$50,000
Upgrade audio routing and mixing platform	\$2,100,000
	TOTAL: \$3,961,910

PBS North Carolina (UNC-TV)

14 Primary Uninterruptable Power Supply (UPS)	\$8,076,173
14 Primary Emergency Power Generators	\$3,822,967
13 Redundant Emergency Power Generators	\$4,253,205
Microwave System Replacement (All 50+ Sites)	\$2,839,568
Fiber to transmitters (Full power sites)	\$662,131
	TOTAL: \$19,654,044

North Dakota Public Media (Prairie Public)

Microwave Intercity System Pkg	\$4,750,000
Studio Transmitter Line (STL)	\$100,000
9 Television Transmitter Pkg	\$3,150,000
10 Radio Transmitter Pkg	\$3,000,000
Generator	\$200,000
	TOTAL: \$11,200,000

Oklahoma Public Television (OETA)

Transmitter Replacement (Eufaula, OK)	\$950,000
Transmitter and Transmission Line Replacement (KOED - Tulsa, OK)	\$1,750,000
LPTV Sites - transmitter replacement - Qty 13 (OK Statewide Locations)	\$780,000
HVAC Replacement – Qty 5 (KETA - OKC, OK)	\$250,000
Media Archive Server (KETA - OKC, OK)	\$32,000
NOC Facility Upgrades (KETA – OKC, OK)	\$150,000
Avid System Upgrade (KETA – OKC, OK)	\$110,000
4.5M satellite downlink (KETA – OKC, OK)	\$27,000
	TOTAL: \$4,049,000

Oklahoma- KOSU-KOSR-KOSN-FM (Oklahoma City/Stillwater/Nowata)

2 Studio Transmitter Link (STL) KOSU	\$45,000
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FM Exciter for KOSU	\$9,000
Audio Processor for KOSU	\$9,000
Air Conditioner for KOSU transmitter building	\$20,000
Generator replacement for KOSU	\$30,000
Pre-cast concrete transmitter building for KOSN	\$75,000
FM Transmitter for KOSN	\$140,000
FM Transmitter for KOSU	\$140,000
Tower Plumb and Re-tension KOSU and KOSN	\$16,000
Double Conversion Backup Power Supplies KOSU Studio	\$8,800
Comrex Access Multirack Studio Codec	\$5,000
Tieline Gateway Studio Codec	\$6,300
Portable Emergency Transmitter	\$20,000
LED tower light upgrade KOSU	\$187,000
LED tower light upgrade KOSN	\$160,000
Natural Gas generator for KOSR (20kW)	\$25,000
Air Conditioner for Stillwater tower site	\$7,000
	TOTAL: \$903,100

Oklahoma- KGOU-FM (Norman)

Studio and transmitter power generators (3)	\$135,000
Exciters (2)	\$18,000
Broadcast Microwave System	\$6,500
Transmitter monitoring/remote control for Norman auxiliary transmitter	\$1,200
Studio Consoles with Nodes (2)	\$28,000
Backup broadcast and digital studio (remote/offsite)	\$75,000
Backup A/C for main studio	\$15,000
Portable Emergency Transmitter	\$15,000
Upgrade and relocate Norman auxiliary transmitter (offsite)	\$25,000
	TOTAL: \$318,700

Utah- KRCL-FM (Salt Lake City)

Transmitter replacements	\$80,000
Digital on-air console board	\$100,000
Microwave link	\$5,000
	TOTAL: \$185,000

Vermont PBS

2 Transmitters	\$300,000
4 Uninterrupted Power Supply (UPS)	\$1,250,000
5 Microwaves	\$351,000
1 Repeater Microwave	\$40,000
4 Transfer Switches	\$48,000
3 HVACs	\$90,000
	TOTAL: \$2,079,000

Vermont Public Radio

WVBA Transmission Equipment	\$49,000
WVXR Transmission Equipment	\$25,000
WBTN-FM Tower Lighting Replacement	\$20,000

Rupurt and Newbury Translator Transmission Equipment	\$15,000
WVPS, WOXR, WVTQ Studio to Transmitter Link Replacement	\$65,000
WVTX Transmission Equipment	\$7,500
	TOTAL: \$181,500
Washington- KBTC Public Television (Tacoma)	
Transmitters – Full Power with redundant exciters and drivers	\$1,625,000
Antennas – Circular Polarized	\$535,000
Transmission Line	\$273,000
Generators	\$900,000
UPS Systems	\$150,000
Test and Compliance Monitoring	\$205,000
Encoding	\$250,000
Studio Transmission Line (STL)	\$375,000
Remote Control	\$75,000
Tower Lighting	\$55,000
	TOTAL: \$4,443,000
West Virginia Public Media	
5 Antennas and 5 Translators	\$2,200,000
	TOTAL: \$2,200,000
Wisconsin- Milwaukee PBS	
Station Facility Backup Generator	\$250,000
Station Facility UPS	\$120,000
Station Facility Power Distribution	\$55,000
Broadcast Transmission Chair Update	\$495,000
	TOTAL: \$920,000
Wisconsin Public Radio- WERN, WHAD, WHA and WLSU	
23 Transmitters	\$1,995,000
8 Generators	\$1,400,000
19 Uninterruptable Power Supplies (UPS)	\$95,000
10 Antennas	\$890,000
14 Studio Transmission Lines (STL)	\$600,000
	TOTAL: \$6,565,000
Wisconsin Public Television- WHLA, WPNE, WHA, WHRM, WLEF and WHWC	
1 Transmitter	\$300,000
2 Generators	\$600,000
1 UPS	\$80,000
5 STL	\$1,500,000
	TOTAL: \$2,480,000
Wyoming PBS	
1 Transmitter (Dual Exciter)	\$350,000
2 Transmitter Upgrades	\$260,000
3 Antennas	\$300,000
3 Duplex Studio Transmission Lines	\$270,000
Encoding Plant Upgrade	\$30,000

36 Translators	\$508,000
	TOTAL: \$1,718,000

Wyoming Public Radio

8, 10 kw transmitters	\$430,400
5, 3.5 kw transmitters	\$156,000
6, 1 kw transmitters	\$47,400
6, 500kw transmitters	\$39,600
22 Digital STL Link	\$123,200
9 Digital Processors	\$103,500
5 Backup Generators	\$42,000
8 Low Power FM Antennas	\$88,000
3, Medium Power FM Antennas	\$87,000
2 FM Diplexers	\$37,600
3 High Power FM Antennas and Combiners	\$327,000
4 Low Power FM Antennas	\$64,000
	TOTAL: \$1,115,300