EAGLE HILL
unconventional consulting

Introduction and Methodology Rural Targeted Assessments and Snapshot

The Rural Targeted Assessments are intended only as educational materials for station use. The analysis results are derived from data collected during Phase One of the System Technology Assessment. In Phase One, the Corporation for Public Broadcasting (CPB) and Eagle Hill Consulting conducted a system-wide survey to assess public media licensees' identified equipment and technology needs, anticipated capital and operating expenses, equipment expiration timelines, and projected available funds. The data collected and analyzed reflects respondents' recorded responses.

Analyses for the Rural Targeted Assessments used data collected during Phase One of the System Technology Assessment to inform targeted analyses of rural radio and rural TV licensees' funding needs, equipment technology needs, and equipment expiration timelines. Analysis categories for television and radio remained the same as in the initial assessment. Please see methodology from the initial assessment for additional information on those categories (p.10, CPB System Technology Assessment Final Report). Additional information on the overall assessment methodology can be found on p. 24 through 31 of the final report. We maintained the same methodology and weights as the Phase One dataset for consistency and to provide licensees a point of comparison to the Final Report.To access the final report, please see source list below.

For rural TV licensees we adopted the same methodological considerations CPB uses to classify the rurality of TV licensees.

- For TV, the "Rural" classification is based on US average rural population which is 19.3%. TV licensees above this percentage are considered rural.

We then filtered the full dataset by licensee to isolate the rural licensee values. We then extracted the relevant weighted values and worked only with these values as a wholly unique dataset.

- We used the weighted values because we wanted the values to be consistent with the analysis generated in the Final Report and to account for licensees in this cohort that may not have provided responses.
- For TV values, we used the repacked dataset. Please refer to the repack methodology for additional information on how transmitter values were backed out of the dataset for involuntarily repacked stations.

Rural radio licensees were already accounted for as a demographic category in the initial dataset. We filtered by 'Rural" "Yes." We then extracted the relevant weighted values and worked only with these values as a wholly unique dataset.

Snapshot:

Overall Graphic:

The Rural Public Media Licensee Snapshot overall graphic provides an overview of reported funding needs versus projected available funds. To generate these values for TV and Radio, we:

- Calculated the sum of reported available funds by licensee for the years 2017, 2018, 2019, and 2020.
- We divided 2020-2022 values by three to generate all 2020 values, as it was determined in the initial assessment to be the most accurate estimation of 2020 values.

- After obtaining the sum of projected available funds, we summed all projected Capex and Opex values for each equipment bucket for rural TV licensees and rural radio licensees.
- We then compared the projected funds to the anticipated costs. Any negative discrepancy in available funds to anticipated costs resulted in the recorded "gap" in funding.
- During the first technology assessment, methodological choices were made to use licensee-reported Engineers' aggregate Capex and Opex values across all equipment buckets to more accurately estimate anticipated costs. For the Rural Targeted Assessments, we maintained this methodological choice.
- We chose this methodology because in the initial assessment, the only metrics of anticipated potential funds were provided by General Managers, but analysts determined a more accurate measure of cost would result from an analysis of Engineer-reported Capex and Opex.

Timeline Graphics:

For the timeline graphics for radio and TV licensees, we adopted the same methodology listed above to determine available funds and projected costs. We broke out these summations by year, instead of showing them in aggregate, and portrayed this information graphically to illustrate the gaps in funding over time.

Research Questions:

To drive targeted analysis of the data, we scoped out specific research questions that the Rural Targeted Assessment would answer. The Rural Targeted Assessments solely answer these research questions. They are below:

1) What are expected Opex and Capex costs for TV or Radio over the next three years? Are Capex or Opex expected to rise? If so, why?
2) What are the most pressing technology capital needs? Which, if any, of these needs were previously covered by PTFP funding?
3) What RF technologies' need replacement in the next five years? What impact could equipment expiration have on communities?

These research questions were assessed using available data distinctly for TV and radio licensees, rather than rural public media as a whole. This was to provide a more granular analysis of the data and its impacts.

- Each graphic aggregates applicable Capex and Opex values and compares them graphically to portray anticipated Opex and Capex needs, pressing equipment capital expenses, and RF technology expiration.

Impact Statement Source List:

Impact metrics were dependent on open source qualitative and quantitative data sources. A source list of open source resources is below:

America's Public Television Stations (APTS), http://apts.org/

Corporation for Public Broadcasting (CPB), *System Technology Assessment Final Report*, May 21, 2017, https://www.cpb.org/files/reports/Final_Report-CPB_System_Technology_Assessment_2017.pdf

CPB, "Iowa Public Television Connects Fourth Graders to Astronaut in Space," July 2017, https://www.cpb.org/spotlight/iowa-public-television-connects-fourth-graders-astronaut-space

CPB, "KGVA-FM Providing a Voice for the Community," October 2014, https://www.cpb.org/spotlight/kgva

CPB, "In Maine, MPBN Provides Emergency Communication Channel," February 2016, https://www.cpb.org/spotlight/maine-mpbn-provides-emergency-communication-channel

CPB, "WCTE Making a Difference With Early Learning," March 2015, https://www.cpb.org/spotlight/wcte

Department of Education, Corporation for Public Broadcasting, and PBS Kids, The Ready to Learn Initiative, 2010-2015, http://wwwtc.pbskids.org/lab/media/pdfs/research/FINAL_RTL_ItAllAddsUp_Brochure_no_crops.pdf

National Association of Broadcasting (NAB), "Broadcast Television and Radio in Rural Communities," October 2012

PBS, *Today's PBS Trusted Valued Essential*, 2017, http://bento.cdn.pbs.org/hostedbento-prod/filer_public/value-pbs/Infographics/PBS2017TrustBroch_R10_singlepgs.pdf

Rural Public Media Licensees Face a $231 Million Aggregate Funding Gap for Technology and Equipment Purchases over the Next Three Years

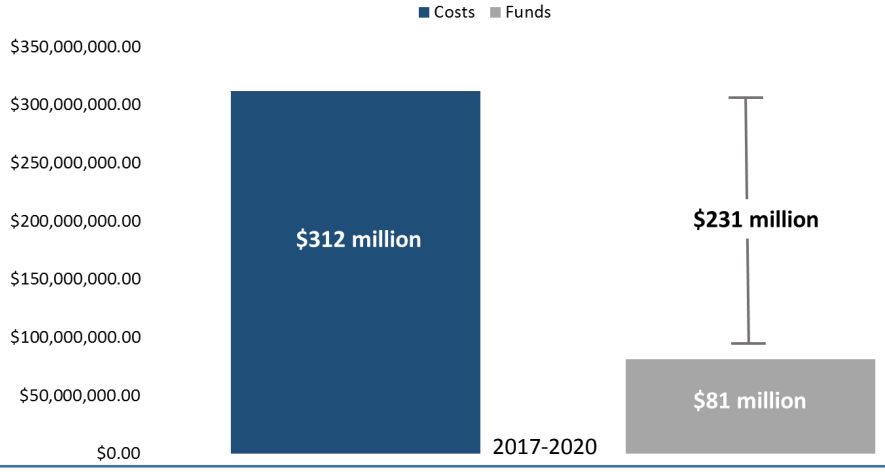
Rural radio and TV licensees face an anticipated $231 million funding gap over the next three years, when assessing projected available funds versus projected costs. **Gaps are expected to increase over time as stations delay essential equipment replacements due to a lack of funds.**

- Cross-referencing Engineer-reported expenses with General Manager-reported available funds from 2017-2020 reveals at least a $231 million aggregate gap in funding for rural licensees.
- Funding gaps are expected to grow over time as licensees delay replacements of essential technologies and infrastructure; TV licensees reported an overall gap of $173 million with $233 million in costs and radio licensees reported a $57 million gap and $79 million in costs by 2020.

Additional funding is needed to continue rural licensees' ability to broadcast vital educational programming, public safety information, news, and civic and cultural information to its audience. Licensees can focus funding efforts on closing projected gaps in 2018, 2019, and 2020, when funding gaps are reportedly highest and expected to grow.

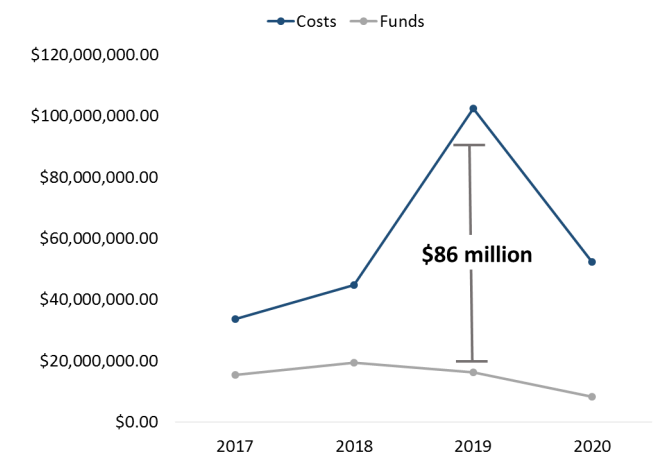
A comparison of rural TV and radio licensees' Engineer-reported financial needs and GM-reported expected funds revealed a $231 million gap in funding for equipment and technology over the next three years.

Rural Licensees Face $231 Million Gap in Projected Available Funding for Equipment and Technology Needs

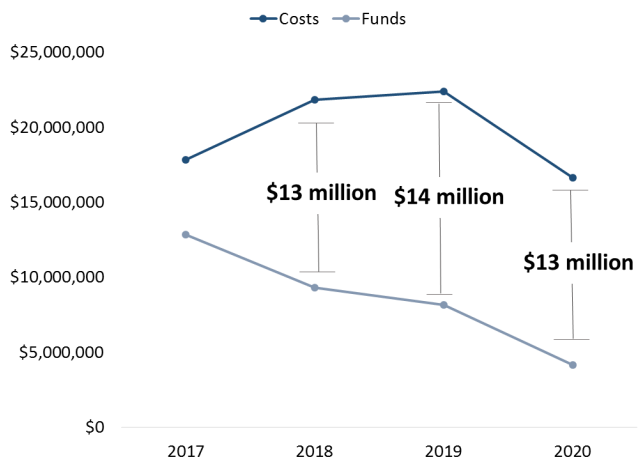


Rural licensees' funding gaps are expected to accumulate over time; Stations reported that they would delay replacing essential equipment and updating technologies because of a lack of funding.

Rural TV Stations' Funding Gap Highest in 2019 and expected to grow*



Rural Radio Stations Reported High Gaps Expected to Grow *



* 2020 costs appear to decrease, but that is due to methodological considerations that divided 2020-2022 data inputs by three; when multiplying 2020 values by three analysis shows that overall costs are expected to increase from 2019 to 2022

EAGLE HILL
unconventional consulting

Corporation for Public Broadcasting

Rural Licensees Growing Funding Gap and Equipment Replacement Needs Could Disrupt Distribution and Development of Vital Content

Without resources to address funding gaps, rural licensees could face operating challenges, disrupting a valuable local public service. Rural licensees provide vital public safety, public health, and education information, as well as economic and industry knowledge, local and national journalism, and access to civic and cultural information to approximately one-fifth of the US population.

- Rural licensees reach the most underserved communities in the country; efforts include providing vital public safety information to Maine's more than 800,000 rural residents.
- In Nebraska, KGVA-FM, reaches more than 9,317 people in a broadcast coverage area of approximately 10,000 square miles, keeping listeners informed and promoting cultural integrity and diversity in a community of rural ranchers and farmers, four Indian tribes, and five Hutterite colonies.

The loss of PTFP funding—last funded nationally at $20 million in 2010—correlates with the increased gap in rural licensees' available funds vs. their anticipated infrastructure and technology needs. PTFP funding provided critical aid for the replacement of necessary infrastructure and production technologies for rural licensees that may have more difficulty raising funds from diverse funding resources than licensees in more metropolitan areas.

Spotlight: Rural stations disseminate critical public safety information and education.

Maine has 61.3% of residents living in rural areas; as a result, in times of crisis, it is difficult to gain access to vital public safety information. To confront these challenges, Maine Public Broadcasting Network's (MPBN) digital TV bandwidth is now available for Maine's Emergency Management Agency (MEMA) to communicate in real time to state police, commercial and non commercial broadcasters, and other news providers across the state through a one-way, closed-circuit system.

Astronaut Peggy Whitson shared her record-setting space mission from the International Space Station directly with nearly 300 fourth-graders in Iowa through Iowa Public Television. NASA and IPTV facilitated the live in-flight downlink to encourage students to study and pursue STEM careers.

Spotlight: Rural TV licensees provide unique access to educational resources for local populations.

WCTE, serving rural Tennessee, reaches 7,000 at risk students ages 2 to 8, their families, and educators to support early learning in math and literacy.

Iowa Public Television curated an extensive list of resources that align with literacy standards and target specific grade levels to enhance the early learning and development of Iowan readers.

Radios stations provide valuable localized weather reporting and community industry information to Americans living in rural areas, including agricultural information.

Rural licensees distribute award winning content from PBS LearningMedia to provide free educational content to rural audiences.

Rural TV Licensees' Expect Higher Capex than Opex from 2017-2020, Necessitating Fundraising From Capital Campaigns to Avoid Service Disruptions

Of rural TV licensees' anticipated $233 million costs from 2017-2020, **licensees reported $181 million in capital expenses for equipment and technology over the next five years,** necessitating capital campaign fundraising to meet capital resource needs.

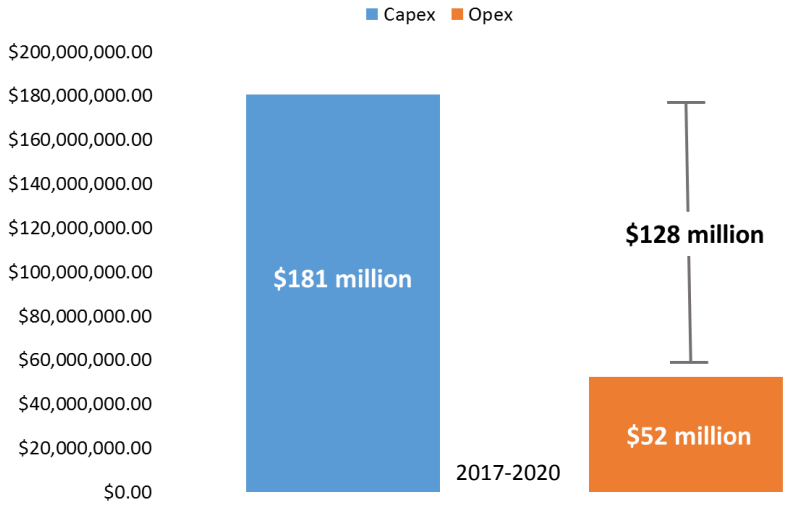
- Capital expenses make up 78% of anticipated costs for rural TV licensees from 2017-2020.
- Capital expenses exceed operating expenses each year and are expected to rise over time.

Though rural TV licensees' capital expenses significantly exceed operating expenses by $128 million, industry shifts to IP infrastructure and other technological changes may increase operating costs over time. **Rural licensees can plan for higher operating costs in the future, while simultaneously pursuing capital campaigns to meet current financial demands for infrastructure and technology capital needs.**

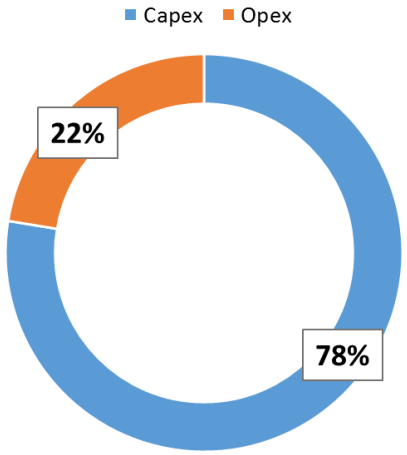
- Opex is expected to increase over time; projections anticipated Opex at approximately $31 million by 2022.*

Rural TV licensees reported that anticipated Capex would exceed Opex overall by $128 million by 2020, making up 78% of projected costs.

Capex Exceeds Opex by $128 million for Rural TV Licensees

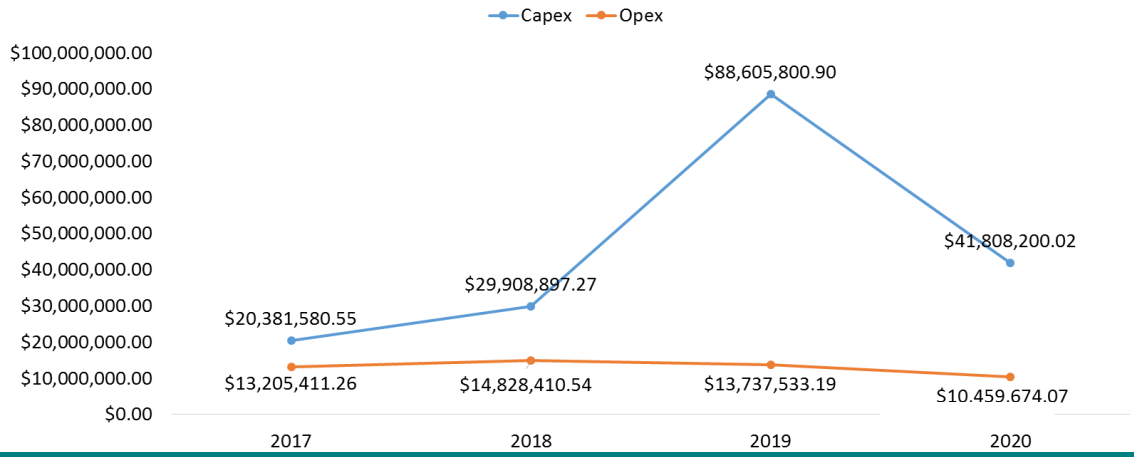


Capex Comprises 78% of Rural TV Licensees Needs



Rural TV licensees reported that Capex would Exceed Opex each year from 2017 to 2020, and anticipate overall expenses to rise over time.

Capex Expected to Exceed Opex for Rural TV Licensees from 2017-2020, Particularly in 2019*



* 2020 costs appear to decrease, but that is due to methodological considerations that divided 2020-2022 data inputs by three; when multiplying 2020 values by three analysis shows that overall costs are expected to increase from 2019 to 2022

RF Technologies Are Highest Capex for Rural TV Licensees; Transmitters Comprise the Majority of Anticipated RF Technology Needs

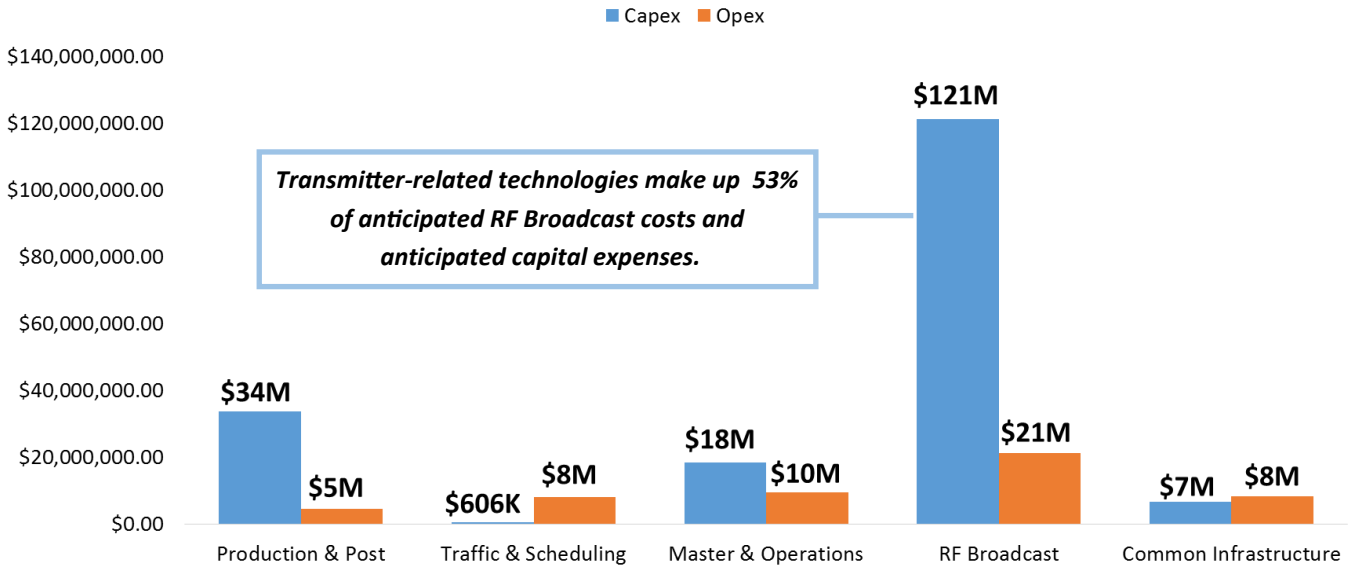
Rural TV licensees reported the highest capital needs for RF Broadcast technologies at $121 million, including transmitters, antennas, and towers. Total operating costs were also projected to be highest for RF Broadcast at $21 million.

- Rural TV licensees indicated a need for more than $75 million in transmitters and transmitter-related encoding, Mux, and PSIP (EMP) equipment, $26 million in antennas, $16 million in satellites, $15 million in towers, and $8 million in generators and UPS equipment.

Most of these RF technologies were previously eligible for PTFP funding; since 2010, the loss of the PTFP program has correlated to the growing financial need to replace aging distribution technologies, contributing to rural TV licensees' projected $232 million in costs and $173 million financial gap in available funds and projected costs from 2017-2020.

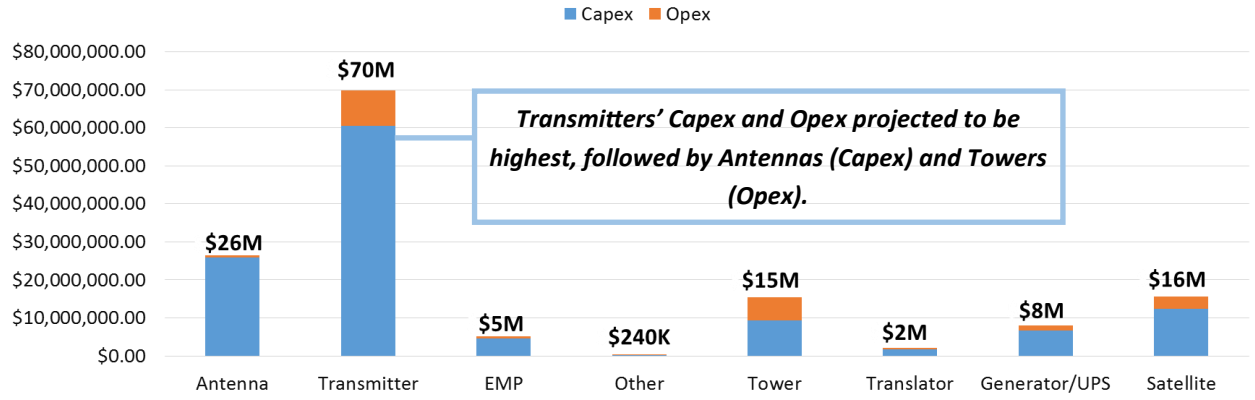
Rural TV licensees reported 61% of total expenses in RF Broadcast technologies at $142 million, including $121 million in capital expenses and $21 million in operating costs.

RF Broadcast Technologies and Equipment Highest Capex and Opex for Rural TV Stations



Rural TV licensees reported transmitters as the highest overall costs in RF Equipment at $70 million; Transmitters made up the highest capital expenses and towers made up the highest operating expenses for RF Broadcast.

Transmitters and Antennas have the Highest Anticipated Capex; Transmitters and Towers have the Highest Anticipated Opex



Transmitters and Transmitter-related EMP Technologies Comprise Most of the Anticipated RF Equipment Replacement for Rural TV Licensees, Which Could Contribute to Content Distribution Challenges

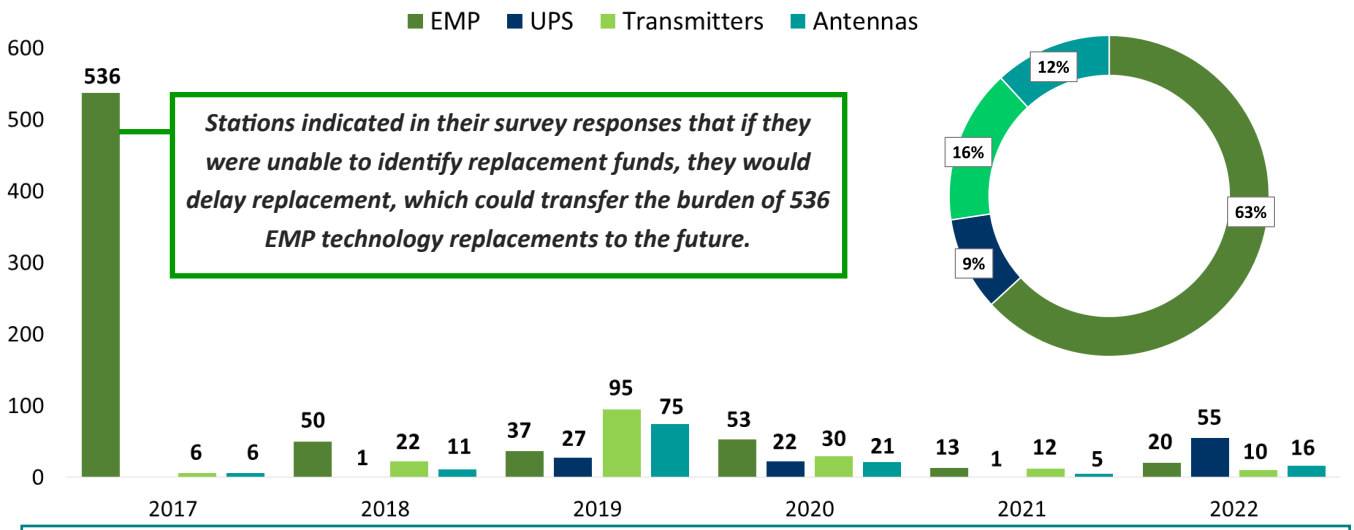
Transmitters, transmitter-related encoding, MUX, and PSIP equipment (EMP), antennas, and generators/unlimited power supply (UPS) technology replacement contribute to the anticipated $142 million in RF Broadcast expenses from 2017-2020. **Equipment replacements are highest in 2017, 2019, and 2020; though 2017 replacements could be completed or underway, licensees can prevent service disruptions in the future by planning for and acquiring necessary capital funds for known replacements.**

- EMP equipment and transmitters, which are essential for operations, make up 79% of needed RF broadcast equipment replacements by 2020.
- Transmitters make up 16% and EMP technologies make up 63% of an anticipated 1,125 equipment replacements by 2022, necessitating capital investment in these technologies to maintain broadcasting capabilities.

RF Technology replacements are essential to maintain broadcasting capabilities. **Without these technologies rural audiences could lose access to valuable educational programming, news, and public safety information.**

Rural TV licensee data reveals that anticipated RF broadcast equipment replacement is highest in 2017 because of 536 anticipated elements of EMP equipment; 2019, 2020, and 2022 also have high equipment replacement needs.

EMP Equipment Replacements are Notably High in 2017 with 536 Anticipated Replacements, Transmitter Replacements are Highest in 2019 and 2020



Rural TV licensees provide communities with unique access to valuable educational, public safety, and civic resources they otherwise would be unable to access.

Maine Public Broadcasting Network (MPBN) serves as the backbone for the state's Emergency Alert System, reaching a population with 61.3% of its residents living in rural areas. MPBN transmits alerts for public broadcast in the event of a weather-related emergency or other public safety issue.

In Tennessee, WCTE public television has provided educational content to underserved children in Tennessee's Cumberland region for more than 30 years. The region consists of 14 rural and isolated counties with above average poverty rates. In 2014, more than 4,000 children participated in WCTE's learning activities.

Rural Radio Licensees Expect Capex to Exceed Opex from 2017-2020, Necessitating Capital Campaigns to Meet Projected Demands

Capital expenses are projected to exceed operating expenses for rural radio licensees from 2017 to 2020, making up 61 % of projected costs. **As a result, rural radio licensees could continue to seek funds from capital campaigns to address capital needs for distribution infrastructure and production technologies.**

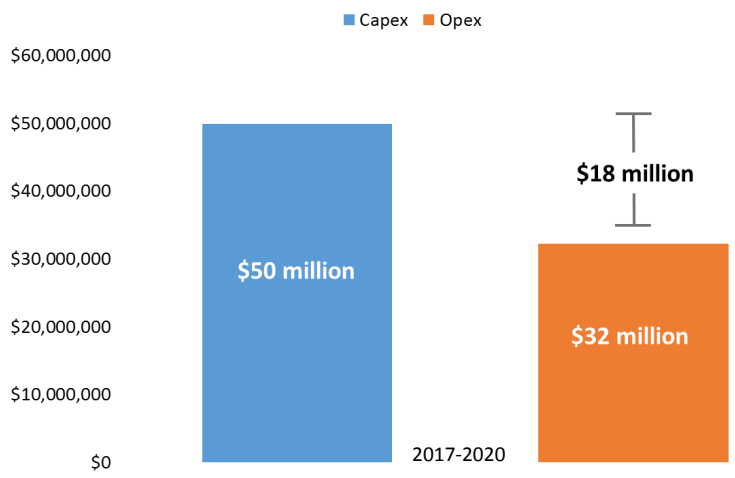
- Capex expected to exceed Opex by $18 million from 2017 to 2020.
- Rural radio licensees' highest reported capital and operating expenses are projected for 2019 at $22 million; These costs are expected to rise over time.

Projected industry shifts from one time capital expenses to service-based contracts could contribute to higher operating expenses in the future. **Rural radio licensees can plan for higher operating costs in the future, while simultaneously pursuing capital campaigns to meet current financial demands for infrastructure and technology capital needs.**

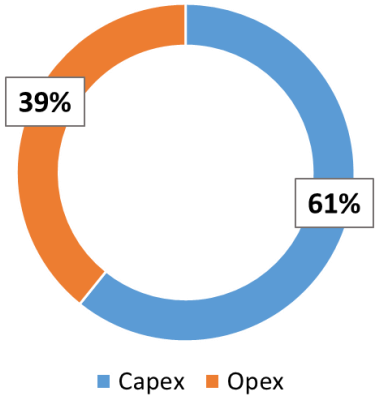
- Operating expenses make up 39% of rural licensees' anticipated costs and are projected to increase over time.

Rural radio licensees reported that anticipated Capex would exceed Opex overall by $18 million by 2020, and that anticipated Capex makes up 61% of projected costs.

Capex Exceeds Opex by $18 million for Rural Radio Licensees

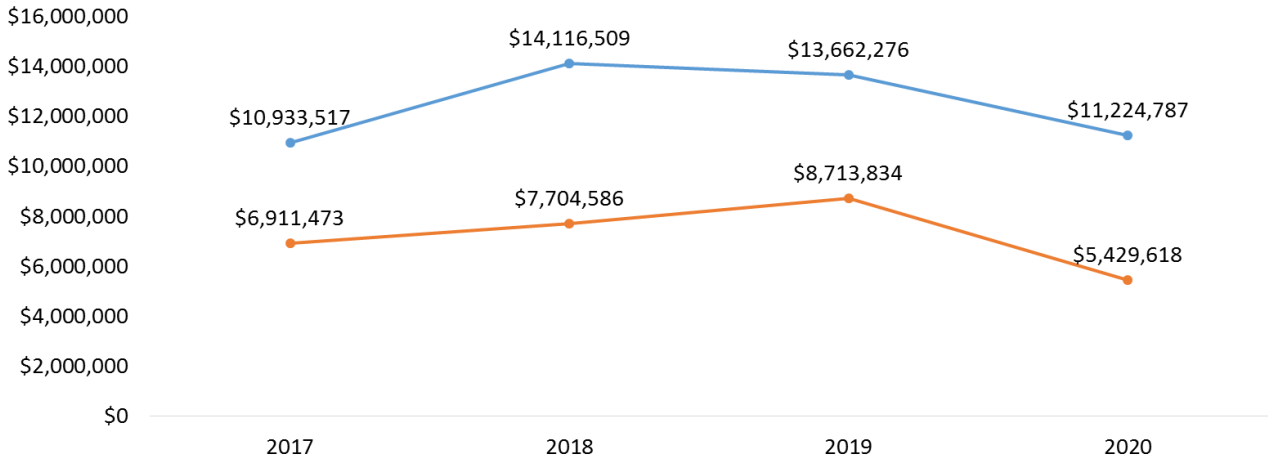


Capex Makes Up 61% of Anticipated Expenses for Rural Radio Licensees



Rural radio licensees anticipate Capex to exceed Opex each year from 2017 to 2020, and anticipate overall expenses to rise over time as stations delay purchases or the adoption of new technologies due to insufficient funds.

Capex Anticipated To Exceed Opex for Rural Radio Licensees from 2017 to 2020*



* 2020 costs appear to decrease, but that is due to methodological considerations that divided 2020-2022 data inputs by three; when multiplying 2020 values by three analysis shows that overall costs are expected to increase from 2019 to 2022

RF Broadcast Technologies are Highest Projected Opex and Capex for Rural Radio Licensees

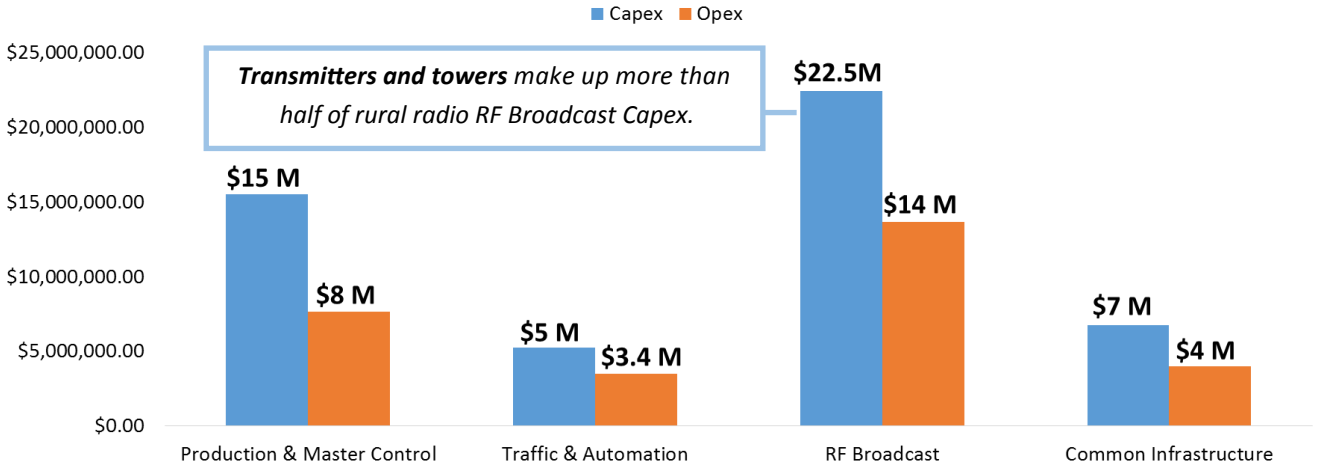
Rural radio licensees reported the highest anticipated capital and operating expenses in RF Broadcast equipment, followed by Production & Master Control technologies. **Capital campaigns and alternative funding efforts are necessary to cover anticipated capital and operating expenses for essential distribution technologies to ensure continued service to rural communities.**

- Transmitter-related technologies make up more than $17 million in anticipated capital expenses, while towers make up an additional $8 million. Antennas, satellites, translators, and generators/unlimited power supply (UPS) equipment make up an additional $11 million in costs.
- Transmitters and towers—essential RF broadcast equipment—make up 68% of anticipated RF needs.

Most of these critical RF technologies were previously eligible for PTFP funding; Since 2010, the loss of the PTFP program has correlated to a growing financial need to replace aging distribution technologies, likely contributing to rural radio licensees' $79 million in expenses and $57 million financial gap.

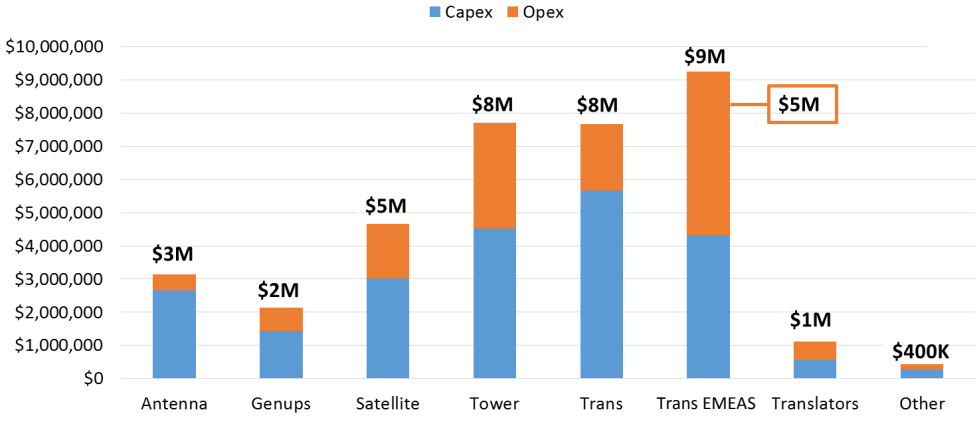
Rural radio licensees reported that Capex are highest for RF Broadcast technologies, necessitating capital campaigns to continue to distribute content to rural audiences.

Rural Radio Licensees Face Highest Capex and Opex in RF Broadcast Technologies and Equipment that are Essential for Broadcast

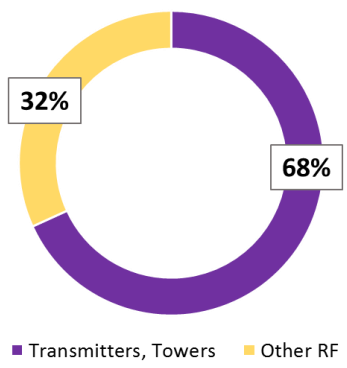


Rural radio licensees highest Capex and Opex in transmitters, transmitter-related technologies and towers, making up 68% of projected RF expenses.

Transmitters, Towers, and Transmitter-related EMEAS Technologies have Highest Capex and Opex at $25 million, followed by Satellites and Antennas



Transmitter and Tower Costs Comprise 68% of $36.5 million in RF Broadcast Costs for Rural Radio Licensees



Transmitter-Related Technologies Comprise the Majority of Anticipated RF Equipment Replacements for Rural Radio Licensees, Which Could Negatively Impact Licensees' Ability to Broadcast Content

Transmitters, transmitter-related technologies, antennas, and generators/unlimited power supply (UPS) replacement contribute to the anticipated $37 million in anticipated RF Broadcast expenses from 2017-2022. Equipment replacements are highest in 2019, 2020, and 2022; licensees can prevent future service disruptions by planning for and acquiring necessary capital funds for 126 anticipated replacements in 2019, 321 expected replacements in 2020, and 171 anticipated replacements in 2022.

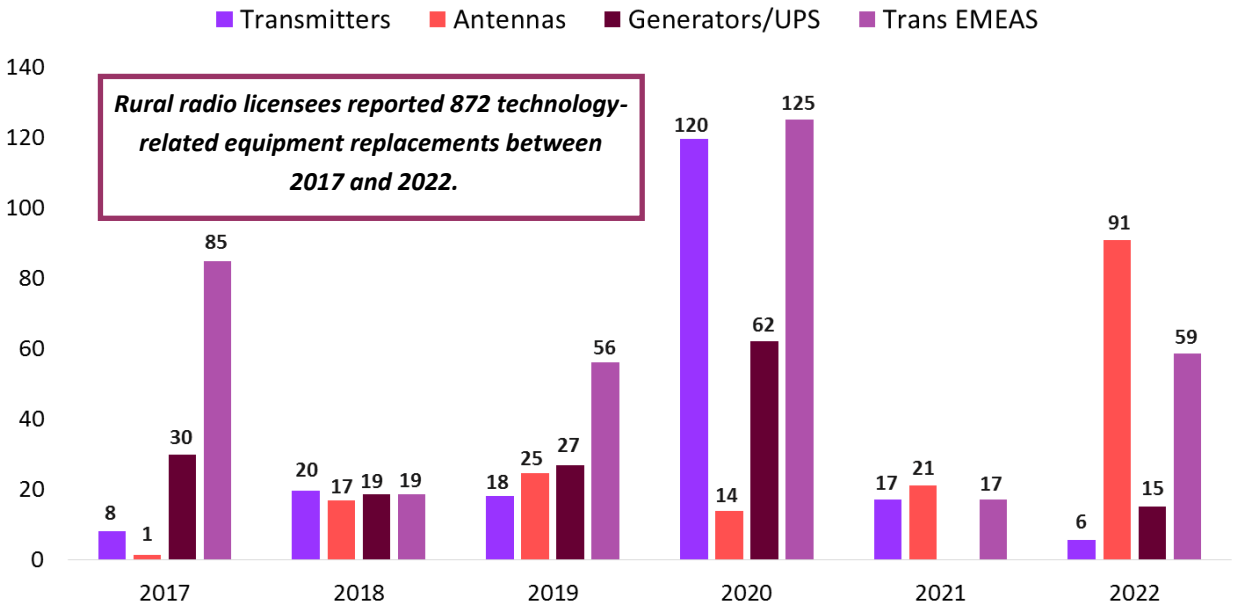
- 550 transmitter and encoding, mux, EAS/CAP (Trans EMEAS) equipment, which are essential for operations, make up the majority of needed RF broadcast equipment replacements by 2022.

RF broadcast infrastructure replacements are essential to maintain distribution capabilities. Rural radio audiences rely on these technologies to gain access to valuable educational programming, news, and public safety information.

- In addition to transmission equipment, generators and UPS equipment are essential to enable continued broadcast during times of crisis when valuable public safety information is broadcast by local radio licensees.

Rural radio licensees reported that equipment replacements are highest in 2020, including 245 transmitter-related equipment replacements, which could negatively impact radio's ability to broadcast if replacement timelines cannot be accommodated with existing funds.

RF Equipment Replacements are Highest in 2020 at 321, 245 of which are Transmitter-Related Technologies



Rural radio licensees provide rural Americans— who account for one-fifth of the total US population—with vital access to journalism programming, cultural information, industry knowledge, and public safety information.

Rural radio stations—including 162 CPB grantees--provide programming on localized weather and industry information to rural agricultural communities, helping listeners adapt to weather events and keep informed on relevant industry developments.

In Nebraska, KGVA-FM, reaches more than 9,317 people in a broadcast coverage area of approximately 10,000 square miles, keeping listeners informed and promoting cultural integrity and diversity in a community of rural ranchers and farmers, four Indian tribes, and five Hutterite colonies.