Introduction and Methodology Licensee Size and Licensee Type Targeted Assessments and Snapshot

The Licensee Size and the Licensee Type 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 Licensee Size and Licensee Type Targeted Assessments used data collected during Phase One of the System Technology Assessment to inform targeted analyses of radio and TV licensees' funding needs, equipment technology needs, and equipment expiration timelines by licensee size and licensee type. 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.

We adopted the same methodological considerations CPB uses to classify the size and type of licensees to determine licensee sizes and types, respectively. We then analyzed the weighted values by size to determine differences and commonalities across licensee sizes and types, respectively.

- Because one radio station did not have a recorded licensee size, licensee size aggregate funding gaps and radio funding gaps differ from licensee types.

- 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.

Snapshot:

Overall Graphic:

The Licensee Size and Licensee Type Public Media Snapshots overall graphic provides an overview of reported funding needs versus projected available funds. **Please see note above (*) for information on the differences in licensee size and licensee type reported gaps.**

To generate these values, we:

- Calculated the sum of reported available funds by licensee for the years 2017, 2018, 2019, and 2020-2022.

- We divided the 2020-2022 values by three for all summations as it was determined in the initial assessment to be the most accurate estimation of 2020 weighted values.

- After obtaining the sum of projected available funds, we summed all projected Capex and Opex values for each equipment bucket for TV and radio licensees of all sizes and types, respectively.
- 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 Licensee Size and Licensee Type 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 capital and operating expenses.

Percentage Graphics:

For the percentage graphics for radio and TV licensee sizes and types, respectively, we adopted the same methodology listed above to determine available funds and projected costs. We then divided the proportional gap of each licensee size and/or type in TV and Radio by the anticipated financial gap to determine each licensee sizes' and types' percentage of the total gap.

Research Questions:

To drive targeted analysis of the data, we scoped out specific research questions that the Licensee Size and Licensee Type Targeted Assessments would answer. The Licensee Size and Licensee Type 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 licensee sizes and types distinctly. This was to provide a more granular analysis of the data and its impacts by licensee size and type.

- Each graphic aggregates applicable Capex and Opex values and compares them graphically to portray reported Opex and Capex needs by licensee size and type, the highest cost equipment buckets by licensee size and type, and RF equipment expiration by licensee size and type.
- Percentage graphics determine each licensee sizes' and types' respective percentage of expected equipment expenses for each equipment bucket to illustrate similarities and differences across licensees of different sizes and/or types.

EAGLE HILL
unconventional consulting

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, "Collaboration Helps Public Media Weather the Hurricanes," November 2, 2017, https://www.cpb.org/spotlight/collaboration-helps-public-media-weather-hurricanes

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, "Public Media's Role in Emergency Services," https://www.cpb.org/emergency-alerts

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

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

WDVX, About WDVX, https://wdvx.com/about/

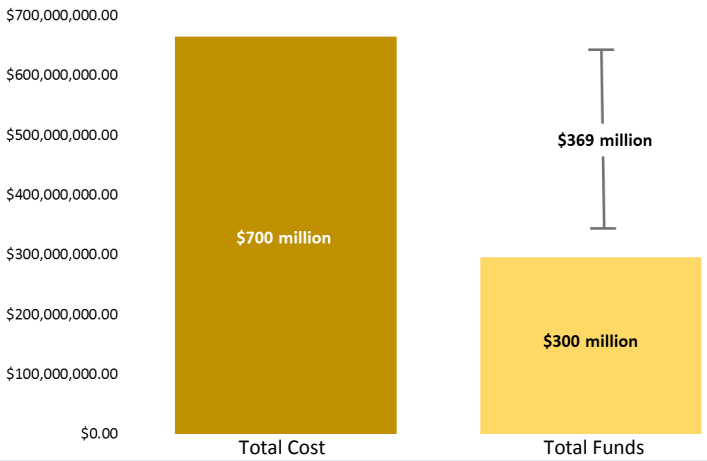
Public Media Licensees of All Sizes Face an Estimated $369 million Gap in Anticipated Costs versus Available Funds by 2020, Necessitating Additional Funding to Continue Distribution and Production of Vital Content

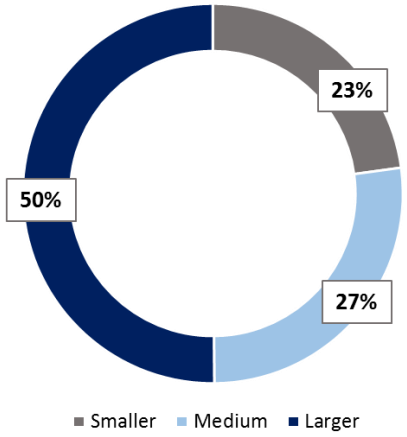
Public media licensees of all sizes reported an estimated $700 million in anticipated costs and a $369 million gap* in funding by 2020. Without needed funds, stations may be unable to continue to produce and distribute valuable education, public safety, journalism, and cultural information to audiences nationwide.

- Television (TV) licensees reported an estimated $273 million funding gap and radio licensees reported an estimated $96 million* funding gap by 2020.
- Smaller TV and radio licensees face a particularly high burden in raising needed funds to account for a $56 million (TV) and $28 million (radio) projected gap.
- Larger licensees, which have proportionally greater budgets than Smaller and Medium licensees, account for approximately 52% of TV licensees' and 43% of radio licensees' aggregate financial gaps.

A comparison of Engineer-reported costs and General Manager-reported expected funds revealed a $369 million funding gap by 2020. Larger TV licensees accounted for 50% of that gap, followed by Medium (27%) and Smaller (23%) licensees. Larger radio licensees accounted for 43%, followed by Medium (27%) and Smaller (29%).

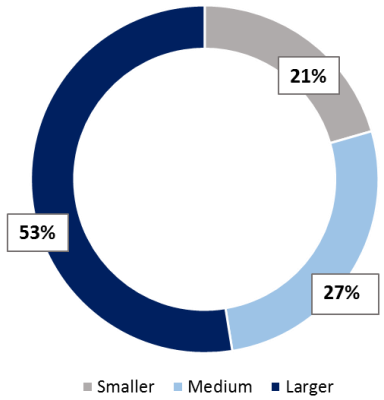
Public Media System Faces $369 million Funding Gap by 2020; Larger Licensees Comprise 50% of System Gap





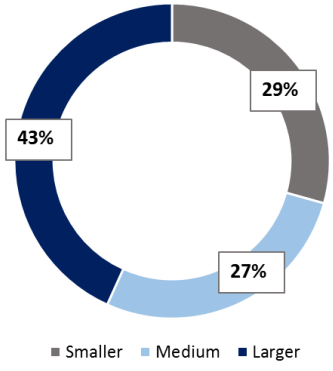
Though Larger TV and radio licensees comprise the majority of the aggregate $369 million gap, Smaller licensees are more dependent on federal funding and face a higher burden when seeking alternative sources of funding, increasing the impact their respective funding gaps have on broadcasting capabilities

TV Licensee Size Percentage of TV Gap



Smaller radio licensees (29%) projected financial gap is higher than for Smaller TV licensees (20%); Medium licensees have the same projected ratio of the financial gap for TV and Radio (27%); and Larger licensees maintain a higher ratio of the overall gap for TV (52%) than for radio (43%).

Radio Licensee Size Percentage of Radio Gap



* Licensee demographic information did not account for one Radio station's size, leading to a difference in licensee size and licensee type aggregate financial costs and gaps for the system and radio

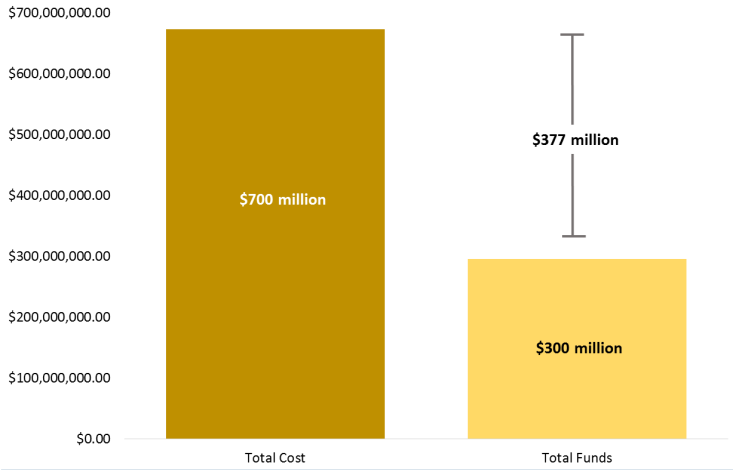
Public Media Licensees of all Types Face an Estimated $377 million Gap in Anticipated Costs versus Available Funds by 2020, Necessitating Additional Funding to Continue Distribution and Production of Vital Content

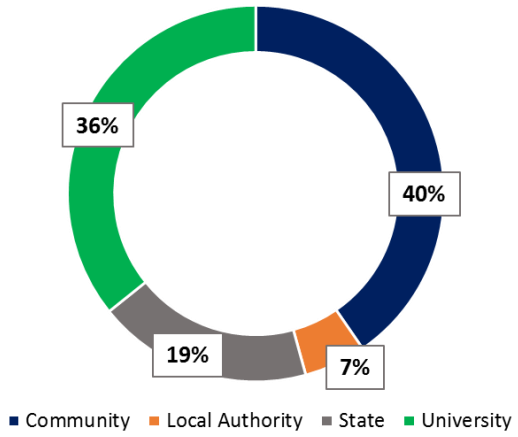
Public media licensees of all types reported an estimated $700 million in anticipated costs and a $377 million gap in funding by 2020. Without needed funds, stations may be unable to continue to produce and distribute valuable education, public safety, journalism, and cultural information to audiences nationwide.

- Television (TV) licensees reported an estimated $273 million funding gap and radio licensees reported an estimated $104 million funding gap by 2020.
- Community TV and radio licensees face a particularly high burden in raising needed funds to account for a $94 million (TV) and $58 million (radio) projected gap.
- Community licensees accounted for 35% of TV licensees' and 56% of radio licensees' aggregate financial gaps. University licensees reported the highest percentage of TV licensees' anticipated gaps at $109 million (40%).

A comparison of Engineer-reported costs and General Manager-reported expected funds revealed a $377 million funding gap by 2020. Community and University licensees comprised 76% of that gap, followed by State licensees at 19% and Local Authority licensees at 7%.

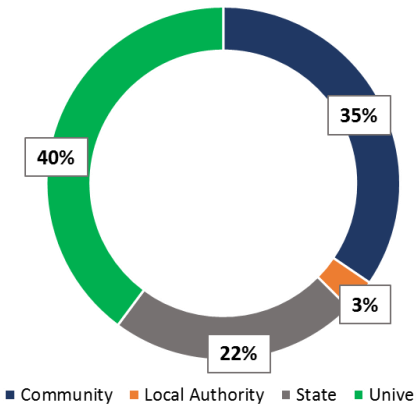
Public Media System Faces $377 million Funding Gap by 2020; Community and University Licensees Comprise 76% of Gap





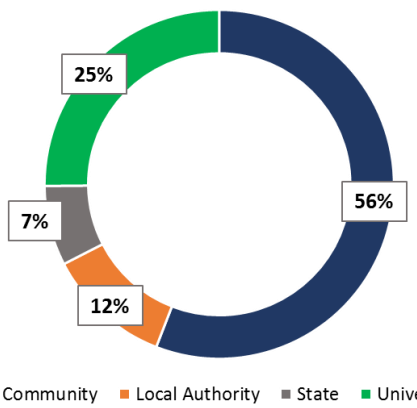
Though Community and University licensees comprise the majority of the aggregate $377 million gap, Community licensees are more dependent on federal funding and face a higher burden when seeking alternative sources of funding, increasing the impact their respective funding gaps have on broadcasting capabilities.

Licensee Type Percentage of TV Gap



Community and Local Authority radio licensees (56% and 12%) projected financial gap is higher than for Community and LA TV licensees (35% and 3%); University and State TV licensees, conversely, had higher percentage gaps than radio licensees of the same type (40% and 22% TV to 25% and 7% radio).

Licensee Type Percentage of Radio Gap



Licensees of All Sizes and Types Provide Vital Programming and Public Safety Information That Could be Compromised by Growing Funding Gap

Without resources to address funding gaps, **TV and radio licensees of all sizes and types could face operating challenges nationwide, disrupting a valuable public service.** The elimination of critical federal funding resources has contributed to the growing financial needs for licensees nationwide as aging infrastructure and natural disasters challenge the nation's public media networks.

- Public media stations like PBS have been voted #1 in public trust because of their unbiased production and dissemination of critical public safety, education, culture, and journalism resources.
- The loss of PTFP funding—last funded at $20 million in 2010—correlates with the increased gap in public media's available funds vs. its anticipated infrastructure and technology needs. PTFP funding provided critical aid for the replacement of station's equipment in the event of a natural or man-made disaster. Currently, there are no dedicated funds available to confront these challenges, despite escalating infrastructure challenges posed by aging infrastructure, technological changes, and recent catastrophic Hurricanes in Puerto Rico, the US Virgin Islands, Houston, and Florida.

Spotlight: Public Media vital to dissemination of information during Hurricane Harvey in Houston, TX.

The Houston Fire Department and Houston Police Department used Houston Public Media's datacasting technology to stream live video of flooding conditions and fire hazards to the Emergency Operations Center. Datacasting also provided first responders with the ability to securely communicate during the crisis to help them assess conditions and make informed decisions

Houston Public Media used its radio multicast channels to broadcast multiple programs at once to provide comprehensive storm coverage to listeners. Reporters that were unable to make it to the office used WhatsApp and other mobile applications to edit and publish important public safety information to the web, mobile, and social media

Spotlight: Public Television provides unique access to educational resources for underserved populations.

The Ready to Learn program helps funds educational programming for underserved youth, providing them with unique access to invaluable materials proven to enhance math and literacy proficiency in young learners

More than 100 research and evaluation studies show that Ready to Learn enhances learning kills and allows children to bridge the achievement gap

PBS KIDS attracts a higher proportion of viewers from African American (133%), Hispanic (127%) and low income (109%) families compared to their representation in the US

PBS LearningMedia provides educators with over 100,000 Digital Resources

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

TV licensees of all sizes reported higher capital expenses for equipment over the next three years than operating costs, necessitating capital campaigns to meet capital resource needs. Licensees of all sizes reported capital and operating expenses to increase over time, illustrating that financial gaps could rise in the future if licensees are unable to attract new sources of funding.

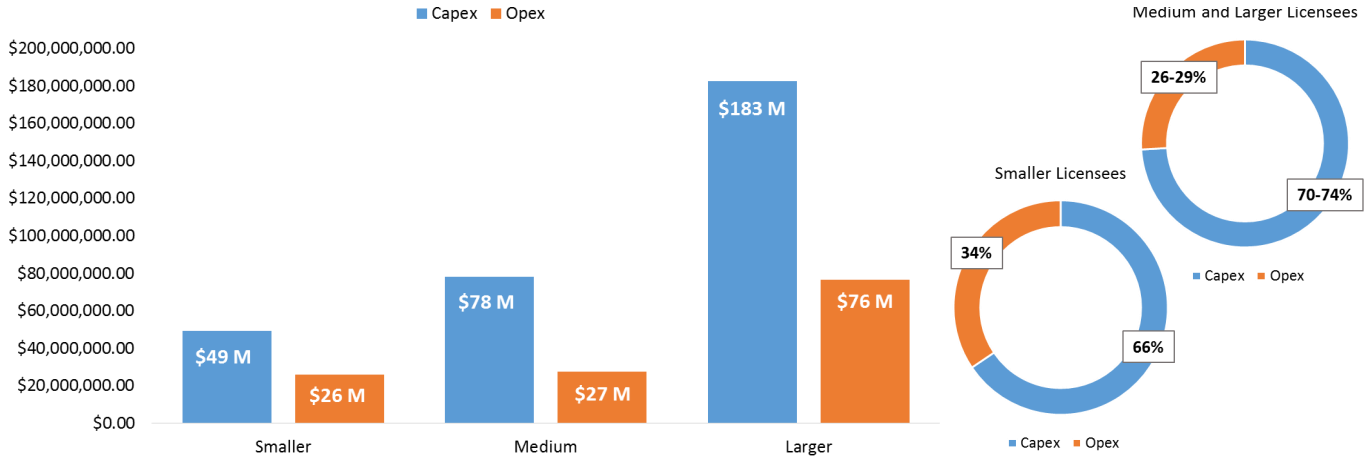
- Capital expenses exceeded operating expenses each year, and increased over time.*
- All licensee sizes reported higher anticipated capital expenses than operating expenses.

Though capital expenses continue to dominate overall costs, industry shifts towards more service-based contracts could increase operating expenses over time for all licensee sizes, encouraging stations to pursue a diversified fundraising approach long-term to cover future capital and operating expenses.

- Smaller licensees, particularly, could anticipate an increase in operating costs over time because they reported operating expenses as a higher percentage of overall costs than Medium or Larger licensees.

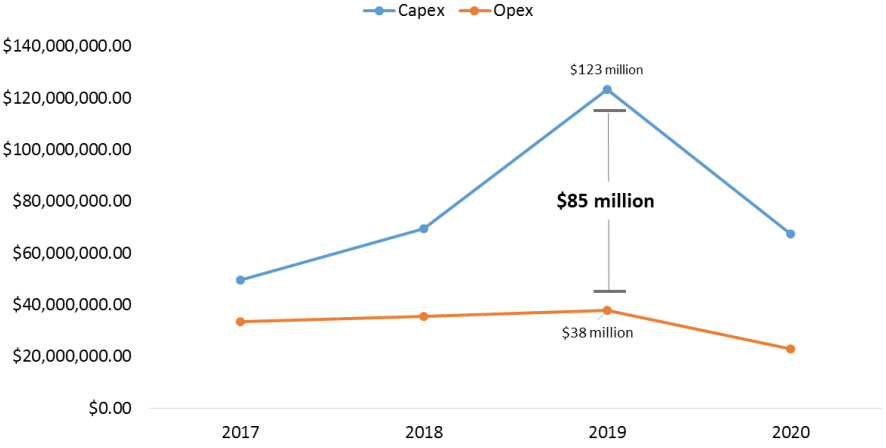
TV licensees of all sizes reported that their anticipated Capex would exceed Opex overall by 2020.

Capex Exceeded Opex for All Licensee Sizes from 2017 -2020, Comprising 70-74% of Medium and Larger Licensees Anticipated Costs and 66% of Smaller Licensees Costs



Though all TV licensee sizes reported Capex to exceed Opex needs from 2017-2020, Smaller licensees reported Capex as a lower percentage of overall costs, potentially indicating a shift to higher operating expenses in the future.

Capex Exceeded Opex Each Year for all Licensee Sizes; Capex Lower Percentage of Overall Costs for Smaller Licensees*



Projected capital expenses are expected to exceed operating expenses by $85 million in 2019. Capital expenses are expected to increase over time, consistently outpacing operating expenses. Capital and operating expenses may increase further if licensees are unable to purchase necessary equipment and services, forcing them to delay purchases into future years.

* 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

All TV Licensee Sizes Reported RF Broadcast Technologies as the Highest Anticipated Expense, Followed by Production & Post

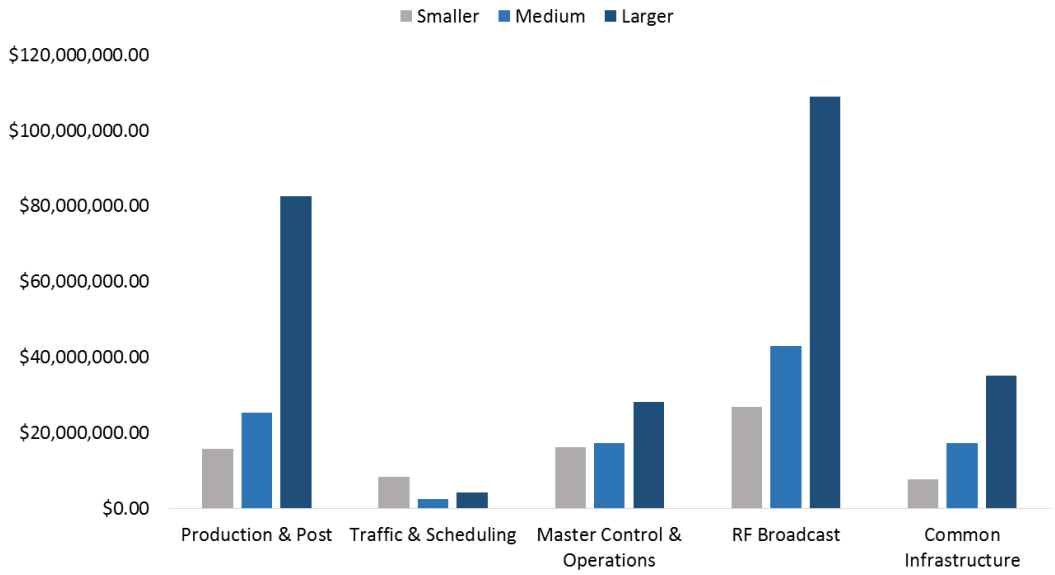
All licensee sizes reported RF Broadcast (RF) technologies as the highest anticipated expense, illustrating a potential broadcasting challenge if stations are unable to identify new sources of funding. Licensees also reported Production & Post (PP) technologies as high anticipated expenses, potentially limiting the ability of stations to produce and develop their own content.

- Transmitters and towers make up 53%, 60%, and 43% of Smaller, Medium, and Larger licensees' anticipated RF Broadcast costs, respectively.
- Cameras and remote studios comprised the highest costs for PP technologies for Larger licensees, while cameras and switchers dominated costs for Smaller and Medium licensees.

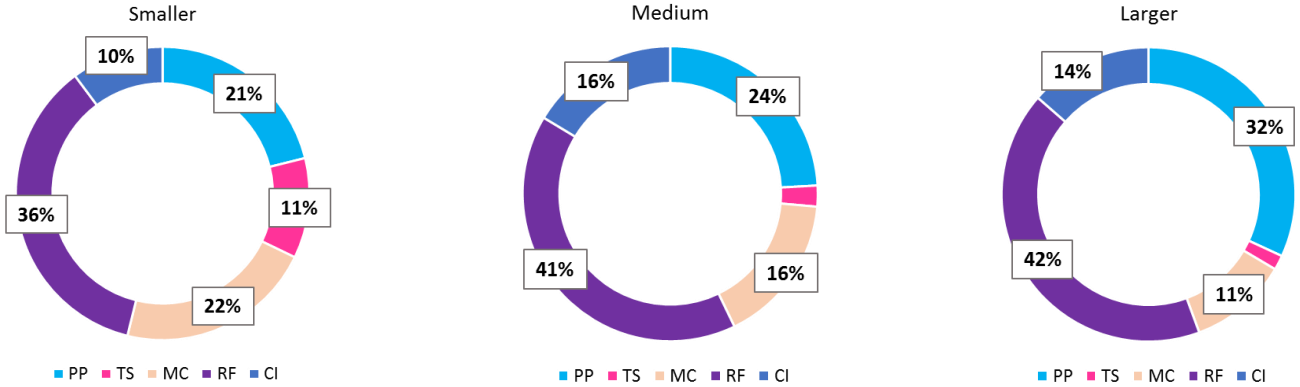
Most of these production and RF technologies were previously eligible for PTFP funding; Since 2010, the end of the PTFP program has contributed to the growing financial need to replace aging production technologies, contributing particularly to Smaller licensees' projected expenses.

TV licensees of all sizes reported the highest overall costs in RF Broadcast technologies essential for distribution, followed by PP technologies needed to develop unique content.

All TV Licensee Sizes Reported RF Broadcast Infrastructure as the Highest Overall Projected Costs, Followed by PP Technologies



Smaller licensees reported Master Control & Operations (MC) expenses as a larger relative percentage than Medium and Larger licensees. Traffic & Scheduling (TS) and Common Infrastructure (CI) costs were reportedly lower than other technologies.



Transmitters and Transmitter Encoding, MUX, and PSIP Equipment Comprise Most of the Anticipated RF Equipment Replacements for all Licensee Sizes, Which Could Contribute to Content Distribution Challenges

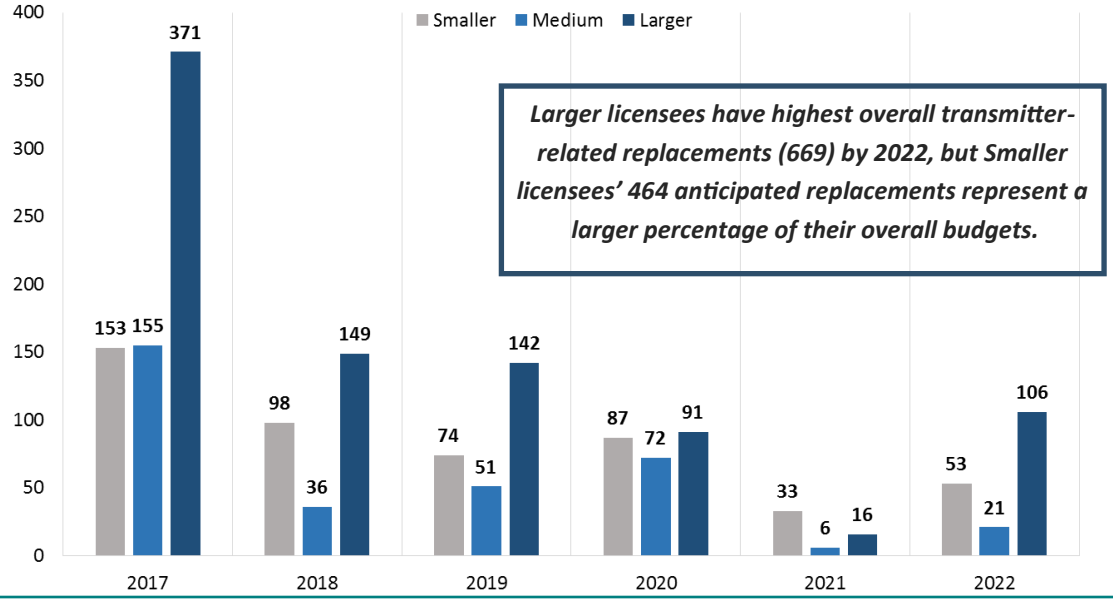
Transmitters and transmitter-related encoding, MUX, and PSIP (EMP) equipment replacement contribute to the anticipated $179 million in RF Broadcast anticipated expenses from 2017-2020. **Equipment replacements are highest in 2017 for all licensee sizes; licensees reported they would delay replacements without sufficient funding, which could negatively impact their ability to broadcast content in 2017 and long-term.**

- EMP equipment and transmitters, which are essential for operations, make up the majority of needed RF Broadcast equipment replacements in 2017.
- Smaller (93%), Medium (84%), and Larger (76%) licensees reported transmitter-related technologies as the majority of anticipated RF Broadcast equipment replacements.

Transmitter-related replacements are essential to maintain broadcast capabilities. **Without these technologies millions of Americans could lose service to invaluable educational programming and public safety information.**

Licensee size data reveals that anticipated RF Broadcast equipment replacement is highest in 2017; **Stations may delay the replacement of these vital broadcasting technologies because of unavailable funds or desires to shift to NextGen compatible technologies. Replacement delays could increase future financial gaps, as RF costs compound.**

RF Equipment Replacements are Highest in 2017; Transmitter Replacements are Also Highest in 2017



Americans enjoy access to valuable public safety, education, and news programming because of TV licensees' continued operations; without this essential infrastructure, millions of Americans could lose access to this valuable programming content.

Public television provides a vital public safety resource. Alabama Public Television's microwave system serves as the foundation for Alabama's Emergency Alert system, and South Dakota Public Broadcasting serves as the emergency alert center for the state as well as for AMBER Alerts and weather warnings.

PBS stations reach more children ages 2-8 and more children in lower income homes than any other children's network, providing invaluable access to educational programming with proven results in improving young learners' math and literacy skills.

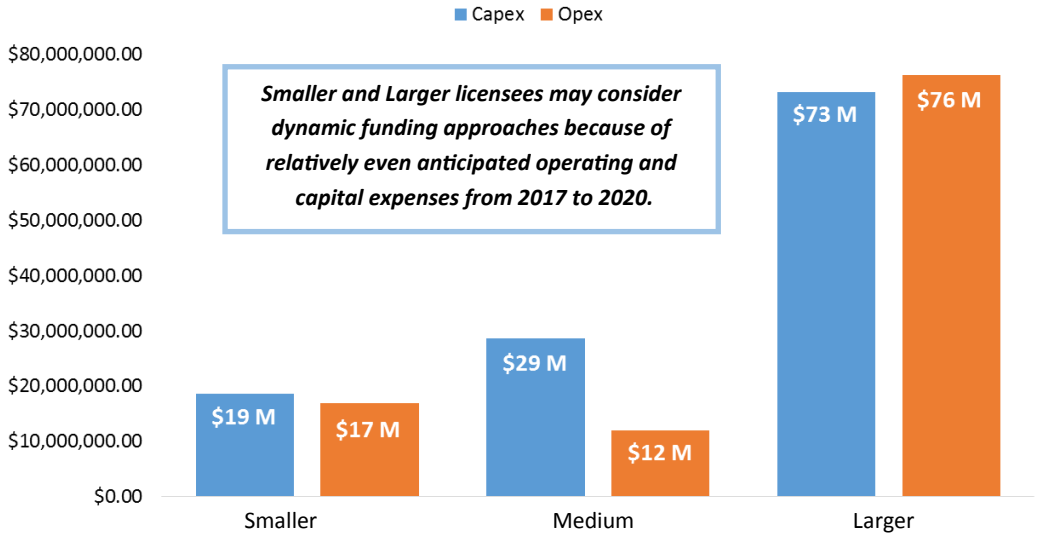
Capex and Opex for Radio Licensees of All Sizes Indicate that a Dynamic Funding Approach is Necessary to Attain both Capital and Operating Funds

Smaller and Larger licensees projected their respective capital and operating expenses almost evenly, **indicating that a diversified funding approach is necessary to obtain both capital and operating funds for Smaller and Larger licensees.** Medium licensees reported higher capital expenses than operating expenses; but **shifts to service-based contracts industry-wide may increase operating costs in the future, necessitating licensees of all sizes to plan strategically to acquire funding for both capital and operating funds.**

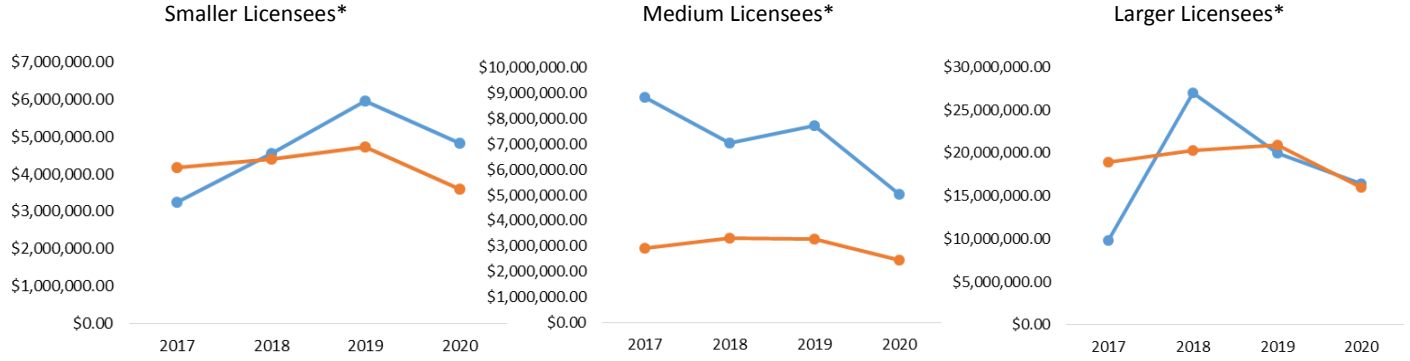
- Smaller licensees reported only $2 million more in capital expenses than operating expenses, while Larger licensees reported $3 million more in operating expenses than capital expenses.
- Medium licensees reported capital expenses as 70% of overall anticipated expenses.
- Capital and operating expenses were projected to rise over time for Smaller and Medium licensees, while Larger licensees anticipated a short fall in spending in 2019 followed by an increase in spending into 2022.*

Smaller and Larger licensees reported roughly 50-50 in anticipated operating and capital expenses from 2017 to 2020, necessitating a dynamic fundraising approach to acquire both capital and operating funds. Medium licensees expected capital expenses to exceed operating expenses during this time period.

Smaller and Larger Licensees Reported Relatively Even Capital and Operating Expenses Over Time, while Medium Licensees Reported Higher Overall Capital than Operating Expenses



Licensees of all sizes project operating and capital expenses to rise over time, potentially as a result of stations pushing off the replacement and/or acquisition of technologies due to insufficient funds in 2017.*



* 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 Expense for Larger and Medium Licensees; Smaller Radio Licensees Reported Highest Costs in Production & Master Control Technologies

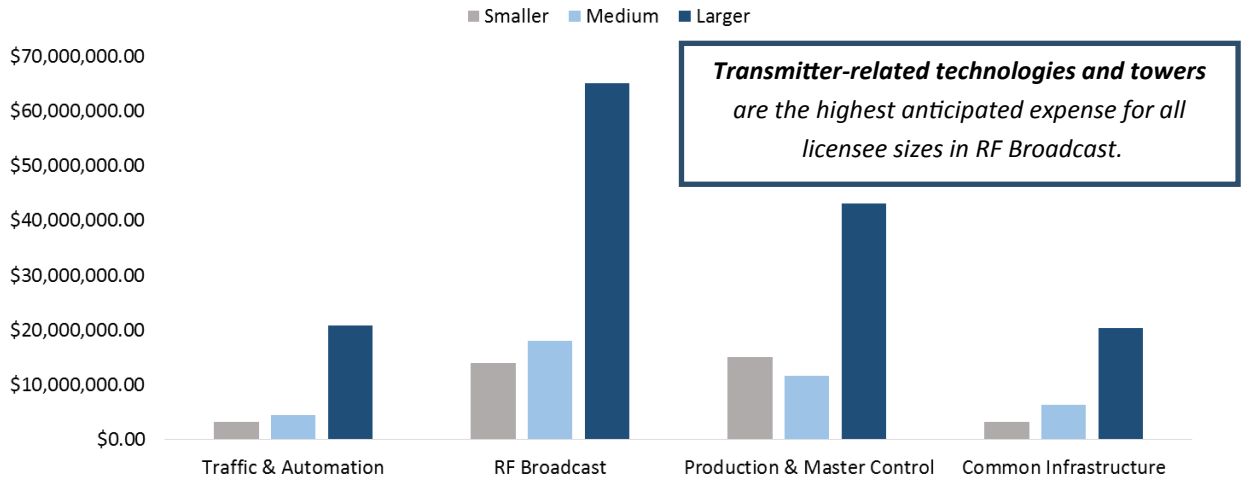
Larger and Medium licensees reported the highest expenses in RF Broadcast (RF) equipment followed by Production and Master Control (MC), necessitating capital campaigns to cover essential distribution technologies and ensure continued service to listeners nationwide. Smaller licensees reported the highest expenses in MC technologies.

- Transmitter-related technologies and towers make up approximately 63% of Medium licensees' and 74% of Larger licensees' anticipated RF needs.
- Production Control Rooms (PCRs) accounted for 61% of Smaller licensees' anticipated capital needs for MC equipment.

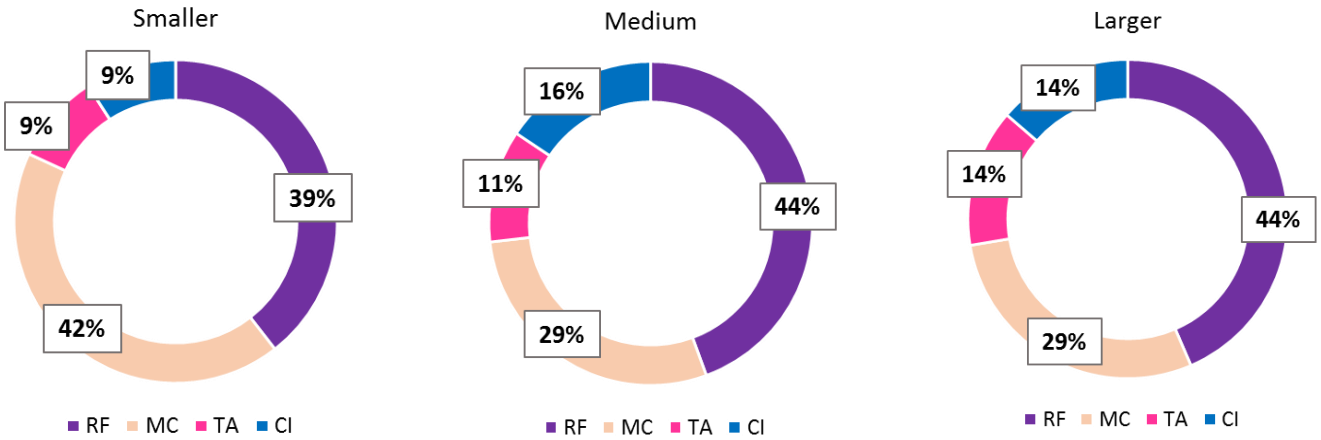
Most of these critical RF and MC technologies were previously eligible for PTFP funding; Since 2010, the end of the PTFP program has contributed to a growing financial need to replace aging distribution and production technologies, likely contributing to $226 million* in anticipated costs from 2017-2020.

Larger and Medium licensees' high costs in RF Broadcast necessitate funding for essential broadcast technologies like transmitters and towers; Smaller licensees reported high costs in MC, which could contribute to production challenges

Larger and Medium Licensees Expect Highest Expenses in RF Broadcast; Smaller Licensees Projected Highest Costs in Production and Master Control



RF Broadcast (RF) and Production and Master Control (MC) expenses make up 73% of Medium and Larger licensees and 81% of Smaller licensees expected costs from 2017-2020.



* Licensee demographic information did not account for one Radio station's size, leading to a difference in licensee size and licensee type aggregate financial costs and gaps for the system and radio

Transmitter Equipment Comprise the Majority of Anticipated RF Equipment Replacements for Radio Licensees of All Sizes, Which Could have a Negative Impact on Licensees' Abilities to Broadcast Content

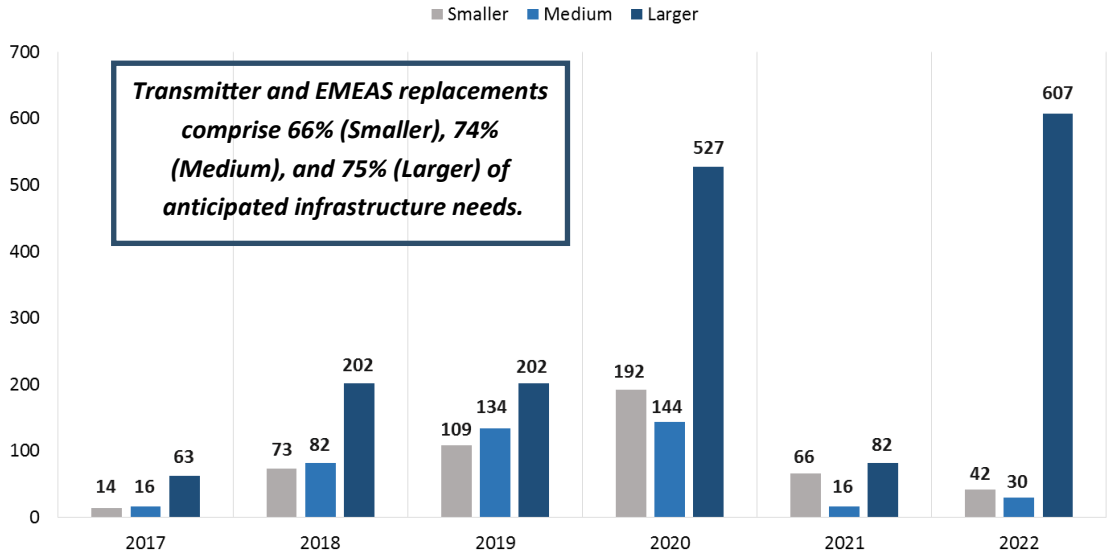
Transmitters, transmitter encoding, Mux, EAS/CAP (EMEAS) equipment, antennas, and generators/unlimited power supply (UPS) replacements contribute to the $100 million in radio RF Broadcast anticipated expenses from 2017-2020. Equipment replacements are highest in 2020; licensees can prevent future service disruptions by planning for and acquiring necessary capital funds for 863 anticipated replacements in 2020.

- Of 863 anticipated replacements in 2020, 603 are Transmitters or Trans EMEAS replacements for licensees of all sizes.
- Smaller licensees reported 66%, medium licensees reported 74%, and larger licensees reported 75% of their anticipated RF replacements as transmitter and EMEAS technologies respectively.
- Smaller licensees reported antennas as an additional 19% of their anticipated replacements.

RF broadcast infrastructure replacements are essential to maintain distribution capabilities. Without these vital technologies, millions of Americans could lose access to valuable educational programming, news, and public safety information.

Overall RF broadcast equipment as highest in 2020, including Transmitter and EMEAS technology replacements. Of these replacements, Smaller licensees reported 110 anticipated replacements in 2020, which could negatively impact their ability to broadcast content.

Anticipated RF Replacements Highest in 2020 for All Radio Licensee Sizes, Totaling 863



Americans enjoy access to valuable public safety, education, and news programming because of radio licensees' continued operations; without this essential infrastructure, Americans could lose access to this valuable programming and information sharing platform.

WDVX in East Tennessee creates and provides content to promote the cultural heritage of East Tennessee and the Southern Appalachian region by promoting local music, reporting on local happenings, and providing public safety information.

Maine Public Broadcasting Network makes its statewide system spectrum available to federal and state authorities to communicate with first responders and the media in the event of an emergency, providing continued access to vital public safety information during power outages.