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December 14, 2007

The Honorable Edward J. Markey  
Chairman  
Subcommittee on Telecommunications and the Internet  
Committee on Energy and Commerce  
House of Representatives

Subject: *Telecommunications: Preliminary Information on Media Ownership*

Dear Mr. Chairman:

The media play an important role in educating and entertaining the public and fostering an informed citizenry; thus the ownership of media outlets has been a long-standing concern of the Congress. The Federal Communications Commission (FCC) regulates many aspects of the media industry, including radio and television stations and cable and satellite service. In the Telecommunications Act of 1996 (1996 Act), the Congress required that FCC periodically review its media ownership rules. In 2003, FCC released an order that altered its existing media ownership rules. This order generated significant public debate, and more than 500,000 comments were filed with FCC. The U.S. Court of Appeals for the Third Circuit affirmed some of FCC's rule changes while remanding others for further justification or modification;<sup>1</sup> most of the rule changes have not gone into effect. In response to the court's decision and the congressional mandate for periodic review of its rules, FCC has another proceeding underway to assess its media ownership rules. This proceeding has attracted significant attention from both the public and the Congress, and has raised concerns about the level of consolidation in the media industry.

While today's media environment provides the public with numerous programming choices from across the country, media outlets in local markets remain a concern for policymakers. With cable and satellite service, the public can receive programming from nationwide outlets, such as CNN and FOX News, and television stations in adjacent markets. However, media outlets located in a market are more likely to provide local news, public affairs, and political programming addressing the needs of residents in that market, such as coverage of local political campaigns, compared to nationwide and adjacent-market outlets. Reflecting the importance of local media outlets, localism is one of FCC's three policy goals for media ownership.

You asked us to examine the current status of media ownership. In this report, we provide preliminary information on (1) the presence and ownership of various media

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<sup>1</sup>Prometheus Radio Project v. FCC, 373 F.3d 372 (3rd Cir. 2004), cert. denied, 545 U.S. 1123 (2005).

outlets, (2) the level of minority- and women-owned broadcast outlets, and (3) stakeholders' opinions on modifying certain media ownership laws and regulations. We plan to issue a final report on this work in several months.

To respond to the objectives of this report, we interviewed officials from FCC, the National Telecommunications and Information Administration (NTIA) of the Department of Commerce, and trade associations. Additionally, we conducted structured interviews with 102 industry officials and experts, selected based on industry sector (such as television and radio stations, broadcast networks, newspapers, and cable and satellite companies), geographic service territory, size of the media outlet, and professional publications (for experts). To assess the presence and ownership of media outlets, we conducted case studies in 16 Nielsen Designated Market Areas (DMA).<sup>2</sup> To select the 16 case study markets, we used a stratified random sample methodology: we (1) randomly selected four case study markets from each of three market strata (large, medium, and small), (2) selected the three largest markets as a separate stratum, and (3) judgmentally selected one market from the medium-size category to test our data collection and structured interview methodology. The 16 case study markets that we analyzed include approximately 20 percent of all television households in the United States. In each case study market, we identified the number of television and radio stations, newspapers (daily and weekly), and cable and satellite companies present in the central city of the DMA. We also identified the number of owners of these media outlets.

We conducted our review from February 2007 through December 2007 in accordance with generally accepted government auditing standards.

## **Results in Brief**

The numbers of media outlets and owners of media outlets generally increase with the size of the market, although operating agreements may reduce the effective number of independent outlets. Markets with large populations have more television and radio stations and newspapers than less-populated markets. For example, in New York City, the nation's largest market, we identified 21 television stations and 73 radio stations. In contrast, we found 2 television stations and 16 radio stations in Harrisonburg, Virginia, the smallest market in our review. In more diverse markets, we also observed more radio and television stations and newspapers operating in languages other than English, which contributed to a greater number of outlets. While we focused on media outlets located in specific markets, residents, in some instances, may be able to receive television and radio signals from stations located in adjacent markets. Some companies participate in agreements to share content or agreements that allow one company to produce programming or sell advertising through two outlets, among other agreements. In our review, these agreements were prevalent in a variety of markets but not in the top three markets, suggesting that market size may influence the benefits that companies realize through such agreements. To some degree, these agreements may suggest that the number of

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<sup>2</sup>According to Nielsen, a DMA consists of all counties whose largest viewing share is given to stations of the same market area. There are 210 nonoverlapping DMAs that cover the entire continental United States, Hawaii, and parts of Alaska.

independently owned media outlets in a market might not always be a good indicator of how many independently produced local news or other programs are available in a market.

Ownership of broadcast outlets by minorities and women appears limited, but comprehensive data are lacking. FCC collects data on the gender, race, and ethnicity of radio and television station owners biennially through its Ownership Report for Commercial Broadcast Stations, or Form 323. However, we found that these data suffer from three weaknesses: (1) exemptions from filing for certain types of broadcast stations, such as noncommercial stations; (2) inadequate data quality procedures; and (3) problems with data storage and retrieval. While reliable government data on the ownership by minorities and women are lacking, available evidence from FCC and nongovernmental reports suggests that ownership of broadcast outlets by these groups is limited. For example, reports by Free Press, a nongovernmental organization, found that women and minorities own about 5 percent and 3 percent of full-power television stations, respectively, and about 6 percent and 8 percent of full-power radio stations, respectively.

Stakeholders expressed varied opinions about the media ownership rules under review by FCC. Among the stakeholders we interviewed, there was little consensus on modifications to existing laws and regulations related to media ownership. However, stakeholders representing business interests were more likely to support deregulatory positions while nonbusiness stakeholders were more likely to support enhancing or leaving existing rules in place. Moreover, both business and nonbusiness stakeholders who expressed an opinion on a previously repealed tax certificate program supported either reinstating or expanding the program to encourage the sale of broadcast outlets to minorities.

## Background

Various laws and regulations constrain the ownership of television and radio stations. Five restrictions on the ownership of television and radio stations follow:

- **National television ownership cap.** A single entity can own any number of television stations nationwide as long as the stations collectively reach no more than 39 percent of national television households. For purposes of calculating the 39 percent limit, ultra-high frequency (UHF) television stations are attributed with 50 percent of the television households in their market.
- **Local television ownership limit.** A single entity can own two television stations in the same DMA if (1) the “Grade B” contours<sup>3</sup> of the stations do not overlap or (2) at least one of the stations is not ranked among the top four stations in terms of audience share and at least eight independently owned and operating full-power commercial and noncommercial television stations would remain in the DMA. In general, no entity can own more than two television

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<sup>3</sup>“Grade B” is an FCC-defined measure of signal strength pertaining to the availability of an over-the-air signal with a rooftop antenna.

stations whose Grade B contours overlap regardless of whether (1) the stations are not among the top four stations in terms of audience share and (2) at least eight independently owned and operating full-power commercial and noncommercial stations would remain in the DMA.

- **Local radio ownership limit.** A single entity can own up to 5 commercial radio stations, not more than 3 of which are in the same service (that is, AM or FM), in a market with 14 or fewer radio stations; up to 6 commercial radio stations, not more than 4 of which are in the same service, in a market with 15 to 29 radio stations; up to 7 commercial radio stations, not more than 4 of which are in the same service, in a market with 30 to 44 radio stations; and up to 8 commercial radio stations, not more than 5 of which are in the same service, in a market with 45 or more radio stations; except that an entity can not own, operate, or control more than 50 percent of the stations in a market.<sup>4</sup>
- **Newspaper-broadcast cross-ownership ban.** A single entity cannot have common ownership of a full-service television or radio station and a daily newspaper<sup>5</sup> if the television station's "Grade A" contour or the radio station's principal community service area completely encompass the newspaper's city of publication.<sup>6</sup>
- **Television-radio cross-ownership limit.** A single entity can own up to 2 television stations (if permitted under the Local Television Multiple Ownership Cap) and up to 6 radio stations (if permitted under the Local Radio Multiple Ownership Cap) or 1 television station and 7 radio stations in a market with at least 20 independently owned media voices remaining post merger; up to 2 television stations and up to 4 radio stations in a market with at least 10 independently owned media voices remaining post merger; and 1 television station and 1 radio station regardless of the number of independently owned media voices.<sup>7</sup>

In the 1996 Act, the Congress required FCC to conduct a biennial review of its media ownership rules to determine "whether any such rules are necessary in the public interest as the result of competition" and to "repeal or modify any regulation it determines to be no longer in the public interest."<sup>8</sup> In its 2002 biennial review, FCC adopted several important changes to its media ownership regulations. FCC increased the caps on ownership of local television stations, increased the nationwide television ownership cap, eliminated the prohibition on joint ownership

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<sup>4</sup>There is no limit on the number of AM or FM radio stations that a single entity can own nationwide.

<sup>5</sup>For purposes of this rule, a daily newspaper is defined as one published 4 or more days per week in English and circulated generally in the community of publication; the definition includes non-English newspapers if published in the primary language of the market.

<sup>6</sup>Newspaper-broadcast combinations that predate imposition of this ban are permitted. Companies also may seek a waiver from FCC to permit a newspaper-broadcast combination.

<sup>7</sup>For purposes of this rule, media voices include independently owned and operating full-power television stations, radio stations, daily newspapers with a circulation that exceeds 5 percent of the households in the DMA, one cable system if that system is generally available to households in the DMA, and independently owned out-of-market radio stations with a minimum share as reported by Arbitron.

<sup>8</sup>See Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, Section 202(h).

of a broadcast outlet and a newspaper in some instances, and raised the caps on joint ownership of television and radio stations in local markets. In 2004, the U.S. Court of Appeals for the Third Circuit affirmed some of FCC’s rule changes while remanding others for further justification or modification; most of the rule changes have not gone into effect. In 2006, FCC released a Further Notice of Proposed Rule Making concerning its media ownership rules.<sup>9</sup> FCC initiated the rule making to address the issues posed by the Court of Appeals as well as to fulfill the congressional mandate for periodic review of its media ownership rules.<sup>10</sup>

Since the 1970s, the number of media outlets has increased dramatically, with large increases in the number of television and radio stations. In the case of television, the number of full-power television stations increased from 875 in 1970 to 1,754 in 2006; this increase occurred in both commercial and noncommercial educational television stations.<sup>11</sup> Moreover, the number of broadcast networks that supply programming to stations across the country increased from three major networks (ABC, CBS, and NBC) to four major networks (ABC, CBS, FOX, and NBC) and several smaller networks, such as The CW Television Network, MY Network TV, and ION Television Network. In the case of radio, the number of full-power radio stations more than doubled, from 6,751 stations in 1970 to 13,793 stations in 2006, with increases in AM, FM, and FM educational stations.<sup>12</sup> Daily newspapers illustrate a different trend—decreasing from 1,763 in 1970 to 1,447 in 2006. While the number of morning newspapers increased from 334 in 1970 to 833 in 2006, the number of evening newspapers decreased by more than half, from 1,429 to 614. Table 1 illustrates the trends in television and radio stations and newspapers.

**Table 1: Number of Full-Power Television and Radio Stations and Daily Newspapers**

Media category	Number of outlets by year		
	1970	1990	2006
Television station	875	1,465	1,754
Radio station	6,751	10,770	13,793
Daily newspaper	1,763	1,643	1,447
Morning	334	559	833
Evening	1,429	1,084	614

Source: GAO analysis of data from FCC and the Newspaper Association of America.

While the number of media outlets has increased, the ownership of outlets also has evolved. Beginning in the late 1980s, the broadcast networks increasingly have become affiliated with companies that provide program production services, as happened when The Walt Disney Company acquired ABC. Each of the four major broadcast networks also owns television stations that reach more than 20 percent of the nation’s television households. Following the passage of the 1996 Act, several companies acquired a large number of radio stations. Clear Channel owns over 1,000

<sup>9</sup>2006 Quadrennial Regulatory Review—Review of the Commission’s Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996, Further Notice of Proposed Rulemaking, 21 FCC Rcd. 8834 (2006).

<sup>10</sup>The Congress now requires FCC to review its broadcast media ownership rules every 4 years.

<sup>11</sup>In addition to full-power television stations, there were approximately 568 Class A and 2,227 low-power television stations in 2006.

<sup>12</sup>In addition to full-power radio stations, there were approximately 770 low-power FM stations in 2006.

radio stations throughout the United States, and Cumulus Broadcasting and Citadel Communications each own over 200 stations. Finally, four companies—Comcast, DirecTV, Time Warner, and EchoStar—provide service to nearly two-thirds of subscribers to cable television or direct broadcast satellite service; additionally, many nonbroadcast networks, such as CNN and ESPN, are owned by cable companies or broadcast networks.<sup>13</sup>

In recent years, some companies have taken steps to sell assets. In 2005, Viacom split into two separate companies: Viacom and CBS Corporation.<sup>14</sup> In 2006, The McClatchy Company acquired Knight Ridder and subsequently sold 12 former Knight Ridder newspapers. Also in 2006, Clear Channel announced plans to sell 448 radio stations, all in markets outside the top 100, and its entire television station group.<sup>15</sup> More recently, The New York Times Company sold its television stations. Alternatively, the two satellite radio companies—Sirius and XM—have proposed a merger that, if approved, would leave one company providing satellite radio service.

### **Numbers of Media Outlets and Owners Generally Increase with Market Size, Although Operating Agreements May Reduce the Effective Number of Independent Outlets**

Markets with large populations have more television, radio, and newspaper outlets than less populated markets. In the top three markets—New York, Los Angeles, and Chicago—the combination of large populations and relatively high disposable income helps produce substantial advertising revenues for the media outlets in these markets. Hence, these markets have more television and radio stations and more newspapers than other markets. Alternatively, the small markets we analyzed—such as Jackson, Tennessee, and Harrisonburg, Virginia—are characterized by significantly fewer media outlets than larger markets. In more diverse markets, we also observed more radio and television stations and newspapers operating in languages other than English, which contributed to a greater number of outlets. For example, the Miami/Fort Lauderdale, Florida, market has more television stations than the other large, case study markets<sup>16</sup> we studied because of the large number of Spanish language outlets. In addition, the Tucson, Arizona, market, which has a relatively large Hispanic population, has more television and radio stations than other similarly sized case study markets due to the presence of Spanish language television and radio stations. Table 2 illustrates the number of media outlets and owners in our case study markets. While we focused on media outlets located in specific markets, residents may, in some instances, be able to receive television and radio signals from stations located in adjacent markets.

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<sup>13</sup>For example, among the nonbroadcast networks with the most subscribers, CNN and TNT are affiliated with Time Warner, ESPN is affiliated with Disney, USA Network is affiliated with NBC-Universal, and Discovery Channel is affiliated with Cox.

<sup>14</sup>These two separate companies are controlled by National Amusements, Inc.

<sup>15</sup>On November 13, 2007, FCC granted, subject to conditions, Clear Channel's application to assign its television stations to Newport Television LLC, which is wholly owned by affiliates of Providence Equity Partners, Inc.

<sup>16</sup>The other large media markets in our case study analysis are Charlotte, North Carolina; Nashville, Tennessee; and Wilkes Barre/Scranton, Pennsylvania.

**Table 2: Number of Media Outlets and Owners in Case Study Markets**

Case study market Name (DMA rank)	Television stations		Radio stations		Daily newspapers	
	Outlets	Owners	Outlets	Owners	Outlets	Owners
New York, New York (1)	21	15	73	44	5	5
Los Angeles, California (2)	24	19	69	34	2	2
Chicago, Illinois (3)	16	13	65	38	3	3
Miami, Florida (16)	16	13	47	24	3	2
Charlotte, North Carolina (26)	12	9	37	17	1	1
Nashville, Tennessee (30)	12	11	52	35	2	2
Scranton, Pennsylvania (53)	8	7	24	14	1	1
Tucson, Arizona (70)	11	8	38	17	2	2
Springfield, Missouri (76)	6	6	26	11	2	2
Chattanooga, Tennessee (86)	8	8	32	20	1	1
Cedar Rapids, Iowa (89)	9	8	25	11	1	1
Florence, South Carolina (105)	6	5	13	6	1	1
Terre Haute, Indiana (151)	5	5	18	11	1	1
Sherman, Texas (161)	2	2	23	13	1	1
Jackson, Tennessee (174)	3	3	21	14	1	1
Harrisonburg, Virginia (181)	2	2	16	7	1	1

Source: GAO analysis of FCC data, Warren Online Cable and Television Factbook, and *Bowker's News Media Directory*.

Some media companies participate in operating agreements that involve a partnership between two or more outlets. For example, some companies participate in agreements wherein one company produces content or sells advertising through its own outlets and another company's outlets. FCC's attribution rules—which seek to identify those interests in or relationships to licensees that have a realistic potential to affect the programming decisions of licensees or other core operating functions—apply to several types of operating agreements.<sup>17</sup> In our 16 case study markets, we found these agreements in a variety of markets but not in the top 3 markets, suggesting that market size may influence the benefits that companies realize through such agreements. We found television stations participating in operating agreements in five markets—Nashville, Tennessee; Wilkes Barre/Scranton, Pennsylvania; Springfield, Missouri; Myrtle Beach/Florence, South Carolina; and Terre Haute, Indiana. We also found operating agreements between radio stations in Harrisonburg, Virginia, and Nashville, Tennessee; and in Tucson, Arizona, the two competing daily newspapers participate in a joint operating agreement.<sup>18</sup> To some extent, these agreements may reduce the number of independent outlets. For example, in Wilkes Barre/Scranton, we identified eight television stations. However, one owner of two stations participated in an agreement with a third station and the remaining four television stations participated in two separate agreements—each agreement covering two stations. Thus, while there are eight television stations and seven owners in Wilkes Barre/Scranton, there are three loose commercial groupings in the market. This example suggests that the number of independently owned media outlets in a given market is not always a good indicator of how many independently produced local news or other programs are available in a market.

<sup>17</sup>We did not review whether the agreements fell within the requirements of the attribution rules.

<sup>18</sup>The Newspaper Preservation Act of 1970 allows various operating agreements in order “to preserve separate and independent editorial voices.”

## Ownership of Broadcast Outlets by Women and Minorities Appears Limited, but Comprehensive Data Are Lacking

In 1998, FCC issued rules to collect data on the gender, race, and ethnicity of holders of broadcast licenses. FCC decided to collect these data via its Ownership Report for Commercial Broadcast Stations, or Form 323. FCC noted that it was appropriate to develop “precise information on minority and female ownership of mass media facilities” and “annual information on the state and progress of minority and female ownership,” thereby positioning “both Congress and the Commission to assess the need for, and success of, programs to foster opportunities for minorities and females to own broadcast facilities.”<sup>19</sup> FCC began collecting these data in 1999 and the Form 323 is the only mechanism through which FCC collects information on the gender, race, and ethnicity of broadcast owners; FCC requires biennial filing of the Form 323.

As FCC’s only information source on owners’ gender, race, and ethnicity, the Form 323 data potentially could be used to determine and periodically report on the level of women and minority broadcast ownership. However, we identified several weaknesses that limit the usefulness of the Form 323 data.<sup>20</sup>

- **Filing exemptions.** Sole proprietors, partnerships, and noncommercial stations are not required to file the Form 323.<sup>21</sup> Since data from the Form 323 do not include stations owned by sole proprietors, partnerships, or noncommercial stations, it is not possible to use the Form 323 data to identify either the full universe of broadcast stations owned by women and minorities or the number of women and minority owners. FCC also does not require the filing of the Form 323 for low-power stations.
- **Data quality procedures.** According to FCC officials, FCC does not verify or periodically review the gender, race, and ethnicity data submitted via the Form 323. According to these officials, a staff person from FCC’s Video Division reviews submitted Form 323s, and this staff person focuses on ensuring compliance with the commission’s multiple ownership and citizen ownership rules. These officials told us that station owners were responsible for determining the accuracy of their Form 323 submissions.
- **Data storage and retrieval.** Companies must file the Form 323 electronically. However, FCC allows owners to provide attachments with their electronic filing of the Form 323. These attachments may include the gender, race, and ethnicity data. Since these data are not entered into the database, the data are unavailable for electronic query.

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<sup>19</sup>1998 Biennial Regulatory Review—Streamlining of Mass Media Applications, Rules, and Processes; Policies and Rules Regarding Minority and Female Ownership of Mass Media Facilities; Report and Order, 13 FCC Rcd. 23056, 23096-23097 (1998).

<sup>20</sup>For its media ownership proceeding, FCC commissioned three studies assessing the status of women and minority broadcast ownership. Each of the three studies explored the adequacy of FCC’s Form 323 data records and found the aggregate data to be unreliable.

<sup>21</sup>Noncommercial stations are required to file a Form 323-E. However, the Form 323-E does not collect data on gender, race, or ethnicity.

While there are no reliable government data on ownership by women and minorities, ownership of broadcast outlets by these groups appears limited. According to the industry stakeholders and experts we interviewed, the level is limited, and recent studies generally support this conclusion. In a 2006 report, Free Press found that for full-power television stations, women and minority ownership was about 5 percent and 3 percent, respectively. Specifically, the report noted that women owned a majority stake in 67 of 1,349 full power commercial television stations and minorities owned 44 stations, 8 of which were owned by 1 company. In another report, Free Press estimated that women owned approximately 629 of 10,506 (or 6 percent) of full-power radio stations and minorities owned 812 stations (or 8 percent) of full-power radio stations. Additionally, three reports commissioned by FCC as part of its media ownership proceeding found relatively limited levels of ownership of television and radio stations by women and minorities.

### **Stakeholders' Opinions Varied on Modifications to Media Ownership Rules, but Business Stakeholders Were More Likely to Favor Deregulation**

The stakeholders we interviewed seldom agreed on proposed modifications to media ownership rules. However, business stakeholders expressing opinions on these rules were more likely to report that the rules should be relaxed or repealed. In contrast, nonbusiness stakeholders who expressed opinions on the rules were more likely to report that the rules should be left in place or strengthened. Both business and nonbusiness stakeholders who expressed an opinion on a previously repealed tax certificate program supported either reinstating or expanding the program to encourage the sale of broadcast outlets to minorities.

- **National television ownership cap.** The majority (65 of 102) of stakeholders expressed no opinion on this issue. Of the 37 who did express an opinion, 22 said the cap should be left as is or lowered, further restricting ownership, while 15 favored raising or repealing the cap. But these results differed for nonbusiness and business stakeholders. Whereas 11 of 15 nonbusiness stakeholders stated that the cap should be left as is or lowered, further restricting ownership, 11 of 22 business stakeholders indicated that the cap should be raised or repealed.
- **Local television and radio ownership limits.** Stakeholders were fairly evenly divided on whether FCC should alter rules limiting the number of television and radio stations a single entity can own in a local market. Of the 50 stakeholders expressing an opinion on the matter, 27 said the rule should be repealed and 23 said the rule should either be left as is or strengthened. However, opinions within stakeholder segments were more consistent. Fourteen of 19 nonbusiness stakeholders were in favor of strengthening or leaving the rules in place, while 22 of 31 business stakeholders were in favor of repealing the regulation.
- **Newspaper-broadcast cross-ownership ban.** Overall, stakeholders were fairly evenly divided on whether FCC should modify its current rule prohibiting cross-ownership of newspapers and television or radio stations in the same local area. Of the 50 stakeholders expressing an opinion on the matter, 27 reported that the

rule should be repealed and 23 said the rule should either be left as is or strengthened. However, among business and nonbusiness stakeholders interviewed, there were clear differences in opinion on this issue. Fourteen of 20 nonbusiness stakeholders were in favor of strengthening or leaving the rule in place. In contrast, 21 of 30 business stakeholders were in favor of repealing the regulation. For example, 13 of 14 stakeholders from multisector media companies stated the rule should be repealed.

- **Reinstitution of minority tax certificate program.** Prior to its repeal by the Congress in 1995, the minority tax certificate program provided for the seller of a broadcast station to defer capital gains taxes on the sale if the station was sold to a minority-owned company. Of the 102 stakeholders interviewed, most (72) expressed no opinion as to whether the minority tax certificate program should be reinstated. However, among the 30 stakeholders who mentioned this issue, there was broad consensus in favor of reinstating some version of this program. Twenty-eight of these 30 stakeholders indicated that either the program should be reintroduced without changes or expanded, and 2 said the program was not needed and should not be reinstated.

### **Agency Comments**

We provided a draft of this report to FCC for its review and comment. FCC provided technical comments that we incorporated where appropriate. In addition, FCC noted that it has several items under consideration that could impact media ownership.

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As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the Chairman of the Federal Communications Commission and interested congressional committees. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you have any questions about this report, please contact me at (202) 512-2834 or [heckerj@gao.gov](mailto:heckerj@gao.gov). Individuals making key contributions to this report include Michael Clements (Assistant Director), Carl Barden, Matt Barranca, Steve Brown, Ted Burik, Elizabeth Eisenstadt, Brandon Haller, Madhav Panwar, Friendly Vang-Johnson, and Mindi Weisenbloom.

A handwritten signature in black ink, appearing to read "JayEtta Z. Hecker". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

JayEtta Z. Hecker  
Director, Physical Infrastructure Issues